SCHOOL OF HUMANITIES & SOCIAL SCIENCES

(SOHSS)RAFFELS UNIVERSITY, NEEMRANA

B.A. (GENERAL) (3 Years Degree Program)

Programme Educational Objective (PEO)

Programme Outcomes (POs)

Programme Specific Outcomes (PSOs)

Course Outcomes (COs)

Raffles University Neemrana

RAFFLES
UNIVERSITY

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Vision: To evolve as an Institution of Excellence, where scholars develop informed and inquiring minds and broaden the frontiers of pure and applied knowledge.

Mission: In graining the capacity to us usher in change by discovering nurturing and expanding individual skills talents and interests while standing forth as leader and path breaker in their future carrier.

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEO 1 To providing subjective and practical knowledge as well as developing practical solutions and connections between theory.

PEO 2 Hearten individual growth among the students and enhance their confidence by providing them an opportunity to become a part of science-industry.

PEO 3 To make Science subjects interesting through technically, scientifically and experimentally.

PEO 4 To develop problem-solving skills through practical applications and research

PROGRAMME OUTCOMES (POS)

On successful completion of Graduate Program, Graduating Students/ Graduateswillbe able to

PO 1	Realizing human values.
PO 2	Becoming a responsible and dutiful citizen.
PO 3	Acquiring critical temper.
PO 4	Inculcating creative ability.
PO 5	Getting well acquainted with the historical events happened in India as well as in the world.
PO 6	Getting acquainted with social transactions, social relations, social formations, social control, social values and culture

PO 7	Working in NGOs and preparing for competitive exams
PO 8	Creating interest in basic Knowledge and major Knowledge in literature.
PO 9	Developing reading, writing, speaking and listening skills in language.
PO 10	To develop better understanding of societal norms and values.

PROGRAMME SPECIFIC OUTCOMES (PSOs)

The School of Humanities and Social Sciences, offers Three Year (comprising 6 semesters) Undergraduate Program in B A (Genral) with objective of empowering students to acquire all- inclusive understanding of Society, Literature, Political System and Economy. The students shall acquire the following skills and competencies.

Programme Specific Outcomes (PSO): B. A. (English)

PSO 1	Basic Knowledge of English as a language.
PSO 2	Major knowledge of English as Literature.
PSO 3	Advanced knowledge of English Grammar

PSO 4	Critical study of English literary studies
PSO 5	Relation between literature and real life.

Programme Specific Outcomes (PSO): B. A. (Geography)

PSO 1	Serving as a Geographer and Work as a teacher in colleges, schools and high schools.
PSO 2	Serving as conserver in forest, Soil, Agricultural Departments and Work in disaster and water resources management.
PSO 3	Serving in cargrapher in map making divisions of government.

Programme Specific Outcomes (PSO): B. A.(Economics)

PSO 1	Understanding how different degrees of competition in a market affect pricing and output.
PSO 2	Understanding the efficiency and equity implications of market interference, including government policy.
PSO 3	Developing research Knowledge in economics and also Developing the skill of data collection & use of sampling techniques in research.

Programme Specific Outcomes (PSO): B.A. (PoliticalScience)

PSO 1	Getting knowledge about political system of the nation.
PSO 2	Studying national and international political affairs.
PSO 3	Studying, from competitive examination point of view.

PSO 4	Understanding the government mechanism, its functions, duties and responsibilities.
PSO 5	Creating appropriate and efficient political leaders.

Programme Specific Outcomes (PSO): B. A.(Sociology)

PSO 1	Knowing the significance of social institution, caste system, religion, nationalism, integrity, equality and justice.
PSO 2	Getting the Knowledge of the works of social reformers all over the nation.
PSO 3	Ability to follow new stream of thoughts and theories of social thinkers.
PSO 4	Getting the deep Knowledge about various social groups like tribal community, women bulk etc.

PSO-PO Mapping

	PO										
PSO		1	2	3	4	5	6	7	8	9	10
	1	√	√	√							
	2	√	√		√	√			√	√	
	3	√	√	√	√	√			√	√	
	4	√	√	√	√	√			√	√	√
	5			√	√	√	√	√	√		√

Raffles University, Neemrana

School of Humanities and Social Sciences

Bachelor of Arts (B.A.)(General)

(For the Session 2021-2024)

First Semester

Core Discipline

Subject Code	Course Type	Subject	Credits	Marks			
				1A 20	MT 20	ET 60	Total 100
PS-101	Core Discipline	Principles of Political Science	06	20	20	60	100
ENG-101	Core Discipline	English Literature- Poetry & Short Stories	06	20	20	60	100

Compulsory Subjects

Subject Code	Course Type	Subject	Credits	Marks			
				1A 20	MT 20	ET 60	Total 100
AE101	Ability Enhancement(Compulsory)	General English-1	02	20	20	60	100
AE102	Ability Enhancement(Compulsory)	Environmental Studies	02	20	20	60	100

Elective Subject

Subject Code	Course Type	Subject	Credits	Marks			
				1A 20	MT 20	ET 60	Total 100
SOC-101/ECO-101	Elective	Introduction to Sociology/ Micro Economics	06	20	20	60	100

School of Humanities and Social Sciences

Bachelor of Arts (B.A.) (General)

(For the Session 2021-2024)

First Semester

I- Principles of Political Science (PS-101)

Course Outcomes:

1- To enumerate the concepts associated with Political Science.

2- To conceptualize the associated concepts of Political Science.

3- To Trace Origin of State concepts.

4- To understand different ideologies of political Science.

II- English Literature- Poetry & Short Stories (ENG- 101)

Course Outcomes:

1. Students will have exposure to the different forms of poetry.
2. Students will be able to understand Shakespearian sonnet and Petrarchan sonnet.
3. Students will gain insight into the development of British poetry.
4. Students will understand the socio political context of Elizabethan age to Modern age.

III- General English-1 (AE-101) (Ability Enhancement)

Course Outcomes:

1- Describe importance of Legal Language.

2- Identify the correct usage of grammar in legal drafting.

3- Draft documents for legal correspondence.

4- Analyse characters of literary texts.

5- Apply skills of interpreting poetry.

IV- Environmental Studies (AE- 102) (Ability Enhancement)

Course Outcome:

1. Learn how to use resources sustainably
2. Develop awareness towards resources conservation and take initiative towards conservation process.
3. Understand the importance of resources in our life.
4. Learn the importance of proper use of resources for sustainable development.

V-Introduction to Sociology (SOC-101)

Course Outcomes:

1. Students will have gained a solid understanding of the nature and scope of sociology as a discipline.
2. Students will recognize sociology as a scientific field of study and be able to distinguish it from common-sense thinking.
3. Students will develop a critical sociological perspective, enabling them to approach social phenomena scientifically and analytically.
4. Students will comprehensively understand the interrelationship between sociology and other social sciences, including social anthropology, psychology, and history.
5. Students will appreciate how sociology draws insights from and contributes to these related disciplines, fostering an interdisciplinary approach to the study of society.

VI-**Micro Economics (ECO-101)**

Course Outcomes:

1. Understand the demand and supply of goods in the market.
2. Understand the attitude of consumer and producer towards demand, supply and price structure of the market.
3. Learn about the different types of market structure and determination of price and output in different markets.
4. Able to understand the impacts of price and output structure of different markets.
5. Able to understand the concept of cost and revenue and its impact on the economy

CO-PO MAPPING

PS-101	PO									
	1	2	3	4	5	6	7	8	9	10
1	3	3	3	3	2	3	3	1	1	2
2	2	2	2	2	1	2	2	2	2	1
3	2	1	2	1	2	2	1	3	1	2
4	2	2	1	2	2	1	1	2	1	1
5	1	1	2	1	2	1	3	2	2	1

ENG-101	PO									
	1	2	3	4	5	6	7	8	9	10
CO1	3	3	3	3	2	3	3	1	1	2
CO2	2	2	2	2	1	2	2	2	2	1
CO3	2	3	2	1	2	2	1	3	1	2
CO4	2	2	1	2	2	1	1	2	1	1
CO5	1	1	2	1	1	1	3	2	2	1

AE-101	PO									
	1	2	3	4	5	6	7	8	9	10
CO1	3	3	3	3	2	3	3	1	1	2
CO2	2	2	2	2	1	2	2	2	2	1
CO3	2	1	2	1	2	2	1	3	1	2
CO4	2	2	1	2	2	1	1	2	1	1
CO5	1	1	2	1	1	1	1	2	2	1

AE-102	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1
	CO6	2	2	1	2	1	2	1	2	1	2

SOC-101	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	√	2	2	1
	CO6	2	1	2	1	3	2	2	2	1	2

ECO-101	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

PSO-PO Mapping

	PO-01	PO-02	PO-03	PO-04	PO-05	PO-06	PO-07	PO-08	PO-09	PO-10	PO-11	PSO-01	PSO-02	PSO-03
Average Mapping (M)	3	2	2	1	2	1	2	2	1	1	3	3	3	2
PO / PSO Attainment Level*	2.20	1.59	1.34	0.73	1.34	0.37	1.47	1.10	0.98	0.98	1.96	2.20	1.83	1.10

School of Humanities and Social Sciences

Bachelor of Arts (B.A.) (General)

(For the Session 2021-2024)

(II semester)

Core Discipline

Subject Code	Course Type	Subject	Credits	Marks			
				IA 20	MT 20	ET 60	Total 100
PS-201	Core Discipline	Principles of Public Administration and Governance	06	20	20	60	100
ENG-201	Core Discipline	British Poetry, Prose and Drama from 16th to 18th Century	06	20	20	60	100

Compulsory Subjects

Subject Code	Course Type	Subject	Credits	Marks			
				IA 20	MT 20	ET 60	Total 100
AE-201	Ability Enhancement(Compulsory)	General English-1	02	20	20	60	100

AE-202	Ability Enhancement(Compulsory)	Environmental Studies	02	20	20	60	100

Elective Subject

Subject Code	Course Type	Subject	Credits	Marks			
				1A 20	MT 20	ET 60	Total 100
SOC-201/EC0-201	Elective	Sociology of Indian Society/ Macro Economics	06	20	20	60	100

I- Principles of Public Administration and Governance (PS-201)

Course Outcomes:

1. To enumerate the concepts associated with Public Administration.
2. To understand public and private administration.
3. To conceptualize the associated concepts of Public Administration and Governance.
4. To Trace Origin of the discipline public administration,
5. To understand different concepts of governance.

II- British Poetry, Prose and drama from 16th to 18th Century (ENG-201)

Course Outcomes:

1. Students will be able to differentiate between various forms of poetry, analyze poems in each, and understand how the choice of form influences British poetry's thematic and stylistic elements.
2. Students will have gained a deep understanding of William Shakespeare's "Hamlet," including its complex characters, themes, and historical context. They will be able to critically analyze and interpret the play, recognizing its enduring significance in British drama and world literature.
3. Students will have honed their analytical skills to interpret and appreciate short stories, as demonstrated in Charlotte Perkins Gilman's "The Yellow Wallpaper" and Katherine Mansfield's "Bliss."

III- General English- 1 (AE-201) (Ability Enhancement)

Course Outcomes:

1. Students can read and understand any text in English listening to the inputs given by the teacher in the classroom.

2. Students imbibe the rules of language unconsciously and tune to deduce language structure and usage.

3. Students write paragraphs, essays, and letters.

4. Students decipher the mechanism of language and use it for success in competitive examinations and job related speaking and writing tasks.

IV- Environmental Studies (AE 202) (Ability Enhancement)

Course outcomes:

1. Create awareness about preserving the environment
2. Define the basic rules and concepts of the ecology science.
3. Define the ecology of individual, population, community and ecosystem

V-**Sociology of Indian Society (SOC-201)**

Course Outcomes:

1. Students will understand about the Ancient concepts like Varna, Ashram system, Theory of Karma etc.
2. They will also learn about the cultural diversity prevalent in India, social institutions related with different religions and tribes, changes occurring in the Indian society through the process of Globalization, Liberalization etc. and some social issues and problems of the state of Chhattisgarh.
3. Develop a sociological imagination to make sense of the reality in a more comprehensive manner.
4. Provide basic knowledge of sociological concepts and methods and developing ability to identify the challenges in Sociological field of enquiry.

VI- Macro Economics (ECO-201)

Course Outcomes:

1. Understand the calculation of national income and its aggregates
2. Understand the forms and functions of RBI and commercial banking
3. Learn about the macroeconomic policies and their impact on the economy
4. Able to understand the impacts of changes in money supply

CO-PO MAPPING

PS-201	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

ENG-201	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

AE-201	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

AE-202	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

SOC-201	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

ECO-201	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

School of Humanities and Social Sciences

Bachelor of Arts (B.A.) (General)

(For the Session 2021-2024)

(III semester)

Third Semester

Core Discipline

Subject Code	Course Type	Subject	Credits	Marks			
				1A 20	MT 20	ET 60	Total 100
PS-301	Core Discipline	International Relations	06	20	20	60	100
ENG-301	Core Discipline	British Prose and Novel from 19th to 20th Century	06	20	20	60	100

Compulsory Subject

Subject Code	Course Type	Subject	Credits	Marks 1A	MT	ET	Total
AE-301	Ability Enhancement(Compulsory)	Art of Communication	02	20	20	60	100
AE-302	Ability Enhancement(Compulsory)	Fundamentals of Computers	02	20	20	60	100

Elective Subject

Subject	Course Type	Subject	Credits	Marks

Code				1 A 20	M T 20	E T 60	Tota l 100
SOC-301/ECO-301	Elective	Classical Sociological Theory/ Public Finance and International Economics	06	20	20	60	100

I- International Relations (PS-301)

Course Outcome:

1. To equip students with study of international relations and understand about approaches, methods of International Relations
2. To give glimpse of important actors in international relations
3. To understand concepts of power and diplomacy for understanding international law
4. To give them idea about International Organizations.

II- British Prose and Novel from 19th to 20th Century (ENG-301)

Course outcome:

1. Students would have widened their idea about prose and novels of 19th an 20th century.
2. Students would have grasped the major theme of prose and novels that belong to 19th and 20th century.
3. Students would have understood the socio-political context of the period from 19th -20th century with particular reference to prose and novel.

III- Art of Communication (AE-301) (Ability Enhancement)

Course outcome:

1. The role of Business Communication in running a business and managing an organization.
2. Effective Communication is very important for the successful working of an organization.

3. Communication is both oral and written.
4. Students will be able to develop good and effective communication skills.

IV- Fundamentals of Computers (AE-302) (Ability Enhancement)

Course Outcome:

1. Understanding the concept of input and output devices of Computers
2. Learn the functional units and classify types of computers, how they process information and how individual computers interact with other computing systems and devices.
3. Understand an operating system and its working, and solve common problems related to operating systems
4. Learn basic word processing, Spreadsheet and Presentation Graphics Software skills.
5. Study to use the Internet safely, legally, and responsibly

V- Classical Sociological Theory (SOC- 301)

Course Outcome:

1. Students understood history of social theory, social and political understanding of the society, thoughts of Karl Marx, Emile Durkheim, Max Weber, August Comte, Herbert Spencer
2. To make the student understand the sociological thoughts of Karl Marx, Emile Durkheim, Max Weber, August Comte, Herbert Spencer.
3. Students will be able to understand the history of social theory.

VI- Public Finance and International Economics (ECO- 301)

Course Outcome:

1. Understand working of financial system in an economy
2. Understand the types and effect of public expenditure and public revenue in an economy.
3. Learn about taxation system in India.
4. Able to understand the operation of international trade. Different theories of international trade.
5. Able to understand the concept of balance of trade

CO and PO Mapping

PS-301		PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

ENG-301		PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

AE-301		PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

AE-302	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

SOC-301	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

ECO-301	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	3	2	1	1	1	2	2	2	1

School of Humanities and Social Sciences

Bachelor of Arts (B.A.) (General)

(For the Session 2021-2024)

(IV semester)

Fourth Semester

Core Discipline

Subject Code	Course Type	Subject	Credits	Marks			
				1A 20	MT 20	ET 60	Total 100
PS-401	Core Discipline	Contemporary Models of Government	06	20	20	60	100
ENG-401	Core Discipline	British Poetry and Drama from 19th to 20th Century	06	20	20	60	100

Compulsory Subject

Subject Code	Course Type	Subject	Credits	Marks 1A	MT	ET	Total
AE-401	Ability Enhancement(Compulsory)	Art of Communication-1	02	20	20	60	100

AE-402	Ability Enhancement(Compulsory)	Fundamental of Computers-1	02	20	20	60	100

Elective Subject

Subject Code	Course Type	Subject	Credits	Marks			
				1A 20	MT 20	ET 60	Total 100
SOC-401/EC0-401	Elective	Indian Social Problems/ Indian Economy	06	20	20	60	100

I- Contemporary Models of Government(PS-401)

Course Outcome:

1. Student will be able to compare different constitutions.
2. Student will be able to compare different governments.
3. Student will understand major Constitution.
4. Student will know about Indian Constitution.
5. Student will be able to understand salient features of world Major constitution.

II- British Poetry and Drama from 19th to 20th Century (ENG-401)

Course Outcome:

1. Students will have exposure to the different forms of poetry and drama.
2. Students will be able to understand dramatic monologue and war poetry
3. Students will gain insight into the development of British poetry.

III-Art of Communication-1 (AE-401) (Ability Enhancement)

Course Outcome:

1. Understanding different approaches to development, its problems and issues
2. Knowledge about characteristics of developing societies and finding gaps between developed and developing societies
3. Knowledge about meaning, concept, definition about several paradigms
4. Understanding the role of developmental and rural extension agencies in development
5. Understanding the role of media in development

IV- Fundamental of Computers-1 (AE-402)

e:

1. Converse in basic computer terminology
2. Formulate opinions about the impact of computers on society
3. Possess the knowledge of basic hardware peripherals
4. Know and use different number systems and the basics of programming
5. Solve basic computational problems with C language

V-I ndian Social Problems (SOC-401)

Course Outcome:

1. It enables students to understand various social problems that prevail in the Indian society.
2. The major problems like family disorganization, crime, juvenile delinquency, child labour and problems of aged possible are discussed and possible solutions are suggested
3. Students are able to understand concepts and theories underlying social problems in India and social problems.

VI-I ndian Economy (ECO-401)

Course Outcome:

1. Understand working of an economy
2. Understand the features and trends of Indian economy.
3. Learn about importance of agriculture, industries and services etc. in India.
4. Able to understand the operation of credit system in Indian agriculture.

CO-PO MAPPING

PS-401	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

ENG-401	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

AE-401	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

AE-402	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

SOC-401	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

ECO-401	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

School of Humanities and Social Sciences

Bachelor of Arts (B.A.) (General)

(For the Session 2021-2024)

(V semester)

Fifth Semester

Core Discipline

Subject Code	Course Type	Subject	Credits	Marks			
				IA 20	MT 20	ET 60	Total 100
PS-501	Core Discipline	Western Political Thought	04	20	20	60	100
ENG-501	Core Discipline	Indian English Literature	04	20	20	60	100
ECO-501/SOC-501	Core Discipline	Statistics/ Classical Sociological Theories	04	20	20	60	100
RM-501	Core Discipline	Research Methodology	04	20	20	60	100

Compulsory Subject

Subject Code	Course Type	Subject	Credits	Marks			
				IA 20	MT 20	ET 60	Total 100
AE-501	Compulsory	Ethics and Human Values	02	20	20	60	100

I- Western Political Thought (PS-501)

Course Outcome:

1. To understand the salient features of Greek and Medieval Political thought.
2. Evaluate Plato's theory of education, communism and justice. Analyse Aristotle's Classification of governments and his concept of State.
3. To learn about the Machiavellian theory of State-Craft.
4. To Describe the Social Contract Theory, utilitarianism and Marxism.

I- ndian English Literature (ENG-501)

Course Outcome:

1. Students would have widened their idea about different genres of Indian English Literature.
2. Students would have grasped the major theme of poetry, novel, short story and novellas that belong to Indian Writings in English.
3. Analyse how the sociological, historical, cultural and political context impacted the texts selected for study.
4. Evaluate critically the contributions of major Indian English poets, dramatists, and novelists.

III- Statistics (ECO-501)

Course Outcome:

1. Understand basic calculation of different statistical measures.
2. Understand the use of different methods of statistics in real world.
3. Students will summarize data visually and numerically.
4. Students will build and assess data-based models.
5. Students will learn and apply the tools of formal inference.
6. Students will execute statistical analyses with professional software.

IV- Classical Sociological Theories (SOC-501)

Course Outcome:

1. It enables the learners to understand social thought and sociological theories.
2. The founding fathers of sociology and their contribution for the development of sociology as an independent science
3. Students understood Major Sociological Perspectives.

V- Research Methodology (RM-501)

Course Outcome:

1. Students who complete this course will be able to understand and comprehend the basics in research methodology and applying them in research/ project work.
2. This course will help them to select an appropriate research design.
3. With the help of this course, students will be able to take up and implement a research project/ study.
4. The course will also enable them to collect the data, edit it properly and analyse it accordingly. Thus, it will facilitate students' prosperity in higher education.
5. The Students will develop skills in qualitative and quantitative data analysis and presentation.
6. Students will be able to demonstrate the ability to choose methods appropriate to research objectives.

VI- Ethics and Human Values (AE- 501)

Course Outcome:

1. Identify and analyze an ethical issue in the subject matter under investigation or in a relevant field
2. Identify the multiple ethical interests at stake in a real-world situation or practice
3. Articulate what makes a particular course of action ethically defensible
4. Assess their own ethical values and the social context of problems
5. Identify ethical concerns in research and intellectual contexts, including academic integrity, use and citation of sources, the objective presentation of data, and the treatment of human subjects
6. Demonstrate knowledge of ethical values in non-classroom activities, such as service learning, internships, and field work

CO-PO MAPPING

PS-501	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

ENG-501	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

AE-501	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

AE-502	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

SOC-501	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

ECO-501	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

School of Humanities and Social Sciences

Bachelor of Arts (B.A.) (General)

(For the Session 2021-2024)

(VI semester)

Sixth Semester

Core Discipline

Subject Code	Course Type	Subject	Credits	Marks			
				IA 20	MT 20	ET 60	Total 100
PS-601	Core Discipline	Indian Social and Political Thinkers	04	20	20	60	100
ENG-601	Core Discipline	Literary and Critical Movements, Critical Terms and Practical Criticism	04	20	20	60	100
SOC-601/ECO-601	Core Discipline	Mathematical Economics/Classical Sociological Thinkers	04	20	20	60	100
DSOHSS	Core Discipline	Dissertation (Inter-disciplinary topic)	04	20	20	60	100

Compulsory Subject

Subject Code	Course Type	Subject	Credits	Marks			
				1A 20	MT 20	ET 60	Total 100
AE-601	Compulsory	Gender Studies	02	20	20	60	100

I-Indian Social and Political Thinkers (PS-601)

Course Outcome:

1. To develop a general understanding of Indian Political Thinkers.
2. To discuss the basic concepts of state, sovereignty, liberty, equality, rights and justice which are summarise and explained by Indian Political and Social Thinkers.
3. To assess the applications and practices of thought of Indian Political Thinkers.
4. To compare traditional idea of state with modern political system in day-to-day life.

II- Literary and Critical Movements, Critical terms and Practical Criticism (ENG-601)

Course Outcome:

1. Students would have widened their idea about American Literature
2. Students would have grasped the major theme of works of American Literature

III Classical Sociological Thinkers (SOC- 601)

Course Outcome:

1. It enables the learners to understand social thought and sociological theories.
2. The founding fathers of sociology and their contribution for the development of sociology as an independent science
3. Students understood Major Sociological Perspectives.

IV- Mathematical Economics(ECO-601)

Course Outcome:

1. Understand basic calculation of different mathematical measures.
2. Students will able to understand economics better and numerically.
3. Students will build and assess data-based models.

I- Dissertation (Interdisciplinary)(DOSSHS)

Course Outcome:

1. Research Proficiency: Students will demonstrate a high level of proficiency in conducting independent research, including the ability to formulate research questions, design appropriate

methodologies, and collect and analyze data effectively.

2. Critical Thinking and Analysis: Students will develop advanced critical thinking skills, enabling them to critically evaluate existing literature, synthesize information from multiple sources, and offer well-founded arguments and insights within their chosen field of study.
3. Writing and Communication Skills: Through the process of dissertation writing, students will refine their academic writing and communication skills, ensuring the ability to articulate complex ideas and findings clearly and concisely, adhering to academic conventions and standards.
4. Original Contribution: Students will be able to make an original contribution to knowledge within their chosen subject area, either by extending existing research or by addressing a previously unexplored aspect of their field.

II- Gender Studies (AE 601)

Course Outcome:

1. Identify and analyze the links among gender, sexuality, identity, power, and social justice
2. Identify and analyze intersections among gender and sexuality and other categories of difference, such as class, race, religion, nationality, and physical ability
3. Situate gender and sexuality in broader historical and geopolitical contexts
4. Write or otherwise present (depending on field of study) analyses of gender and sexuality in specific works (visual, literary, theoretical)
5. Design and execute a senior project that demonstrates these competencies within a theoretical framework of gender and sexuality

CO-PO MAPPING

PS-601	PO										
CO		1	2	3	4	5	6	7	8	9	10
	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

ENG-601	PO										
CO		1	2	3	4	5	6	7	8	9	10
	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

SOC-601	PO									
	1	2	3	4	5	6	7	8	9	10
CO1	3	3	3	3	2	3	3	1	1	2
CO2	2	2	2	2	1	2	2	2	2	1
CO3	2	1	2	1	2	2	1	3	1	2
CO4	2	2	1	2	2	1	1	2	1	1
CO5	1	1	2	1	1	1	2	2	2	1

ECO-601	PO									
	1	2	3	4	5	6	7	8	9	10
CO1	3	3	3	3	2	3	3	1	1	2
CO2	2	2	2	2	1	2	2	2	2	1
CO3	2	1	2	1	2	2	1	3	1	2
CO4	2	2	1	2	2	1	1	2	1	1
CO5	1	1	2	1	1	1	2	2	2	1

AE-601	PO									
	1	2	3	4	5	6	7	8	9	10
CO1	3	3	3	3	2	3	3	1	1	2
CO2	2	2	2	2	1	2	2	2	2	1
CO3	2	1	2	1	2	2	1	3	1	2
CO4	2	2	1	2	2	1	1	2	1	1
CO5	1	1	2	1	1	1	2	2	2	1

DOHSS-601	PO									
	1	2	3	4	5	6	7	8	9	10
CO1	3	3	3	3	2	3	3	1	1	2
CO2	2	2	2	2	1	2	2	2	2	1
CO3	2	1	2	1	2	2	1	3	1	2
CO4	2	2	1	2	2	1	1	2	1	1
CO5	1	1	2	1	1	1	2	2	2	1

B.A General Syllabus

(2022-2025)



Department of Humanities and Social Sciences

RAFFLES UNIVERSITY
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RAFFLES UNIVERSITY

B.A (General)
POLITICAL SCIENCE
1st Semester

Unit-I: Introduction
Political Science: meaning Definition Nature and Scope
Relationship of Political Science with History, Economics and Sociology
Methods of Political Science: Historical, Comparative and Philosophical
Modern Approach to Study of Political Science: Behavioral and System

Unit-II: The Concept of State
The State: Meaning, Definition and Elements
Theories of Origin of State: Social Contract (Hobbes, Locke, Rousseau) and Evolution Theory
Sovereignty: Meaning Characteristics and Theories (Monistic and Pluralist)
Law: Meaning, Definition, Sources and Kinds

Unit-III: Concepts of Political Theory
Liberty: Meaning and Dimentions (Negative and Positive)
Equality: Meaning, Dimension and Kinds
Justice: Meaning and Dimensions: Procedural and Substances
Right: Meaning and Kinds for Natural Rights Political Rights and Legal Rights

Unit-IV: Post-Modern Theory
Feminism
Ecologism
Communalism
Post-Modernism

Reading list

1. A. Leftwich, *what is politics: the Activity and Its Study*, Polity, 2004.
2. John Hoffman and Paul Graham, *Introduction to Political Theory*, Pearson (latest edition).
3. Barrie Axford et. al., *Politics: An Introduction*, Routledge (latest edition)
4. Ernest Barker, *Principles of Political and Social Theory*
5. Harold A. Laski, *Grammar of Politics*
6. J.W. Garner, Political Science and Government
7. Catriona McKinnon, Issues in Political Theory, Oxford 2008.
8. Sushila Ramaswamy, Political Theory: Ideas and Practices, Macmillan (latest edition).
9. O.P. Gauba, *An Introduction to Political Theory*, 5th edition, Macmillan.

English (ENG-101)
Semester- 1st
Introduction to British Poetry
UNIT-1
Forms of Poetry- Sonnet, Elegy, Epic, Ballad, Lyric, Ode
UNIT-2
Stanza Forms- The Heroic Couplet, The Blank Verse, The Spenserian Stanza, Terza Rhyme
UNIT-3
William Shakespeare: Sonnet no. 116 John Donne: Canonization Michael Drayton: Since There's No Help Left
UNIT-4
William Blake: A Poison Tree William Wordsworth: The World is Too Much With Us P.B. Shelley: Ozymandias
Recommended
Readings:
1) Blamires, Harry. A Short History of English Literature. Routledge,2003. 2) Bradbury, Malcolm and James McFarlane. Modernism: A Guide to European Literature (1890-1930). Penguin, 1978. 3) Ellman Richard and C. Fidelson, eds. The Modern Tradition: Background of Modern Literature. OUP, 1965. 4) Fraser, G.S. The Modern Writer and His World. Penguin Books, 1964

RAFFLES UNIVERSITY

Micro Economics (ECO 101)

Semester- I

Micro Economics

UNIT-I –

Introduction Nature and Scope of economics. Methodology- micro and macroeconomics, Positive and normative, static and dynamic, Problem of scarcity and choice: scarcity, choice and opportunity cost; production possibility frontier; economic systems.

UNIT-II – Demand and Supply Demand, Law of Demand, Demand Function, Determinant of Demand, Individual and Market Demand, Elasticity of Demand: Price, Income and Cross Elasticity od Demand. Supply, Law of Supply, Individual and Market Supply, Determinants of Supply, Elasticity of Supply. Factors Affecting Price Elasticity of Demand, Substitute and Complementary Goods.

UNIT-III – Theory of Consumer Behaviour Utility Analysis: Cardinal and Ordinal (Indifference Curves, Budget Line, Consumer's Equilibrium, Price Effect, Substitution Effect, Income Effect, Normal, Inferior and Giffin Goods), Consumer's Equilibrium.

UNIT-IV – Theory of Production, Cost and Market Structure Production Function, Law of Variable Proportion, Three Stages of Production Function. Law of Returns to Scale, Iso-Quant and Iso-Cost, Optimum Factor Combination Theory. Theory of Cost, Short Run and Long Run Cost Curves. Market Structure; Perfect Competition (Basic Features, Short Run and Long Run Equilibrium), Monopoly; (Basic Features, Short Run and Long Run Equilibrium, Comparison with Perfect Competition), Price Discrimination, Monopolistic Competition (Basic Features, Short Run and Long Run Equilibrium)

References:

1. Principles of Microeconomics by Gregory Mankiw

2. Salvatore, D. 2003. Microeconomics; Theory and Applications. Oxford University Press, New Delhi.

3. Principles of Microeconomics by H.L.Ahuja., S.Chand Publication. Latest Edition.

RAFFLES UNIVERSITY

SOCIOLOGY (SOC-101)

SEMESTER-1st

Introduction to Sociology

1. *Sociology: Discipline and Perspective*
   - Nature and Scope of Sociology
   - Sociology as a science
   - Sociology and Common Sense

2. *Sociology and Other Social Sciences*
   - Sociology and Social Anthropology
   - Sociology &Psychology
   - Sociology &History

3. *Basic Concepts*
   - Individual and Group
   - Associations and Institutions
   - Culture and Society
   - Social Change

Readings:

1. A. Beteille : Sociology—Essays on Approach and Method (OUP)
2. Alex Inkeles: What Is Sociology?
3. Alex Thio: Sociology
4. Andre, Beteille, 2009, *Sociology: Essays in Approach and Method,* Delhi: OxfordUniversity Press, Chapter 1, 'Sociology and Common Sense', Pp. 13-27
5. Anthony Giddens : Sociology
6. G. Rocher: A General Introduction to Sociology
7. George Ritzer : Encyclopaedia of sociology
8. Gilles Ferreol& Jean-Pierre Noreck: An Introduction to Sociology(PHI Learning)
9. Gordon Marshal : Dictionary of Sociology (OUP)
10. Harry M. Johnson : Sociology
11. Henry Tischler: Introduction to Sociology
12. J Ross Eshleman& B.G. Cashion: Sociology an Introduction
13. M. Haralambas&R. M. Heald: Sociology Themes and Perspectives.
14. P. Worsely: New Introducing Sociology
15. T. Bottomore : Sociology—A Guide to Problems and Literature

RAFFLES UNIVERSITY

Geography (GEO-101)

Semester- 1st

PHYSICAL GEOGRAPHY

UNIT-I:

PHYSICAL GEOGRAPHY Definition and Scope; Components of Earth System.

UNIT-II:

ATMOSPHERE Heat Balance; Global Circulation Pattern; Tropical Cyclones; Monsoon; Climatic Classification (Koppen).

UNIT-III:

LITHOSPHERE Internal Structure of Earth based on Seismic Evidence; Plate Tectonics and its Associated Features.

UNIT-IV:

FLUVIAL CYCLE OF EROSION Davis and Penck.

UNIT-V: HYDROSPHERE Hydrological Cycle; Ocean Bottom Relief Features; Tides and Currents.

REFERENCE:

1. Conserva H. T., 2004: Illustrated Dictionary of Physical Geography, Author House, USA.

2. Gabler R. E., Petersen J. F. and Trapasso, L. M., 2007: Essentials of Physical Geography (8th Edition), Thompson, Brooks/Cole, USA.

3. Garrett N., 2000: Advanced Geography, Oxford University Press.

4. Goudie, A., 1984: The Nature of the Environment: An Advanced Physical Geography, Basil Blackwell Publishers, Oxford.

5. Hamblin, W. K., 1995: Earth's Dynamic System, Prentice Hall, N.J.

6. Husain M., 2002: Fundamentals of Physical Geography, Rawat Publications, Jaipur.

7. Monkhouse, F. J. 2009: Principles of Physical Geography, Platinum Publishers, Kolkata.

8. Strahler A. N. and Strahler A. H., 2008: Modern Physical Geography, John Wiley & Sons, New York.

RAFFLES UNIVERSITY

POLITICAL SCIENCE

2nd Semester

Principles of Public Administration and Government

Unit-I: FOUNDATION OF PUBLIC ADMINISTRATION

Meaning, Nature Scope and Significance of Public Administration;
Evolution of the Discipline and its present status; Difference between Public and Private Administration
New Public Administration and its characteristics; New Public Management and its characteristics. New Public Services and Good Governance
Relationship of Public Administration with Political Science, Law, Economics, Sociology and Psychology

Unit-II: ORGANISATION PF PUBLIC ADMINISTRATION AND ADMINISTRATIVE BEHAVIOUR

Principles of Hierarchy Unity of Command, Span of Control Division of Labor and Centralization or Decentralization;
Line,Staff and Auxiliary agencies: Definition and Distinction.
Decision Making: Meaning, Process, Types and Conditions Decision Making.
Communication: Meaning, Process, Channels and Barriers of Communication

Unit-III: The Concept of Government

Government: Definitional Characteristic
Legislature: Meaning and Types
Executive: Meaning and Functions
Judiciary: Importance and Functions

Unit-III: THEORIES OF ORGANISATION (Classical or Neo-Classical)

Scientific Management theory of F.W. Taylor
Bureaucratic Theory of Max Weber
Administrative theory or Classical Theory
Herbert Simon's Decision Making Theory

Unit-IV: GOVERNANCE: CONCEPTAND DEVELOPMENT

Role of State in the Era of Globalisation
State, Market and Civil Society
Changing Dimensions of Development Strengthening Democracy through Good Governance
Democratic Decentralisation People's Participation in Governance

English (ENG-201)

Semester- 2nd

Introduction to British Drama

UNIT-1

Forms of Drama- Tragedy, Comedy, History, Romance

UNIT-2

William Shakespeare: Hamlet

UNIT-3

GB Shaw: Pigmalion

UNIT-4

Harold Pinter: Birthday Party Recommended

Readings:

1) Bradley, AC. Shakespearean Tragedy: Lectures on Hamlet, Othello, King Lear, Macbeth. Penguin, 1991.

2) Elam, Keir. The Semiotics of Theatre and Drama. Routledge, 2002.

3) Evans, G. Blakemore, ed. Elizabethan-Jacobean Drama: The Theatre in Its Time. New Amsterdam Books, 1998.

4) Sanger, Keith. The Language of Drama. Routledge, 2001

Macro Economics (ECO 201)

Semester- II

Macro Economics

UNIT-I –

Introduction Introduction, nature and scope, Difference between Micro and Macro Economics, Various macroeconomics Concepts: Stock, Flow, Endogenous and Exogenous variables.

UNIT-II –

Aggregates of National Income Circular Flow of Income, Concepts of GDP and National Income; measurement of national income and related aggregates; nominal and real income;

UNIT-III –

Output, Employment and Money Aggregate Demand, Aggregate Supply, Classical Theory of Income, Output and Employment, Consumption Function- APC, MPC; Investment Analysis- Meaning, Types, Factors Determining Investment, Factors Affecting MPC. Keynesian Theory of Income and Employment, Concept of Multiplies and Accelerator.

UNIT-IV –

Money and Banking Functions of Money, Reserve Bank of India: Organizational Set-up and Functions of RBI, Qualitative and Quantitative measures to control Credit creation by RBI, Commercial Bank: Functions. Monetary Policy: Objectives, Targets and Indicators.

References:

1. Shapiro.E. 2005. Macro-economic Analysis (5th Edition). Galgotia Publications. New Delhi.

2. Mankiw, N. (2016). Macroeconomics, 9th ed. Worth Publishers.

3. Dornbusch, R., Fischer, S., Startz, R. (2018). Macroeconomics, 12th ed. McGraw-Hill.

4. H.L Ahuja, Macroeconomics, Theory and Policy. S.Chand & Co. ltd. New Delhi.

RAFFLES UNIVERSITY

Geography (GEO-201)

Semester- 2nd

HUMAN GEOGRAPHY

UNIT-I: INTRODUCTION

Definition; Nature; Major Subfields; Contemporary Relevance.

UNIT-II: SPACE AND SOCIETY

Cultural Regions; Race; Religion and Language

UNIT-III: POPULATION AND DEMOGRAPHY

Population Growth and Demographic Transition Theory; World Population Distribution and Composition (Age, Gender and Literacy).

UNIT-IV: SETTLEMENTS

Types and Patterns of Rural Settlements; Classification of Urban Settlements; Trends and Patterns of World Urbanization

REFERENCE:

1. Chandna, R.C. (2010) Population Geography, Kalyani Publisher.

2. Daniel, P.A. and Hopkinson, M.F. (1989) The Geography of Settlement, Oliver & Boyd, London.

3. Johnston R; Gregory D, Pratt G. et al. (2008) The Dictionary of Human Geography, Blackwell Publication.

4. Jordan-Bychkov et al. (2006) The Human Mosaic: A Thematic Introduction to Cultural Geography. W. H. Freeman and Company, New York.

5. Kaushik, S.D. (2010) Manav Bhugol, Rastogi Publication, Meerut.

6. Maurya, S.D. (2012) Manav Bhugol, Sharda Pustak Bhawan. Allahabad.

7. Ghosh, S. (2015) Introduction to settlement geography. Orient Black Swan Private Ltd., Kolkata

8. Hussain, Majid (2012) Manav Bhugol. Rawat Publications, Jaipur

RAFFLES UNIVERSITY

SEMESTER-II[nd]

SOCIOLOGY (SOC-201)

Introductory Sociology

1. *On the Plurality of Sociological Perspective*

2. **Functionalism**
   General arguments;
   Contributions of Parsons and Merton;
   Critical overview.

3 *Interpretive Sociology*
   General arguments;
   Contributions of Weber

4 *Conflict Perspective*
   General arguments;
   Contributions of Dahrendorf and Coser;
   Critical overview

5 *Structuralism*
   General arguments;
   Contributions of Levi-Strauss

6 *Feminist Perspective*
   General arguments;
   Stages of development of feminism;
   Varieties of feminist sociology**.**

Readings:

1. Anthony Elliot and Charles Lemert, 2014. Introduction to Contemporary Social theory, Routledge.
2. Bert N. Adams and R.A. Sydie. 2002. Sociological Theory. Sage, Vistara
3. Baert, Patrick. 1998. Social Theory in the Twentieth Century. New York. NYU Press.
4. Bottomore, T. B. 1971. *Sociology: A Guide to Problems and Literature*, London:Allen and Unwin, Chapter 2, Pp. 29-47
5. Bottomore, Tom and Nisbet, Robert. 2004. A History of Sociological Analysis. Jaipur: Rawat
6. Bottomore, Tom. 2002. The Frankfurt School. London: Routledge
7. Collins, Randall. 1994. Four Sociological Traditions. New York. OUP

RAFFLES UNIVERSITY

POLITICAL SCIENCE

3rd Semester

International Relations

Unit: INTRODUCTION TO INTERNATIONALR
Meaning, Nature and Scope of International Relations
History and IR: Emergence of International State System
Pre-Westphalia, Westphalia and Post-Westphalia
Unit-II: THEORIES OF IR
Classical Realism & Neo-Realism
Liberalism & Neo-liberalism
Marxism Approaches/Dependency Theory
Feminist Perspectives
Euro-centrism and Perspective from the Global South
Unit-III: HISTORY IN MODERN ERA OF IR
World War I & II: Causes and Consequences.
Significance of the Bolshevik Revolution and Rise of Fascism/Nazism.
Cold War: Different Phase and Collapse of the USSR and the End of Cold War.
Emergence of the Third World: Uni-Polar, Multi-Polar or Bi-Polar
Unit-IV: FOREIGN POLITICS IN IR
Power Management: Diplomacy
Balance of Power and Collective Security
Foreign Policy: Meaning, Kinds & Methods
National Power: Meaning, Nature and Determinates

English (ENG-301)
Semester- 3rd
British Prose and Novel
UNIT-1
Personal Essay, Modern Essay, Types of Novel, Short Stories
UNIT-2
Charles Lamb: New Year's Eve William Hazlitt: On the Pleasure of Hating
UNIT-3
Jane Austen: Pride and Prejudice William Golding: Lord of the Flies
UNIT-4
Charlotte Perkins Gilman: The Yellow Wallpaper Katherine Mansfield: Bliss
Recommended Readings:
1. Raymond Williams, 'Introduction', in The English Novel from Dickens to Lawrence (London: Hogarth Press, 1984) pp. 9–27.
2. Virginia Woolf, A Room of One's Own (New York: Harcourt, 1957) chaps. 1 and 6.
3. Showalter, Elaine. The Female Malady: Women, Madness, and English Culture, 1830-1980, 1st ed., New York: Pantheon Books, 1985
4. Deirdre David ed. Companion to the Victorian Novel. New York: CUP,2001

Geography (GEO-301)

Semester- 3rd

GEOGRAPHY OF INDIA

UNIT-I: PHYSICAL

Relief; Drainage; Climate; Vegetation

UNIT-II:

MINERAL AND POWER RESOURCES

Distribution and production: iron ore, manganese; Distribution and production: coal and petroleum; Multipurpose projects: DVC; Mahanadi, Bhakra Nangal;

UNIT-III:

AGRICULTURE

Major agricultural types; Distribution and production of rice, wheat, cotton, tea; Green revolution, white revolution; Agricultural regions.

UNIT-IV:

TRANSPORT SYSTEM

Road; Railways; Water ways; Air

UNIT-V:

POPULATION

Growth; Distribution and density; Population growth and related problems; Population policy of India

REFERENCE:

a. Nag, P., & Sengupta, S. (1992). Geography of India. Concept Publishing Company.

b. R,Tirtha and Gopal Krishan 2002: Geogrpagy of India, Rawat Publication, new Delhi

c. Singh R L: Regional Geography of India

d. Pal, Saroj K. (1998) Physical Geography of India. Orient BlackSwan,

e. Qazi, Shaz Sharqi Qazi (2007): Natural Resource Conservation. APH Publishing

f. Shovan Ray (2007): Handbook of Agriculture in India. Oxford University Press,

RAFFLES UNIVERSITY

SEMESTER-III[rd]

SOCIOLOGY (SOC-301)

Sociology of India – I

1. *India: An Object of Knowledge*

The Colonial Discourse

The Nationalist Discourse

The Subaltern Critique

2. *Indian Society: Concepts and Institutions*

Caste: Concept and Critique

Varna & Jati; Dominant Caste

Jajmani System; Caste Mobility: Sanskritization

Agrarian Classes

Nature of Agrarian Class

Tribe: Profile and Location

Features

Regional Distribution

Village: Structure and Change

Village Solidarity

Internal Regulation

Kinship: Principle and Pattern

Religion and Society

Role of Religion

Readings:

1. A. R. Desai. Bharatiya Jatiatabader SamajikPatabhumi (Social Background of IndianNationalism).
2. A. R. Desai. Rural sociology
3. A. Beteille. Caste, Class and Power: Changing Patterns
4. Amartya Sen. Argumentative India (Chs. 10, 11)
5. Bernard Cohn, Colonialism and its forms of knowledge, Princeton University Press
6. Aniruddha Choudhury. 2016. "Bharater Samaj Prasange"Chatterjee Publishers.
7. David Mandelbaum – Society in India

RAFFLES UNIVERSITY

POLITICAL SCIENCE

4th Semester

MAJOR CONSTITUTION(S)

Unit-I:

INDIA

Salient features of Indian Constitution
Preamble
Citizenship
Fundamental Rights and Duties
Directive Principles of State Policy
President, Prime Minister, Council Of Ministers
Parliament
Judiciary

Unit-II:

THE UNITED KINGDOM

Salient Features of the Constitution: Conventions, Parliamentary Government, Sovereignty of Parliament, Unitary Government, Rule of Law
Parliament: The House of Commons and the House of Lords- Composition and Powers
Executive: Monarchy-Functions and Position
Prime Minister and the Cabinet: Powers and Position

Unit-III:

The United State of America

Salient Feature of the Constitution: Supremacy of the Constitution, Presidential System, Federalism, Separation of Powers and Checks and Balances, Judicial Review
The Congress – The Senate and the house of representative – Composition and Powers
Executive - The President – Methods of Election, Powers and Position
Judiciary – The Supreme Court: Composition, Jurisdictions and Role

Unit-IV:

THE SWITZERLAND

Salient Feature of the Constitution: Federalism Direct Democracy
Federal Legislature: The National Council and Council of State: Composition and Powers
Plural Executive- Composition and Functions
Federal Tribunal- Compositions Jurisdictions

English (ENG-401)

Semester- 4th

British Poetry and Drama: 19th and 20th Century

UNIT-1

Forms of Poetry: Dramatic Monologue Forms of Drama: Problem Play

UNIT-2

Robert Browning: My Last Duchess Lord Alfred Tennyson: Ulysses

UNIT-3

W.B.Yeats: The Second Coming Philip Larkin: Deception

UNIT-4

Henrik Ibsen: A Dolls House John Osborne: Look Back in Anger

Recommended Readings:

1. Karl Marx and Friedrich Engels, 'Mode of Production: The Basis of Social Life', 'The Social Nature of Consciousness', and 'Classes and Ideology', in A Reader in Marxist Philosophy, ed. Howard Selsam and Harry Martel (New York: International Publishers,1963) pp. 186–8, 190–1, 199–201.

2. Charles Darwin, 'Natural Selection and Sexual Selection', in The Descent of Man in The Norton Anthology of English Literature, 8th edn, vol. 2, ed. Stephen Greenblatt (New York: Northon, 2006) pp. 1545–9.

3. John Stuart Mill, The Subjection of Women in Norton Anthology of English Literature, 8th edn, vol. 2, ed. Stephen Greenblatt (New York: Norton, 2006) chap. 1, pp. 1061–9.

4. T.S. Eliot, 'Tradition and the Individual Talent', in Norton Anthology of English Literature, 8th edn, vol. 2, ed. Stephen Greenblatt (New York: Norton, 2006) pp. 2319–25

Geography (GEO-401)

Semester- 4th

ECOLOGY AND ENVIRONMENT

UNIT-I:

ENVIRONMENTAL GEOGRAPHY: CONCEPTS AND APPROACHES; ECOSYSTEM Concept and Structure; Ecosystem Functions.

UNIT-II:

HUMAN Environment Relationship in Equatorial; Desert, Mountain and Coastal Regions.

UNIT-III:

ENVIRONMENTAL PROBLEMS AND MANAGEMENT Air Pollution; Biodiversity Loss; Solid and Liquid Waste. UNIT-IV:

ENVIRONMENTAL PROGRAMMES AND POLICIES Countries; Developing Countries. New Environmental Policy of India; Government Initiatives.

REFERENCE:

1. Casper J.K. (2010) Changing Ecosystems: Effects of Global Warming. Infobase Pub. New York.

2. Hudson, T. (2011) Living with Earth: An Introduction to Environmental Geology, PHI Learning Private Limited, New Delhi.

3. Miller, G.T. (2007) Living in the Environment: Principles, Connections, and Solutions, Brooks/ Cole Cengage Learning, Belmont.

4. Singh, R.B. (1993) Environmental Geography, Heritage Publishers, New Delhi.

5. UNEP (2007) Global Environment Outlook: GEO4: Environment For Development, United Nations Environment Programme. University Press, Cambridge.

Indian Economy (ECO 401)

Semester- IV

Indian Economy

UNIT-I

Basic Features of Indian Economy, Demographic Features and Major Trends, Human Resource Development. Agriculture: Role and Importance of Agriculture in India, Institutional and Structural reforms in Agriculture in India. Agriculture Financing: Institutional Credit, Microfinance. Flagship schemes of government for Agriculture.

UNIT-II

Industry: Role, Strategy and Challenges, Growth of MSMEs, Industrial Policy 1991, New Economic Policy and Disinvestment. Service Sector in India: IT, Education and Health.

UNIT-III

Poverty and Unemployment: occupational structure in the organised and unorganised sectors; open-, under- and disguised- unemployment (rural and urban); employment schemes and their impact.

UNIT-IV

Planning in India: Objectives and Achievements. Macroeconomic policies and their impact: fiscal policy; financial and monetary policies. NITI Ayog, Rural Development Programmes and Policy in India.

References:

1. Mishra & Puri. Indian Economy, Himalaya Publication House, 38th revised and Updated Edition.
2. Datt and Sundaram. Indian Economy, S.Chand, 65th Edition (2020)
3. Indian Economy since Independence by Uma Kapila Published by Academic Foundation, New Delhi
4. The Indian Economy by Sanjiv Verma Published by Unique Publishers, New Delhi.

SOCIOLOGY (SOC-401)

Sociology of India – II

1. *Ideas of India*

Gandhi and Ambedkar
Gandhi on Harijan
Ambedkar: Dalit &Hindu Society
Indological and Ethnographic Approaches

2. *Resistance, Mobilization, Change*

Dalit Politics
Mobility and Change
Women's Movement
Peasant Movements
Ethnic Movements
Middle Class Phenomenon

3. *Challenges to Civilization, State and Society*

Communalism: Factors and Control measures
Secularism: Significance, Issues and Challenges
Nationalism: Concept and Growth Factors

Readings:

1. Aniruddha Chaudhury. ed. "Bharater Samajtatta"2016, Chatterjee publishers
2. Deshpande, S., 2003, Contemporary India: A Sociological View, New Delhi: PenguinBooks
3. Dhanagare, D. N. (1993). Themes and Perspectives in Indian Sociology.RawatPublication, Jaipu
4. Ganguly, Ramanuj. Tatwa O Chintadarshe Samakalin Samajtatwa, Bani/ReenaPrakashan, Kolkata
5. Ganguly, Ramanuj and S. A. H. Moinuddin. 2008. SamakaleenBharatiyaSamaj. PHI.Learning.

POLITICAL SCIENCE

5th Semester

WESTERN POLITICAL THOUGHT

Unit-I:

NATURAL-RATIONAL TRADITION OF THE GREEKS

Salient features of Greek Political Thought
Plato's Ideal State: Justice, Philosopher King, Education and Communism
Aristotle's Polity: Classification of Governments, Revolution, The Best Practicable State.

Unit-II:

MEDIEVAL-CHRISTIAN TRADITION

Salient Features of Medieval Political Thought
St. Thomas Aquinas: Theory of Law, Relationship between Church and State
Machiavelli: Separation of Ethics and Politics, Theories of State-Craft

Unit-III:

SOCIAL CONTRACTUALISTS

Thomas Hobbes: State of Nature, Social Contract, Sovereignty
John Locke: State of Nature, Social Contract, Natural Rights, Limited Government
Rousseau: State of Nature, Social Contract, General Will.

Unit-IV:

UTILITARIANISM AND MARXISM

Jeremy Bentham: Utilitarianism, Political and Legal Reforms
J.S. Mill: Utilitarianism, Liberty, Representative Government.
T.H. Green- Theory of State, Rights and Political Obligation
Immanuel Kant: Theory of Moral Freedom, the Civil State
George Wilhelm Fredrick Hegel: Dialectical Methods, theory of State,
Karl Marx: Dialectical Materialism, Historical Materialism, Theory of Class-Struggle.

English (ENG-501)

Semester- 5th

Indian English Literature

UNIT-1

Nissim Ezekiel: Background Causally Kamala Das: My Grandmother's House Jayant Mahapatra: Dhauli Tabish Khair: Amma

UNIT-2

Gandhi: As a School Master Ruskin Bond: The Blue Umbrella

UNIT-3

Mulk Raj Anand: Untouchable

UNIT-4

Anita Desai: Fire on the Mountain Recommended

Readings:

1. Salman Rushdie, 'Commonwealth Literature does not exist', in Imaginary Homelands (London: Granta Books, 1991) pp. 61–70.

2. Meenakshi Mukherjee, 'Divided by a Common Language', in The Perishable Empire (New Delhi: OUP, 2000) pp.187–203.

3. Bruce King, 'Introduction', in Modern Indian Poetry in English (New Delhi: OUP, 2nd edn, 2005) pp. 1–10.

Geography (GEO-501)

Semester- 5th

DISASTER MANAGEMENT

UNIT-I:

INTRODUCTION Disasters: Definition and Concepts: Hazards, Disasters; Risk and Vulnerability; Classification

UNIT-II:

DISASTERS IN INDIA Flood: Causes, Impact, Distribution and Mapping; Landslide: Causes, Impact, Distribution and Mapping; Drought: Causes, Impact, Distribution and Mapping.

UNIT-III:

DISASTERS IN INDIA Earthquake and Tsunami: Causes, Impact, Distribution and Mapping; Cyclone: Causes, Impact, Distribution and Mapping.

UNIT-IV:

MANMADE DISASTERS Manmade disasters: Causes, Impact, Distribution and Mapping

UNIT-V:

RESPONSE AND MITIGATION TO DISASTERS Response and Mitigation to Disasters: Mitigation and Preparedness, NDMA and NIDM; Indigenous Knowledge and Community-Based Disaster Management; Do's and Don'ts During and Post Disasters

REFERENCE:

1. Government of India. (1997) Vulnerability Atlas of India. New Delhi, Building Materials & Technology Promotion Council, Ministry of Urban Development, Government of India.

2. Kapur, A. (2010) Vulnerable India: A Geographical Study of Disasters, Sage Publication, New Delhi.

3. Modh, S. (2010) Managing Natural Disaster: Hydrological, Marine and Geological Disasters, Macmillan, Delhi.

4. Singh, R.B. (2005) Risk Assessment and Vulnerability Analysis, IGNOU, New Delhi. Chapter 1, 2 and 3

5. Singh, R. B. (ed.), (2006) Natural Hazards and Disaster Management: Vulnerability and Mitigation, Rawat Publications, New Delhi.

RAFFLES UNIVERSITY

Statistics (ECO 501)

Semester- V

UNIT-I

Meaning, Nature and Importance of Statistics, Census and Sample Survey, Collection of Data, Tabulation, Diagrammatic and Graphical Representation of Data, Measure of Central Tendency: Arithmetic Mean, Mode, Median, Geometric Mean, Harmonic Mean. Measure of Dispersion (Quartile Deviation, Mean Deviation, Standard Deviation, Coefficient of Variation) and Skewness (Karl Pearson's Coefficient).

UNIT-II

Probability – Basic concepts and calculation. Sampling Theory: probability and Non probability sampling.

UNIT-III

Simple Correlation: Karl Pearson and Ranks Correlation. Regression analysis. Analysis of Time Series (Components and determination of Seasonal variations), Index Numbers (Cost of Living Index, Fisher's Ideal Index, and Test of Ideal).

References:

1. S.C. Gupta. Statistical Method. S. Chand & Sons. New Delhi.
2. K.N. Nagar. Funadamental of Economics. Latest Edition.
3. S.C. Gupta and V.K. Kapoor. Fundamentals of Applied Economics. S. Chand, New Delhi.

SOCIOLOGY

SEMESTER-Vth

Classical Sociological Theories

Unit-I: AUGUSTE COMTE

1. Positivism
2. Hierarchy of Sciences
3. Statics and Dynamics

Unit-II: KARL MARX

1. Historical Materialism
2. Dialectical Materialism
3. Class and Class Struggle

Unit-III: EMILE DURKHEM

1. Social Fact
2. Division of Labour
3. Collective Conscience (Theory of Religion)
4. Theory of Suicide

Unit-IV: MAX WEBER

1. Ideal Types and Social Action
2. Types of Authority, Status and Role
3. Bureaucracy

Reading(s):

Calhoun, J. Craig, 2007, Classical Sociological Theories, 2nd Edition Blackwell, pp. 73-130.
Jayapalan, N. 2001. Sociological Theories, Atlantic Publisher, pp. 35-69.

RAFFLES UNIVERSITY

POLITICAL SCIENCE

6th Semester

INDIAN SOCIAL AND POLITICAL THINKER

Unit-I:
PRE-COLONIAL POLITICAL THOUGHT

Kautilya-Theory of State
Barani-Ideal Polity
Abu Fazal-Monarchy
Kabir-Syncretism

Unit-II:
POLITICAL COHESIVE AND SEPARATIST THOUGHT
Sir Syad Ahmed Khan- Muslim Uplift and Political Views
Genesis of Muslim League and Separatism
Mohammad Ali Jinnah- Political Views and Role in Indian national Movement

Unit-III:
SOCIO-ECONOMIC AND POLITICAL THOUGHT
Mahatma Gandhi- Social, Economic, and Politicall Thought
Jawahar Lal Nehru- Economic and Political Ideas
B.R. Ambedkar- Social and PoliticalIdeas

Unit-IV:
SOCIAL REFORM AND THOUGHT
Aurobindo Ghosh- Social and Political Ideas
Ranade-
Political Ideas, Theory of Social Reforms
Jay Prakash Narayan-The Concept of Sarvodaya, Total Revolution and Social Thought

English (ENG-601)

Semester- 6th

Introduction to American Literature

UNIT-1

Walt Whitman: O Captain My Captain Robert Frost: Mending Walls

UNIT-2

Edgar Allan Poe: The Purloined Letter William Faulkner: Dry September

UNIT-3

Arthur Miller: Death of a Salesman

UNIT-4

Ernest Hemingway: The Old Man and the Sea Recommended

Readings:

1. Howard, Zinn. A People's History of the United States: 1492 to Present, New York: Harpercollins,1980.

2. Stephen A. Black. Eugene O'Neill: Beyond Mourning and Tragedy, New Haven: Yale University Press, 2002.

3. Russ Castronovo (ed.), The Oxford Handbook of Nineteenth-Century American Literature, Oxford: Oxford Handbooks, 2012

4. Malcolm Bradbury and Richard Ruland. From Puritanism to Postmodernism: A History of American Literature, New York: Penguin Group (USA) , 1992

RAFFLES UNIVERSITY

Geography (GEO-601)

Semester- 6th

SUSTAINABLE DEVELOPMENT

UNIT-I:

INTRODUCTION Definition, Components, Historical Background and Scope; The role of higher education in sustainable development.

UNIT-II:

THE MILLENNIUM DEVELOPMENT GOALS National Strategies and International Experiences.

UNIT-III:

SUSTAINABLE REGIONAL DEVELOPMENT Need and examples from Cities and Mountains; The human right to health; Poverty and disease; The Challenges of Health Coverage in High-Income Countries.

UNIT-IV:

INCLUSIVE DEVELOPMENT Education, Health; Climate Change: Policies and Global Cooperation for Climate Change; Sustainable Development Policies and Programmes: The proposal for SDGs at Rio+20; Illustrative SDGs; Goal-Based Development; Financing for Sustainable Development; Principles of Good Governance; National Environmental Policy.

REFERENCE:

1. Ayers, Jessica and David Dodman, “Climate change adaptation and development I: The state of the debate”, in Progress in Development Studies 10 (2): 161-168.

2. Baker, Susan, Sustainable Development, Milton Park, Abingdon, Oxon; New York, N.Y.: Routledge.

3. Brosius, Peter, “Endangered forest, endangered people: Environmentalist representations of indigenous knowledge”, Human Ecology 25: 47-69.

4. Lohman, Larry, “Re-imagining the population debate”. Corner House Briefing 28.

Mathematical Economics (ECO 601)

Semester- VI

UNIT-I

Differentiation – Simple and Partial, Simple Integration. Theory of Consumer behaviour- utility Function, Maximization of utility. Elasticity of Demand.

UNIT-II

Production Function- A well Behaved Production Function, Cobb Douglas Production Function, Homogeneous Production Function. Optimization Behaviour of a Firm – Profit Maximization and Output maximization.

UNIT-III

Perfect Competition- Market Demand and Supply Function, Determination of price and Output. Monopoly: Profit Maximization and Sales Revenue Maximization.

UNIT-IV

Macro - Economic Model, Keynesian Theory of Income Determination, Derivation of IS-LM Functions.

References:

1. S.C. Gupta. Statistical Method. S. Chand & Sons. New Delhi.

2. K.N. Nagar. Fundamental of Economics. Latest Edition.

3. S.C. Gupta and V.K. Kapoor. Fundamentals of Applied Economics. S. Chand, New Delhi.

SOCIOLOGY
Classical Social Thinkers
Semester- VIth

UNIT – I – VILFREDO PARETO:
Vilfredo Pareto: Logico-Experimental Method. Logical and Non-Logical Actions. Residues and Derivations. Circulation of Elites.

UNIT – II – GEROGE SIMMEL:
George Simmel: Formal Sociology. Sociology of Conflict. Theory of Domination. Concept of Social Mobility.

UNIT – III – PITIRIM A SOROIKIN:
Pitirim A Sorokin: Integralist Sociology. Theory of Socio-Cultural Dynamics. Theory of Social Revolution. Concept of Social Mobility.

UNIT – IV – TALCOTT PARSONS:
Talcott Parsons: Theory of Action. Pattern Variables. Theory of Social System.

UNIT – V – ROBERT K. MERTON:
Robert K. Merton: Role Set Theory. Reference group theory. Social structure and anomie. Functional analysis: Manifest and Latent Functions. Dysfunctions

Reading(s):
1. Coser, Lewis A. Masters of Sociological Thought: Ideas in Historical and Social context 2 nd Ed. New York: Harcourt Brace Jovanovich, 1997.
2. Wallace, Ruth A and Wolf Alison. Contemporary Sociological Theory, Englewood Cliffs New jercy, Prentice Hall, 1980
3. Timasheff, Nicholoas S.Sociological Theory: Its Nature and Growth, 3rd Ed. New York: Random house,1967.
4. Nisbet, Robert A. The Sociological Tradition, London: Heinemann, 1967.
5. Abraham Francis, M. and Morgan, John Henry, Sociological Thought. Madras: Macmillan India, 1985. 6. Merton, Robert k., Sociological Theory and Social Structure.Indian Ed. New Delhi: Ameirnd Publishing co., 1968.

SCHOOL OF BASIC & APPLIED SCIENCES (SOBAS)

RAFFELS UNIVERSITY, NEEMRANA

B.Sc. (CBZ) (3 Years Degree Program)

Programme Educational Objective (PEO)

Programme Outcomes (POs)

Programme Specific Outcomes (PSOs)

Course Outcomes (COs)

Raffles University Neemrana

RAFFLES
UNIVERSITY

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Vision: To evolve as an Institution of Excellence, where scholars develop informed and inquiring minds and broaden the frontiers of pure and applied knowledge.

Mission: In graining the capacity to us usher in change by discovering nurturing and expanding individual skills talents and interests while standing forth as leader and path breaker in their future carrier.

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEO 1 To providing subjective and practical knowledge as well as developing practical solutions and connections between theory.

PEO 2 Hearten individual growth among the students and enhance their confidence by providing them an opportunity to become a part of science-industry.

PEO 3 To make Science subjects interesting through technically, scientifically and experimentally.

PEO 4 To develop problem-solving skills through practical applications and research

PROGRAMME OUTCOMES (POS)

On successful completion of Graduate Program, Graduating Students/ Graduateswillbe able to

PO 1	Provide students with fundamental knowledge and ability to expertise inComputer Science.
PO 2	Provide insight to problem solving to succeed in Technical Profession throughprecise education and to prepare students to excel in postgraduate programs.
PO 3	To inculcate in students professional, effective communication skills, team work, multidisciplinary approach and an ability to relate issues to broader socialcontext.
PO 4	Prepare students to be aware of excellence, leadership, written ethical codes and guidelines and lifelong learning needed for successful professional career by providing them with an excellent academic environment.
PO 5	Empower the students in academic, social, psychological and economic arenasby developing relevant competencies.
PO 6	Interpret and apply the implications of environment awareness initiatives incorporated in curriculum.

PO 7	Participation and contribution to community development activities throughNCC, NSS etc.
PO 8	Acquire sufficient knowledge base in the Domain Specific area leading to thepursuit of advanced level of study in the chosen Domain Specific area.
PO 9	Adaptability and capacity building to the everchanging needs of the industryand employment opportunities.
PO 10	Inculcate the human values through curricular, co-curricular and extracurricularactivities.

PROGRAMME SPECIFIC OUTCOMES (PSOs)

The Department of Science, offers Three Year (comprising 6 semesters) Undergraduate Programin Science with objective of empowering students to acquire all-inclusive understanding of Computer Knowledge both theoretical and practical as an academic discipline. Upon completion of B. Sc.Computer Science Degree Programsuccessfully, the students shall acquire the following skills and competencies.

PSO 1	Gain the knowledge of Chemistry through theory and practical s.
PSO 2	Develop research-oriented skills.
PSO 3	The students will graduate with proficiency in Botany.
PSO 4	The students will be able to start ventures related to plants viz. horticulture units, agro-units (mushroomcultivation, plant-tissue culture, Hi-Tech Nursery etc.), plant exploration, and conservation NGO. The students equipped with the basics of plant science will be able to apply the knowledge in practicingagriculture with a scientific outlook thereby increasing the production and profits.
PSO 5	Understand the basics of Zoology, Botany
PSO 6	Develop the ability to apply the knowledge acquired in the classroom and laboratories to specificproblems in theoretical and experimental Zoology.

PSO 7	Perform job in various fields like science, environment, education, banking, business and public service, etc. or be an entrepreneur with precision, analytical mind, innovative thinking, clarity of thought,expression, and systematic approach.

Course Objective and Course Outcomes

SCHOOL OF BASIC AND APPLIED SCIENCES

(CBCS Scheme of Studies & Examinations w. e. f. 2023-26 onwards)

B.Sc. (CBZ) I Year (I Semester)

Sr. No.	Subject	Paper Code No.	Name of Paper	Teaching scheme Hrs/Week		Examination scheme			Duration of exam Hour	Credits
				L	P	IA	End Term Exam	Total		
1	Chemistry	CH-101	Inorganic Chemistry	2	0	20	30	50	3	2
2		CH-103	Organic Chemistry	2	0	20	30	50	3	2
3		CH-105	Physical Chemistry	2	0	20	30	50	3	2
4		CH- 107	Chemistry Lab-I	0	3/6	20	30	50	4	3
5	Botany	BOT-101	Diversity of microbes and plant pathology	3	0	20	30	50	3	3
6		BOT-103	Plant Ecology	3	0	20	30	50	3	3
7		BOT-105	Botany Lab-I	0	2/4	20	30	50	4	2
8	Zoology	ZOO-101	Life and Diversityfrom Protozoa to Helminthes	3	0	20	30	50	3	3
9		ZOO-103	Cell Biology	3	0	20	30	50	3	3
10		ZOO-105	Zoology Lab-I	0	2/4	20	30	50	3	2
11	Open Elective/Skill Enhancement Course (SEC)*	-	-	2	0	20	30	50	3	2
TOTAL				20	14			550		27

SCHOOL OF BASIC & APPLIED SCIENCES
(Syllabus & Scheme of Studies w.e.f. 2021-22)
B.Sc. (CBZ)
I Year (I semester)

1. Inorganic Chemistry (CH-101)

Course Outcomes:

1. Systematic and coherent understanding of the fundamental concepts of atomic structure.
2. Students will be able to understand the basic principle of classifications of elements and their periodic properties
3. Students will have through knowledge of different kinds bonding, hybridization in diatomic molecules.
4. Students can gain thorough knowledge about the structures of ionic solids, coordination no and lattice energy.

2. Organic Chemistry (CH-103)

Course Outcomes:

1. Have comprehensive knowledge of the basic organic chemistry like different electronic effects with suitable examples
2. Get information about the types of structural and stereoisomers, optical isomerism, and different nomenclature like D/L, R/S, cis/trans, E/Z etc. of various organic compounds.
3. Learn nomenclature of various types of alkanes and cycloalkanes, preparation and their chemical reactions.
4. Sound knowledge of alkenes, alkynes, dienes and their chemical reactions.

3.Physical Chemistry (CH-105)

Course Outcomes:

1. To understand the Maxwell distribution law and various parameters associated with collisions ideal gas molecules
2. To learn about Role of temperature and pressure to establish the state of gases and describe the Concept of critical temperature, pressure and volume of real gases
3. To study the Physical properties of liquids like surface tension, viscosity and their measurements

4. To have knowledge about various types of symmetries present in different solids and and Bragg's law of X-ray diffraction

3. Diversity of microbes and Plant Pathology (BOT-101)

Course Outcomes:

1. Evaluate the trend of evolution from unicellular to multicellular organisms.
2. Describe the all-introductory terms concerned with cryptogams.
3. Determine significance of thallus organization and alternation of generation among different groups studied.
4. Utilize different studied groups for various environmental issues and assessments
5. Evaluate different studied groups for several bio- prospection studies
6. Develop various methodologies to recognize pathogenic and non-pathogenic associations among organisms.

4.Plant Ecology (BOT-103)

Course Outcomes:

1. Explain various Ecosystems & relationships between Organisms and environment.
2. State plant population and community ecology
3. Describe energy flow and biomass transfer in different ecosystems
4. Describe the correlations between balanced ecosystem and cycling of minerals and nutrients
5. Identify Phyto geographical Regions of India, Plant Biodiversity and its importance using additional OE resources available in the internet using modern ICT tools.
6. Analysis the effect of pollution on environment, their causes and measures

5.Life and Diversity from Protozoa to Helminthes (ZOO-101)

Course Outcomes:

1. Students will be able to describe unique characters, Life history, mode of infection and pathogenicity of parasitic protozoans of Phylum Protozoa.
2. Students will be able to identify the diversity and ecological role, Canal system and spicules in sponges of Phylum Arthropoda especially of Porifera.

3. Students will be able to describe the general characteristics and classification biodiversity, economic importance, Corals and coral reefs, polymorphism belonging to Phylum Coelenterate.
4. Students will be able to understand the unique characteristics, economic importance, Brief account of life history, mode of infection and pathogenicity of helminth parasites, parasitic adaptations belonging to Phylum Platyhelminthes.
5. Students will be able to describe the general characteristics and classification, Brief account of life history, mode of infection and pathogenicity of helminth parasites, parasitic adaptations of Phylum Aschelminths.

6.Cell Biology (Z00-103)

Course Outcomes:

1. Students will understand the basic structures and purposes of basic components of prokaryotic and eukaryotic cells, especially macromolecules, membranes, and organelle.
2. Students will understand how these cellular components are used to generate and utilize energy in cells
3. Students will understand the cellular components underlying mitotic cell division.
4. Students will apply their knowledge of cell biology to selected examples of changes or losses in cell function.
5. Students will understand the basics of cancer, different microscopic and centrifugal techniques.

CO-PO MAPPING

CH-101	PO										
CO		1	2	3	4	5	6	7	8	9	10
	1	3	3	3	3	2	3	3	1	1	2
	2	2	2	2	2	1	2	2	2	2	1
	3	2	1	2	1	2	2	1	3	1	2
	4	2	2	1	2	2	1	1	2	1	1
	5	1	1	2	1	2	1	3	2	2	1

CH-103	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	3	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	3	2	2	1

CH-105	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	1	2	2	1

BOT-101	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1
	CO6	2	2	1	2	1	2	1	2	1	2

BOT-103	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	√	2	2	1
	CO6	2	1	2	1	3	2	2	2	1	2

BOT-105	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

ZOO-101	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

ZOO-103	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

ZOO-105	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

PSO-PO Mapping

	PO-01	PO-02	PO-03	PO-04	PO-05	PO-06	PO-07	PO-08	PO-09	PO-10	PO-11	PSO-01	PSO-02	PSO-03
Average Mapping (M)	3	2	2	1	2	1	2	2	1	1	3	3	3	2
PO / PSO Attainment Level*	2.20	1.59	1.34	0.73	1.34	0.37	1.47	1.10	0.98	0.98	1.96	2.20	1.83	1.10

SCHOOL OF BASIC & APPLIED SCIENCES
(Syllabus & Scheme of Studies w.e.f. 2021-22)
B.Sc. (CBZ)
I Year (II semester)

Sr. No.	Subject	Paper Code No.	Name of Paper	Teaching scheme Hrs/Week		Examination Scheme			Duration of exam Hour	Credits
				L	P	IA	End Term Exam	Total		
1	Chemistry	CH-102	Inorganic Chemistry	2	0	20	30	50	3	2
2		CH-104	Organic Chemistry	2	0	20	30	50	3	2
3		CH-106	Physical Chemistry	2	0	20	30	50	3	2
4		CH-108	Chemistry Lab-II	0	3/6	20	30	50	4	3
5	Botany	BOT-102	Biodiversity (Archegoniate)	3	0	20	30	50	3	3
6		BOT-104	Plant Taxonomy	3	0	20	30	50	3	3
7		BOT-106	Botany Lab-II	0	2/4	20	30	50	4	2
8	Zoology	ZOO-102	Life and Diversity fromAnnelida to Hemichordate	3	0	20	30	50	3	3
9		ZOO-104	Developmental Biology	3	0	20	30	50	3	3
10		ZOO-106	Zoology Lab-II	0	2/4	20	30	50	3	2
11	Open Elective/Skill Enhancement Course (SEC)*	-	-	2	0	20	30	50	3	2
TOTAL				20	14			550		27

1.Inorganic Chemistry (CH-102)

Course Outcomes:

1. To know the conception of different types of hydrogen bonding and the effects of these. To learn about van der Waals forces on properties of substances.

2. To know about the diagonal relationship among s- block elements and about hydrides, oxides, hydroxides and halides of s-block elements.

3. Learn about chemistry of noble gases with emphasizing to xenon.

4. To know about the physical and chemical properties of p-block elements and have knowledge about the boron family elements their structure, preparation and properties of diborane and borazine.

5. Students can gain thorough knowledge about elements of carbon and nitrogen family and concept of catenation, carbides and fluorocarbons. They will know about the elements of oxygen family and have knowledge about the chemical properties of oxides of sulphur.

2. Organic Chemistry (CH-104)

Course Outcomes:

1. To have sound knowledge in alkenes and their properties.

2. Learn the basics of aromaticity and Huckel's rule. To know preparation and chemical reactions of different aromatic hydrocarbons.

3. Sound knowledge of dienes and their chemical reactions.

4. Get knowledge about the mechanism of SN1 and SN2 reactions and other various chemical reactions of alkyl and aryl halides.

5.understand cyclo alkanes.

3.Physical Chemistry (CH-106)

Course Outcomes:

1. Systematic and coherent understanding of the fundamental concepts in Chemical Kinetics.

2. Students will be able to understand the causes behind the different types of chemical reactions and the temperature dependence of reaction rate.

3. Students will be able to understand the basic principle of the electrical conduction in liquid state and how is it measured.

4. Students will learn the principles of equipment and instruments used in the chemistry laboratory. Students would also acquire theoretical as well as practical information about the electrical conduction in liquid state and its' application in different cases.

4.Biodiversity (Archegoniates) (BOT-102)

Course Outcomes:

1. Recognize, and describe the morphological characteristics of bryophytes and pteridophytes.
2. Draw and describe the gametophytic and sporophytic life cycle of bryophytes and pteridophytes.
3. Identify the given specimens in laboratory and field-based study.
4. Understand the origin and evolution of Land plants.
5. Understand the affinities of thallophytes with higher plants.
6. Evaluate the importance of Archegoniate.

5.Plant Taxonomy (BOT-104)

Course Outcomes:

1.Employ various taxonomic resources for plant identification and herbarium collections.
2.Outline and describe the different parameters of classification
3.Identify, and describe the morphological characteristics of Dicotyledons and Monocotyledonous families.
4.Draw and describe floral formulas and diagrams of Angiosperms.
5.Recognize the economic importance (Medicinal as well as Industrial uses) of important members of Angiosperms.
6.Design, carry out, and present a laboratory-based study in flowering plants.

6.Life and Diversity of Annelida to Hemichordate (ZOO-102)

Course Outcomes:

1. Students will be able to describe unique characters, metamerism mechanism and recognize life functions of Phylum Annelida.
2. Students will be able to identify the diversity and ecological role of Phylum Arthropoda especially of cockroach.
3. Students will be able to describe the general characteristics and classification biodiversity, economic importance, torsion and detorsion mechanism and evolutionary relationship belonging to Phylum Mollusca.
4. Students will be able to understand the unique characteristics, economic importance, concept of Echinoderm larvae and Aristotle's latern belonging to Phylum Echinodermata.
5. Students will be able to describe the general characteristics and classification of Phylum Hemichordata.

7.Developmental Biology(Z00-104)

Course Outcomes:

1. Students will be able to understand different classical and experimental developmental theories
2. Students will be able to describe the events that lead up to fertilization, its stages and cellular mechanisms for gastrulation, and embryonic development.
3. Students will be able to understand the concept of extra-embryonic membranes, implantation of embryo.
4. Students will be able to describe the process of blastulation and gastrulation of frog and chick.
5. Students will be able to understand the phenomenon of regeneration, competence, determination and cell differentiation, neural induction and its genetic basis.

CO-PO MAPPING

CH-102	PO										
CO		1	2	3	4	5	6	7	8	9	10
	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

CH-104	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

CH-106	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

BOT-102	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

BOT-104	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

ZOO-102	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

ZOO-104	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

SCHOOL OF BASIC & APPLIED SCIENCES
(Syllabus & Scheme of Studies w.e.f. 2021-22)
B.Sc. (CBZ)
II Year (III semester)

Sr. No.	Subject	Paper Code No.	Name of Paper	Teaching scheme Hrs/Week		Examination scheme			Durationof exam Hour	Credits
				L	P	IA	End Term Exam	Total		
1	Chemistry	CH-201	Inorganic Chemistry	2	0	20	30	50	3	2
2		CH-203	Organic Chemistry	2	0	20	30	50	3	2
3		CH-205	Physical Chemistry	2	0	20	30	50	3	2
		CH-207	Chemistry Lab-III	0	6	20	30	50	4	3
5	Botany	BOT-201	Plant Anatomy	3	0	20	30	50	3	3
6		BOT-203	Plant Embryology	3	0	20	30	50	3	3
		BOT-205	Botany Lab-III	0	2/4	20	30	50	4	2
8	Zoology	ZOO-201	Life and Diversity of Chordates	3	0	20	30	50	3	3
9		ZOO-203	Mammalian Physiology -I	3	0	20	30	50	3	3
10		ZOO-205	Zoology Lab-III		2/4	20	30	50	3	2
11	Open Elective/Skill Enhancement Course (SEC)*	-	-	2	0	20	30	50	3	2
TOTAL				20	14			550		27

1. Inorganic Chemistry (CH-201)

Course Outcomes:

1. Have good knowledge about d-block elements particularly of transition elements.

2. To study the comparison between 3d elements with 4d and 5d elements with reference to ionic radii, oxidation state, magnetic properties and spectral properties of some compounds of transition elements.

3. To know about the basic concepts of coordination chemistry like EAN, Werner theory of coordination, nomenclature and isomerism in coordination complexes.

4. Students can gain knowledge about the properties and reactions in non-aqueous solvents like liquid NH_3 and liquid SO_2, and also the concept of Acids and Bases.

2.Organic Chemistry (CH-203)

Course Outcomes:

1. Have comprehensive knowledge of the synthesis and properties of alcohols and epoxides

2. Know about synthesis and properties of phenols and their chemical reactions.

3. Have knowledge of Beer-Lambert law, molar absorptivity, different electronic transitions, analysis UV spectra and application of UV spectroscopy in structure elucidation.

4. Knowledge about various methods for the preparation of carboxylic acid, carboxylic derivatives (ester, amide, acid chlorides, anhydrides) and their chemical reactions.

3. Physical Chemistry (CH-205)

Course Outcomes:

1. To know about different process, functions and 1^{st} law of thermodynamics

2. To have knowledge about w, q, dU & dH and Kirchoffs equation

3. To understand the basic terms related to chemical equilibrium and derive the law thermodynamically, deduce relation between various equilibrium constants and determining partition coefficient of a solvent dissolved in two immiscible solvents

4. To have good knowledge about distribution law and its applications

4.Biology and Diversity of Seed Plants-I (BOT-201)

Course Outcomes:

1. Understand the concept of evolution and distinguish primitive and advanced characters in plants. Draw life-cycle and economic importance of: *Cycas* and *Pinus*
2. Recognize origin of seed plants and correlate their affinity with other plant groups
3. Describe the process involved in fossilization, types of fossils and importance of fossils
4. Evaluate Economic importance of Gymnosperms
5. Analyse the advancement in reproductive structures and modes of fertilization in Gymnosperms.
6. Evaluate affinities between Gymnosperms and Angiosperms.

5. Plant Anatomy (BOT-203)

Course Outcomes:

1. Identify the function and importance of various tissue systems.
2. Describe the modifications of plant parts in accordance with environmental conditions
3. Understand Apical meristem of root & shoot, types of tissues, vascular bundles, xylem, phloem, cambium, and periderm.
4. Differentiate monocots and dicots morphologically and anatomically.
5. Understand the physiological processing in plants through various apertures and appendages.
6. Understand the processing of secondary growth and its importance in plants.

6.Life and Diversity of Chordates (Z00-201)

Course Outcomes:

1. Students will be able to describe unique characters, Retrogressive metamorphosis belonging to subphylum urochordata, cepahalochordata and Phylum cyclostomata especially of petromyzon.
2. Students will be able to describe the general characteristics and classification biodiversity, economic importance, Osmoregulation, migration, Parental care belonging to class Pisces & Amphibia and paedomorphosis belonging to Phylum Amphibia.
3. Students will be able to describe unique characters, Poisonous and non- poisonous snakes in India, Biting mechanism in snakes of Phylum Reptilia and Origin of birds, Flight adaptations, Migration belonging to class Aves.

4. Students will be able to understand the unique characteristics, economic importance, classification, Origin of mammals, dentition belonging to class Mammalia.

7. Mammalian Physiology-I (Z00-203)

1. It will make the students understand the physiology of digestive system, mechanism of buccal, gastric, intestinal, pancreatic digestion and absorption.
2. Students will be able to understand the concept of osmoregulation, physiology of excretion, structure of excretory system and mechanism of urine formation.
3. Students will be able to explain the mechanism of structure of respiratory system, different respiratory pigments, mechanism of external and internal respiration and transport of gases.
4. It will make the students understand the concept of circulatory system, origin and conduction of heart beat, Cardiac cycle, working of mammalian heart, Blood composition and function, Mechanism of blood clotting.

CO and PO Mapping

CH-201	PO										
CO		1	2	3	4	5	6	7	8	9	10
	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

CH-203	PO										
CO		1	2	3	4	5	6	7	8	9	10
	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

CH-207	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

BOT-201	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

BOT-203	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

BOT-205	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	3	2	1	1	1	2	2	2	1

ZOO-203	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	3	2	1	1	1	2	2	2	1

ZOO-205	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	3	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

SCHOOL OF BASIC & APPLIED SCIENCES
(Syllabus & Scheme of Studies w.e.f. 2021-22)
B.Sc. (CBZ)
II Year (IV semester)

Sr. No.	Subject	Paper Code No.	Name of Paper	Teaching scheme Hrs/Week		Examination scheme			Duration of exam Hour	Credits
				L	P	IA	End Term Exam	Total		
1	Chemistry	CH-202	Inorganic Chemistry	2	0	20	30	50	3	2
2		CH-204	Organic Chemistry	2	0	20	30	50	3	2
3		CH-206	Physical Chemistry	2	0	20	30	50	3	2
		CH-208	Chemistry Lab-IV	0	6	20	30	50	4	3
5	Botany	BOT-202	Plant Physiology	3	0	20	30	50	3	3
6		BOT-204	Plant Metabolism	3	0	20	30	50	3	3
		BOT-206	Botany Lab-IV	0	2/4	20	30	50	4	2
8	Zoology	ZOO-202	Genetics and Immunology	3	0	20	30	50	3	3
9		ZOO-204	Mammalian Physiology-II	3	0	20	30	50	3	3
10		ZOO-206	Zoology Lab-IV	0	2/4	20	30	50	3	2
11	Open Elective/Skill Enhancement Course (SEC)*	-	-	0	2	30	20	50		2
TOTAL				18	16			500		27

1. Inorganic Chemistry (CH-202)

Course Outcomes:

1. Have good knowledge about d-block elements particularly of transition elements.
2. To study the bonding of 3d elements. To recapitulate the concept of valence bond theory and know the concept of crystal field theory with reference to splitting of d orbital's in octahedral, tetrahedral and square planar complexes and factors affecting the crystal field parameters. Students will be able to calculate the spectroscopic terms for various metal ions.
3. To study the comparison between 3d elements with 4d and 5d elements with reference to ionic radii, oxidation state, magnetic properties and spectral properties some compounds of transition elements.
4. To know about position of f block elements in periodic table and their general characteristics. To study the occurrence and separation of lanthanides and lanthanide compounds. Have knowledge of actinides their existence and general properties.
5. To explain the factors responsible for the stability of coordination complexes and various substitution reactions of square planar complexes with reference to trans effect.

2.Organic Chemistry (CH-204)

Course Objective:

1. Able To describe absorptions of various functional groups and applications of IR spectroscopy. To know the application of IR spectroscopy in structure elucidation.
2. To synthesize and know reactions of amines.
3. To discuss synthetic application of diazonium salts and other nitro compounds.
4. Get knowledge about the preparation of aliphatic, aromatic aldehydes and ketones and various important name reactions of aldehydes and ketones.

3.Physical Chemistry (CH-206)

Course Outcomes:

1. Systematic and coherent understanding of the fundamental concepts in Physical chemistry.

2. Students will be able to understand the fundamentals of thermodynamics and electrochemistry.

3. Students will be able to understand the solve problems using the properties and relationships of thermodynamic equations. Students will have understanding of thermodynamic fundamentals for application in applied thermodynamics.

4. Students will gain the knowledge of instrumentation in electrochemistry. Students would also acquire theoretical as well as practical information about the electrical conduction in liquid state.

5. Biology and Diversity of Seed Plants-II (BOT-202)

Course Outcomes:

1. Employ various taxonomic resources for plant identification and herbarium collections.
2. Identify, and describe the morphological characteristics of Dicotyledons and Monocotyledonous families.
3. Draw and describe floral formulas and diagrams of Angiosperms.
4. Recognize the economic importance (Medicinal as well as Industrial uses) of important members of Angiosperms
5. Outline and describe the different parameters of classification.
6. Design, carry out, and present a laboratory-based study in flowering plants.

6.Plant Embryolog (BOT-204)

Course Outcomes:

1. Explain structure and functions of reproductive organs of flowering plants.
2. Identify, and describe morphological adaptations of flowers linked with variety of pollinators.
3. Draw, identify, and describe different structural patters of ovules.
4. Outline and describe the developmental process of male and female gametophyte.
5. Outline and describe the fertilization process and understanding of the embryogenesis.
6. Design, carry out, and present a laboratory-based study in plant embryology.

7. Genetics and Immunology (Z00-202)

1. Students will be able to understand the concept of genetics, its basic principles & theories and genetic interactions.
2. Students will have acquaintance with respect to variations, mutations and sex linked inheritance.
3. Students will be able to get knowledge about several chromosomal abnormalities involving autosomes and sex chromosomes along with some implications of applied genetics.
4. Students will be able to understand the concept of immune system, blood transfusion, autoimmune disorders and transplanting of tissues and organs

8.Mammalian Physiology-I (Z00-204)

Course Outcomes:

1. It will make the students understand the appropriate functioning of various body systems in animals and mechanism of working.
2. Students will be able to understand the structure of various muscle fibres and mechanism of muscle contraction.
3. Students will be able to explain the mechanism of nerve conduction and related neurotransmitters involved in its physiological processes.
4. It will make the students understand the structure and function of various endocrine glands as well as their secretion.
5. Students will be able to understand the control of hormones on reproductive physiology mechanism that is essential for the continuance of the human species.

CO-PO MAPPING

CH-202	PO										
CO		1	2	3	4	5	6	7	8	9	10
	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

CH-204	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

CH-206	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

BOT-202	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

BOT-204	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

ZOO-202	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

ZOO-204	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

Z00-206	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

SCHOOL OF BASIC & APPLIED SCIENCES
(Syllabus & Scheme of Studies w.e.f. 2021-22)
B.Sc. (CBZ)
III Year (V semester)

Sr.No.	Subject	Paper Code No.	Name of Paper	Teaching scheme Hrs/Week		Examination scheme			Duration of exam Hour	Credits
				L	P	IA	End Term Exam	Total		
1	Chemistry	CH-301	Inorganic Chemistry	2	0	20	30	50	3	2
2		CH-303	Organic Chemistry	2	0	20	30	50	3	2
3		CH-305	Physical Chemistry	2	0	20	30	50	3	2
		CH-307	Chemistry Lab-V	0	6	20	30	50	4	3
5	Botany	BOT-301	Economic Botany	3	0	20	30	50	3	3
6		BOT-303	Plant Biotechnology	3	0	20	30	50	3	3
		BOT-305	Botany Lab-V	0	2/4			50	4	2
8	Zoology	ZOO-301	Biochemistry	3	0	20	30	50	3	3
9		ZOO-303	Ecology & Evolution	3	0	20	30	50	3	3
10		ZOO-305	Zoology Lab-V	0	2/4	20	30	50	3	2
11	ECA	ECA-301	Seminar/ Project/ Internship	2	0	-	-	50	-	2
TOTAL				20	14			500		27

1. Inorganic Chemistry (CH-301)

Course Outcomes:

1. To summarize the concept of valence bond theory and know the concept of crystal field theory with reference to splitting of d orbitals in octahedral, tetrahedral and square planar complexes and factors affecting the crystal field parameters.

2. To explain the factors responsible for the stability of coordination complexes and various substitution reactions of square planar complexes with reference to trans effect.

3. To study the magnetic properties of transition metal complexes and various types of magnetic materials and their magnetic susceptibility.

4. Have knowledge about orgal level diagrams for d1 and d9 electronic states and the electronic spectrum of $[Ti(H_2O)_6]^{+3}$complex ion.

2. Organic Chemistry (CH-303)

Course Outcomes:

1. Get knowledge about the principle of nuclear magnetic resonance.

2. To elucidate the structure of various molecules by using PMR spectra.

3. To have knowledge about classification, structures and important reactions of carbohydrates

4. Sound knowledge of organometallic compounds.

3.Physical Chemistry (CH-305)

Course Outcomes:

1. To know about dual characteristic of matter and extend this fact to obtain postulates of quantum mechanics and quantum-mechanical operators, apply Schrödinger equation to determine the physical observables for particle in a box.

2. To have knowledge about dipole moment, magnetic permeability and susceptibility

3. To have sound knowledge about the consequences of interaction of radiation with matter resulting into various types of spectra.

4. To be able to solve various numerical problems related to spectroscopy.

4.Plant Physiology (BOT-301)

Course Outcomes:

1. Describe the all-introductory terms concerned with plant physiology and plant Biochemistry like osmosis, transpiration, diffusion and Imbibitions etc.
2. Understand the basic information about principles of physiology and biochemistry of plants, their application in daily life and industry.
3. Describe the various types of plant hormones and plant growth regulators and their origin, distribution, physiological description, brief idea of their action and economic uses of PGRs.
4. Analyse the behaviour of chemical processes of behind the plant movement and their significance for the crops belongs to various taxonomic families.
5. Evaluate the significance of the physiological processes involved in the manufacturing of the dyes, tannins, beverages, timber and rubbers in the body of plants.
6. Create the comparative knowledge of commercial application of the physiological and biochemical processes.

5.Ecology (BOT-303)

Course Outcomes:

1. Understand major biological ecological concepts; develop contemporary scientific outlook in the field of Ecology.
2. Interpret close interrelationship between various components of an ecosystem to exchange nutrients and elements.
3. Understand adaptations in an organism to sustain in their niche.
4. Evaluate population and community quantitatively and qualilatively
5. Analyse various global environments problem their probable solutions.
6. Demonstrate effective communication skills in writing and in oral presentations.

6.Biochemistry (Z00-301)

Course Outcomes:

1. It will make the students understand the structure, function and significance of carbohydrates.
2. Students will be able to understand the Students Oxidation of glucose through glycolysis, Kreb's cycle and oxidative phosphorylation.

3. Students will be able to explain the mechanism of inter conversion of glycogen and glucose in liver and Role of insulin and glucagon.
4. It will make the students understand the structure, function and significance of lipids, Beta-oxidative pathway of fatty acids, Essential and non essential fatty acids, Biosynthesis of different lipids.
5. Students will be able to understand the structure, function and significance of proteins and enzymes, Essential and non-essential amino acids, ornithine cycle
6. Students will be able to understand the concept of vitamins, minerals and nucleic acid.

7. Ecology & Evolution(Z00-303)

Course Outcomes:

1. It will make the students understand the knowledge of interaction between organisms and environment and exchange of nutrients within the ecosystem.
2. Students will be able to understand the concept of population ecology, population growth curves, mechanism of regulation of population growth.
3. Students will be able to explain the various biological interactions and relation between abiotic and biotic factors.
4. It will make the students understand the concept of Succession, stages of primary succession, climax community, Energy flow and chemical cycling through an ecosystem.
5. Students will be able to understand the evolution, the theory of natural selection, Variations, isolation, adaptations and Palaeontology.

CO-PO MAPPING

CH-301	PO										
CO		1	2	3	4	5	6	7	8	9	10
	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

CH-303		PO									
CO		1	2	3	4	5	6	7	8	9	10
	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

CH-305		PO									
CO		1	2	3	4	5	6	7	8	9	10
	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

CH-307		PO									
CO		1	2	3	4	5	6	7	8	9	10
	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

BOT-301		PO									
CO		1	2	3	4	5	6	7	8	9	10
	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

BOT-303	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

zoo-301	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

zoo-303	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

zoo-305	PO									
		1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

SCHOOL OF BASIC & APPLIED SCIENCES
(Syllabus & Scheme of Studies w.e.f. 2021-22)
B.Sc. (CBZ)
III Year (VI semester)

Sr. No.	Subject	Paper Code No.	Name of Paper	Teaching scheme Hrs/Week		Examination Scheme			Duration of exam Hour	Credits
				L	P	IA	End Term Exam	Total		
1	Chemistry	CH-302	Inorganic Chemistry	2	0	20	30	50	3	2
2		CH-304	Organic Chemistry	2	0	20	30	50	3	2
3		CH-306	Physical Chemistry	2	0	20	30	50	3	2
4		CH-308	Chemistry Lab-VI	0	6	20	30	50	4	3
5	Botany	BOT-302	Cell Biology & Genetics	3	0	20	30	50	3	3
6		BOT-304	Plant Breeding	3	0	20	30	50	3	3
		BOT-306	Botany Lab-VI	0	2/4	20	30	50	4	2
8	Zoology	ZOO-302	Environmental Biology & Ethology	3	0	20	30	50	3	3
9		ZOO-304	Applied Biology & Biostatistics	3	0	20	30	50	3	3
10		ZOO-306	Zoology Lab-VI	0	2/4	20	30	50	3	2
11	ECA	ECA-302	Seminar/ Project/ Internship	-	-	-	-	50	-	2
TOTAL				18	12			500		26

1. Inorganic Chemistry (CH-302)

Course Outcomes:

1. To get the detailed understanding of Bonding in homonuclear and heteronuclear molecules using the molecular orbital theory.
2. To study the nomenclature, classification, preparation and bonding in organometallic compounds and of metal carbonyls also.
3. To know about basic concepts of bioinorganic chemistry with reference to metal ions present in biological systems. To understand the biochemistry of oxygen carriers especially hemoglobin and myoglobin.
4. To know about various inorganic clusters compounds with special reference to silicones and phosphazenes.

2. Organic Chemistry (CH-304)

Course Outcomes:

1. To gain knowledge about aromatic behaviour and basicity of simple heterocyclic compounds (pyridine, piperidine and pyrrole).
2. To know about 5 and 6 membered heterocyclic rings , basicity of and the preparation and reactions of indole, quinoline and isoquinoline.
3. To get knowledge about the acidity of α-hydrogens of diethyl malonate, ethyl acetoacetate and the synthesis and Keto-enol tautomerism of ethyl acetoacetate.
4. To learn about the essential amino acids, peptides and proteins. To get the knowledge about their structure and properties.

3.physical Chemistry (CH-306)

Course Outcomes:

1. Systematic and coherent understanding of the fundamental concepts in Physical chemistry.
2. Students will be able to understand the basic principle of electronic spectroscopy and the energy related to every colour imparted by chemicals. They will also gain the clear physical interpretation of chemical bonding and molecular structure.

3. The course curriculum is expected to develop an inquisitive feature among the students through suitable questions and experimental investigation.
4. Students will be having clear knowledge of how light is important to chemical reactions and how the amount of molecules in a solution affects the nature of a solution which is beneficial for the applied field.
5. Students will gain the knowledge of different phases of materials and their co-existence

4.Biochemistry and Plant Biotechnology (BOT-302)

Course Outcomes:

1. Describe the mechanism of enzyme and their role in industries.
2. Explain the molecular structure and role of carbohydrates, proteins and lipids.
3. Explain the theory and practice of recombinant DNA technology.
4. Select and apply experimental procedures to the spectrum of fields making use of biotechnology.
5. Handle, store and analyse different culture and sub-cultures how these can be used for in vitro studies and secondary metabolite production.
6. Grow, maintain, and propagate different plant cell types in aseptic conditions.

6. Economic Botany (BOT-304)

Course Outcomes:

1. Identify the criteria of geological distribution of crops.
2. Determine the trend of migration of crops globally.
3. Identify different methodologies for crop cultivation and their values.
4. Identify the types of major traditional crops in India and their utility in mankind.
5. Identify the economic importance of medicinally plants.
6. Determine the significance of energy plantation.

7.Environmental biology & Ethology (Z00-302)

Course Outcomes:

1. It will give students an insight about the benefits of environment and can be used in the management of natural resources for sustainable development in ways that leave the environment healthy.
2. It will boost students for betterment of diversified resources and life forms for better conservational measures with keen understanding and new approaches.
3. The awareness about pollution and toxic agents, their different sources and their effects on humans and their livestock will be appraised.

4. The students will have the knowledge about solution for ozone depletion, green house, biomagnification and bioaccumulation.
5. Students will have an understanding of ill-health of growing population and continuously rising urbanization.
6. It will give detailed understanding of different interesting patterns of animal behaviour.

8.Applied Zoology & Biostatistics (Z00-304)

Course Outcomes:

1. Students will be able to awareness about use of certain animals and their products for human welfare.
2. Students will be able to explain the basic concepts of sericulture, apiculture, lac culture and other animal industries
3. Students will gain the information regarding different pests along with economics of pest management techniques.
4. Students will able to generate a hypothesis from a set of observation and then design experiment to test the hypothesis.
5. Student will be able to acquire, analyse and understand the significance of data.

CO-PO MAPPING

CH-302	PO										
CO		1	2	3	4	5	6	7	8	9	10
	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

CH-304	PO										
CO		1	2	3	4	5	6	7	8	9	10
	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

CH-306	PO									
	1	2	3	4	5	6	7	8	9	10
CO1	3	3	3	3	2	3	3	1	1	2
CO2	2	2	2	2	1	2	2	2	2	1
CO3	2	1	2	1	2	2	1	3	1	2
CO4	2	2	1	2	2	1	1	2	1	1
CO5	1	1	2	1	1	1	2	2	2	1

BOT-302	PO									
	1	2	3	4	5	6	7	8	9	10
CO1	3	3	3	3	2	3	3	1	1	2
CO2	2	2	2	2	1	2	2	2	2	1
CO3	2	1	2	1	2	2	1	3	1	2
CO4	2	2	1	2	2	1	1	2	1	1
CO5	1	1	2	1	1	1	2	2	2	1

BOT-304	PO									
	1	2	3	4	5	6	7	8	9	10
CO1	3	3	3	3	2	3	3	1	1	2
CO2	2	2	2	2	1	2	2	2	2	1
CO3	2	1	2	1	2	2	1	3	1	2
CO4	2	2	1	2	2	1	1	2	1	1
CO5	1	1	2	1	1	1	2	2	2	1

BOT-306	PO									
	1	2	3	4	5	6	7	8	9	10
CO1	3	3	3	3	2	3	3	1	1	2
CO2	2	2	2	2	1	2	2	2	2	1
CO3	2	1	2	1	2	2	1	3	1	2
CO4	2	2	1	2	2	1	1	2	1	1
CO5	1	1	2	1	1	1	2	2	2	1

zoo-302	PO									
	1	2	3	4	5	6	7	8	9	10
CO1	3	3	3	3	2	3	3	1	1	2
CO2	2	2	2	2	1	2	2	2	2	1
CO3	2	1	2	1	2	2	1	3	1	2
CO4	2	2	1	2	2	1	1	2	1	1
CO5	1	1	2	1	1	1	2	2	2	1

zoo-304	PO									
	1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

zoo-306	PO									
	1	2	3	4	5	6	7	8	9	10
CO	CO1	3	3	3	3	2	3	3	1	1	2
	CO2	2	2	2	2	1	2	2	2	2	1
	CO3	2	1	2	1	2	2	1	3	1	2
	CO4	2	2	1	2	2	1	1	2	1	1
	CO5	1	1	2	1	1	1	2	2	2	1

B.Sc Chemistry Syllabus

(2022-2025)

RAFFLES
UNIVERSITY

Department of Chemistry School of Basic and Applied Sciences

RAFFLES UNIVERSITY
Japanese Zone, National Highway-48, Neemrana-301705,
District: Alwar, RAJASTHAN, INDIA www.rafflesuniversity.edu.in

RAFFLES UNIVERSITY

Examination Time : 3 Hrs **Maximum Marks: 50 (20+30)**
Subject : Inorganic Chemistry **Paper Code : CH-101**

Note: *Examiner will set nine questions in all and the students will be required to attempt only five questions selecting one question from each unit which will be of 6 marks each.* ***Question number one is compulsory containing six short answer type*** *questions covering the entire syllabus and will be of 1 mark.*

UNIT-I

Atomic Structure: Idea of de-Broglie matter waves, Heisenberg's uncertainty principle, atomic orbital's, quantum numbers, Aufbau and Pauli exclusion principles, Hund's multiplicity rule. Electronic configuration of the elements, radial and angular wave functions and probability distribution curves, shapes of s, p, and d orbitals.

UNIT-II

Periodic Table: General principles of periodic table, effective nuclear charge, Slater's rules, Atomic and ionic radii, ionization energy, electron affinity and electronegativity: definition, methods of determination or evaluation, trends in periodic table (s & p block elements).

UNIT-III

Covalent Bond: Valence bond theory and its limitations, directional characteristics of covalent bond, various types of hybridization and shapes of simple inorganic molecules and ions (BeF_2, BF_3, CH_4, PF_5, SF_6, IF_7 SO^{-2}, ClO^{-1})Valence shell electron pair repulsion (VSEPR) theory to NH_3, H_3O^+, SF_4, ClF_3, ICI^- and H_2O_2. MO theory of heteronuclear (CO and NO) diatomic molecules, bond strength and bond energy, percentage ionic character from dipole moment and electronegativity difference.

UNIT-IV

Ionic Solids: Ionic structures (NaCl, CsCl, ZnS, CaF_2) radius ratio effect and coordination number, limitation of radius ratio rule, lattice defects, semiconductors, lattice energy (mathematical derivation excluded) and Born- Haber cycle, solvation energy and its relation with solubility of ionic solids, polarizing power and polarisability of ions, Fajan's rule.

Suggested books:

1. Fundamental concepts of Inorganic Chemistry, A.K. Das [Publisher: CBS]
2. Inorganic Chemistry, Malik, Tuli Madan, [Publisher: S.Chand]
3. Principles of Inorganic Chemistry, Puri, Sharma, Pathania [Publisher: VPC]
4. Inorganic Chemistry, James E. Huheey, E.A. Keiter, R. L. Keiter, O. K. Medhi
5. Concise Inorganic Chemistry, J. D. Lee, [Publisher: Oxford]

RAFFLES UNIVERSITY

B.Sc. (PCM+CBZ) I Year (I Semester)

Schedule per week Lectures: 2
Examination Time : 3 Hrs **Maximum Marks: 50 (20+30)**
Subject : Organic Chemistry **Paper Code : CH-103**

Note: *Examiner will set nine questions in all and the students will be required to attempt only five questions selecting one question from each unit which will be of 6 marks each.* ***Question number one is compulsory containing six short answer type*** *questions covering the entire syllabus and will be of 1 mark.*

UNIT-I

Structure and Bonding: Localized and delocalized chemical bond, van der Waals' interactions, resonance conditions, resonance effect and its applications, hyperconjugation, inductive effect,Electromeric effect & their comparison.

Stereochemistry of Organic Compounds-I: Concept of isomerism. Types of isomerism. Optical isomerism, elements of symmetry, molecular chirality, enantiomers, stereogenic centre, optical activity, properties of enantiomers, chiral and achiral molecules with two stereogenic centres, diastereomers, threo and erythro diastereomers, meso compounds, resolution of enantiomers, inversion, retention and racemization.

UNIT-II

Stereochemistry of Organic Compounds-II: Relative and absolute configuration, sequence rules, R & Ssystem of nomenclature, Geometric isomerism, determination of configuration of geometrical isomers, E & Z system of nomenclature, Conformational isomerism conformational analysis of ethane and n-butane, conformations of cyclohexane, axial and equatorial bonds, Newman projection and Sawhorse formulae, Difference between configuration and conformation.

UNIT-III

Mechanism of Organic Reactions: Curved arrow notation, drawing electron movements with arrows, half-headed and double-headed arrows, homolytic and heterolytic bond breaking. Types of reagents – electrophiles and nucleophiles. Types of organic reactions. Energy considerations.Reactive intermediates carbocations, carbanions, free radicals, carbenes , arynes and nitrenes (formation, structure & stability). Assigning formal charges on intermediates and other ionic species.

UNIT-IV

Alkanes and Cycloalkanes: IUPAC nomenclature of branched and unbranched alkanes, the alkyl group, classification of carbon atoms in alkanes. Isomerism in alkanes, sources, methods of formation (with special reference to Wurtz reaction, Kolbe reaction, Corey-House reaction and decarboxylation of carboxylic acids), physical properties. Cycloalkanes: nomenclature, synthesis of cycloalkanes and their derivatives– photochemical (2+2) cycloaddition reactions, dehalogenation of dihalides, pyrolysis of calcium or barium salts of dicarboxylic acids, Baeyer's strain theory and its limitations, theory of strainless rings.

Suggested books:

1. Basic Stereochemistry of Organic molecules, Subrata Sengupta [Publisher: Oxford]
2. Organic Chemistry Vol-I, I. L. Finar [Publisher: Pearson]
3. Organic Chemistry Vol-I, Nemai Tewari, [Publisher: McGraw Hill]
4. Stereochemistry of Organic Compounds, D Nasipuri, [Publisher: New Age Central]

RAFFLES UNIVERSITY

Examination Time : 3 Hrs **Maximum Marks: 50 (20+30)**
Subject : Physical Chemistry **Paper Code : CH-105**

Note: *Examiner will set nine questions in all and the students will be required to attempt only five questions selecting one question from each unit which will be of 6 marks each.* ***Question number one is compulsory containing six short answer type*** *questions covering the entire syllabus and will be of 1 mark.*

UNIT-I

Gaseous States: Maxwell's distribution of velocities and energies (derivation excluded) Calculation of rootmean square velocity, average velocity and most probable velocity. Collision diameter, collision number, collision frequency and mean free path. Deviation of Real gases from ideal behaviour. Derivation of Vander Waal's Equation of State, its application in the calculation of Boyle's temperature (compression factor) Explanation of behavior of real gases using Vander Waal's equation.

UNIT-II

Critical Phenomenon: Critical temperature, Critical pressure, critical volume and their determination. PV isotherms of real gases, continuity of states, the isotherms of Vander Waal's equation, relationship betweencritical constants and Vander Waal's constants. Critical compressibility factor. The Laws of corresponding states. Liquefaction of gases.

UNIT-III

Liquid States: Structure of liquids. Properties of liquids – surface tension, viscosity, vapour pressure and optical rotations and their determination.

UNIT-IV

Solid State: Classification of solids, Laws of crystallography – (i) Law of constancy of interfacial angles (ii) Law of rationality of indices (iii) Law of symmetry. Symmetry elements of crystals, Definition of unit cell & space lattice. Bravais lattices, crystal system. X-ray diffraction by crystals. Derivation of Bragg equation. Determination of crystal structure of NaCl, KCl.

Liquid crystals: Difference between solids, liquids and liquid crystals, types of liquid crystals, Applications of liquid crystals.

Suggested books:

1. Physical Chemistry, P.C. Rakshit [Publisher: SBH]
2. A Textbook of Physical Chemistry Vol-2, K. L. Kapoor [Publisher: McGraw Hill]
3. Principles of Physical Chemistry, Puri, Sharma, Pathania [Publisher: VPC]
4. Essentials of Physical Chemistry, Bahl, Bahl and Tuli [Publisher: S.Chand]
5. Physical Chemistry, P.W. Atkins [Oxford University Press]

RAFFLES UNIVERSITY

B.Sc. (PCM+CBZ) I Year (I Semester)

Schedule per week Practical: 6
Examination Time : 4 Hrs **Maximum Marks: 50 (20+30)**
Subject : Chemistry Lab-I **Paper Code : CH-107**

UNIT-I (Inorganic)

Volumetric Analysis

1. **Redo titrations**: Determination of Fe^{2+}, $C_2O_4^{2-}$ (using $KMnO_4$, $K_2Cr_2O_7$)
2. **Iodometic titrations:** Determination of Cu^{2+} (using standard hypo solution).
3. **Complexometric titrations:** Determination of Mg^{2+}, Zn^{2+} by EDTA.

UNIT-II (Physical)

1. To determine the specific reaction rate of the hydrolysis of methyl acetate/ethyl acetate catalyzed by hydrogen ions at room temperature.
2. To prepare arsenious sulphide sol and compare the precipitating power of mono, bi and trivalent anions.

UNIT-III (Organic)

1. Preparation and purification through crystallization or distillation and ascertainingtheir purity through melting point or boiling point
   (i) Iodoform from ethanol (or acetone)
   (ii) *m*-Dinitrobenzene from nitrobenzene (use 1:2 conc. HNO_3 H_2SO_4 mixture if fuming HNO_3 is not available)
   (iii) *p*-Bromoacetanilide from acetanilide
   (iv) Dibenzalacetone from acetone and benzaldehyde
   (v) Aspirin from salicylic acid

Distribution of marks

1. UNIT-I	10 (6+4) marks
2. UNIT-II	10 (6+4) marks
3. UNIT-III	10 (6+4) marks
4. Viva-voce	10 (6+4) marks
5. Lab Record	10 (6+4) marks

RAFFLES UNIVERSITY

SCHOOL OF BASIC AND APPLIED SCIENCES
Department of Chemistry
(Syllabus and Scheme of Studies w. e. f. 2023-26 onwards)B.Sc. (PCM+CBZ) I Year (II Semester)

Schedule per week Lectures : 2

Examination Time	**: 3 Hrs**	**Maximum Marks: 50 (20+30)**	
Subject	**: Inorganic Chemistry**	**Paper Code**	**: CH-102**

Note: *Examiner will set nine questions in all and the students will be required to attempt only five questions selecting one question from each unit which will be of 6 marks each****. Question number one is compulsory containing six short answer type*** *questions covering the entire syllabus and will be of 1 mark.*

UNIT-I

Hydrogen Bonding & Vander Waals Forces: Hydrogen Bonding-Definition, Types, effects of hydrogen bonding on properties of substances, application Brief discussion of various types of Vander Waals Forces**.** Metallic Bond and Semiconductors Metallic Bond- Brief introduction to metallic bond, band theory of metallic bond Semiconductors- types and applications.

UNIT-II

s-Block Elements: Comparative study of the elements including diagonal relationships, salient features of hydrides (methods of preparation excluded), solvation and complexation tendencies including their functionin biosystems.

Chemistry of Noble Gases: Chemical properties of the noble gases with emphasis on their low chemical reactivity, chemistry of xenon, structure and bonding of fluorides, oxides & oxyfluorides of xenon.

UNIT-III

p-Block Elements: Emphasis on comparative study of properties of p-block elements (including diagonal relationship and excluding methods of preparation).

Boron family (13th group): Diborane-properties and structure (as an example of electron-deficient compound and multicentre bonding), Borazine-chemical properties and structure Trihalides of Boron – Trends in acid character, structure of aluminium (III) chloride.

Carbon Family (14th group): Catenation, p–d bonding (an idea), carbides, fluorocarbons, silicates (structural aspects), silicons – general methods of preparations, properties and uses.

UNIT-IV

Nitrogen Family (15th group): Structures of oxides of N, P. oxyacids–structure and relative acid strengths of oxyacids of N and P. Structure of white, yellow and red phosphorus

Oxygen Family (16th group): Oxyacids of sulphur – structures and acidic strength, H_2O_2 structure,properties and uses.

Halogen Family (17th group): Basic properties of halogen, interhalogens, types, properties, hydroand oxyacids of chlorine – structure and comparison of acid strength

Suggested books:

1. Fundamental concepts of Inorganic Chemistry, A.K. Das [Publisher: CBS]
2. Inorganic Chemistry, Malik, Tuli Madan, [Publisher: S.Chand]
3. Principles of Inorganic Chemistry, Puri, Sharma, Pathania [Publisher: VPC]
4. Inorganic Chemistry, R.P. Sarkar [Publisher: NCBA]
5. Concise Inorganic Chemistry, J. D. Lee, [Publisher: Oxford]

RAFFLES UNIVERSITY

B.Sc. (PCM+CBZ) I Year (II Semester)

Schedule per week Lectures : 2

Examination Time	**: 3 Hrs**	**Maximum Marks: 50 (20+30)**	
Subject	**: Organic Chemistry**	**Paper Code**	**: CH-104**

Note: *Examiner will set nine questions in all and the students will be required to attempt only five questions selecting one question from each unit which will be of 6 marks each.* ***Question number one is compulsory containing six short answer type*** *questions covering the entire syllabus and will be of 1 mark.*

UNIT-I

Alkenes: Nomenclature of alkenes, mechanisms of dehydration of alcohols and dehydro- halogenation of alkyl halides, The Saytzeff rule, Hofmann elimination, physical properties and relative stabilities of alkenes.Chemical reactions of alkenes and mechanisms involved in hydrogenation, electrophilic and free radical additions, Markownikoff's rule, hydroboration- oxidation, oxymercurationreduction, ozonolysis, hydration,hydroxylation and oxidation with $KMnO_4$,

UNIT-II

Arenes and Aromaticity: Nomenclature of benzene derivatives, Aromatic nucleus and side chain. Aromaticity: the Huckel rule, aromatic ions, annulenes up to 10 carbon atoms, aromatic, antiaromatic and non-aromatic compounds. Aromatic electrophilic substitution general pattern of the mechanism, mechansim of nitration, halogenation, sulphonation, and Friedel-Crafts reaction. Energy profile diagrams; Activating , deactivating substituents and orientation.

UNIT-III

Dienes and Alkynes: Nomenclature and classification of dines isolated, conjugated and cumulated dienes. Structure of butadiene, Chemical reactions 1, 2 and 1, 4 additions (Electrophilic & free radical mechanism),Diels-Alder reaction, Nomenclature, structure and bonding in alkynes. Methods of formation. Chemical reactions of alkynes, acidity of alkynes. Mechanism of electrophilic and nucleophilic addition reactions, hydroboration-oxidation of alkynes,

UNIT-IV

Alkyl and Aryl Halides: Nomenclature and classes of alkyl halides, methods of formation, chemical reactions. Mechanisms and stereochemistry of nucleophilic substitution reactions of alkyl halides, SN_2 and SN_1 reactions with energy profile diagrams. Methods of formation and reactions of aryl halides, The additionelimination and the elimination-addition mechanisms of nucleophilic aromatic substitution reactions. Relative reactivities of alkyl halides vs allyl, vinyl and aryl halides.

Suggested books:

1. Organic Chemistry, Subrata Sengupta [Publisher: Oxford]
2. Organic Chemistry Vol-I, I. L. Finar [Publisher: Pearson]
3. Organic Chemistry Vol-I, Nemai Tewari, [Publisher: McGraw Hill]
4. Organic Chemistry, Jerry March, [Publisher: Willey]
5. A guidebook to mechanism in organic chemistry, Peter Sykes, [Publisher: Pearson]

RAFFLES UNIVERSITY

SCHOOL OF BASIC AND APPLIED SCIENCES
Department of Chemistry
(Syllabus and Scheme of Studies w. e. f. 2023-26 onwards)B.Sc. (PCM+CBZ) I Year (II Semester)

Schedule per week Lectures : 2

Examination Time	**: 3 Hrs**	**Maximum Marks: 50 (20+30)**	
Subject	**: Physical Chemistry**	**Paper Code**	**: CH-106**

Note: *Examiner will set nine questions in all and the students will be required to attempt only five questions selecting one question from each unit which will be of 6 marks each.* ***Question number one is compulsory containing six short answer type*** *questions covering the entire syllabus and will be of 1 mark.*

UNIT-I

Kinetics-I: Rate of reaction, rate equation, factors influencing the rate of a reaction concentration,temperature, pressure, solvent, light, catalyst. Order of a reaction, integrated rate expression for zero order,first order, second and third order reaction. Half-life period of a reaction. Methods of determination of orderof reaction,

UNIT-II

Kinetics-II: Effect of temperature on the rate of reaction-Arrhenius equation. Theories of reaction rate – Simple collision theory for unimolecular and bimolecular collision, Transition state theory of Bimolecular reactions.

UNIT-III

Electrochemistry-I: Electrolytic conduction, factors affecting electrolytic conduction, specific, conductance, molar conductance, equivalent conductance and relation among them, their variation with concentration. Arrhenius theory of ionization, Ostwald's Dilution Law, Debye- Huckel-Onsager's equation for strong electrolytes (elementary treatment only) Transport number, definition and determination by Hittorfs methods, (numerical included)

UNIT-IV

Electrochemistry-II: Kohlarausch's Law, calculation of molar ionic conductance and effect of viscosity temperature & pressure on it. Application of Kohlarausch's Law in calculation of conductance of weak electrolytes at infinite dilution. Applications of conductivity

Measurements: determination of degree of dissociation, determination of Ka of acids determination of solubility product of sparingly soluble salts, conductometric titrations. Definition of pH and pKa, Buffer solution, Buffer action, Henderson – Hazel equation, Buffer mechanism of buffer action.

Suggested books:

1. Physical Chemistry, Peter Atkins, De Paula [Publisher: Oxford]
2. Physical Chemistry, P.C. Rakshit [Publisher: SBH]
3. A Textbook of Physical Chemistry, K. L. Kapoor [Publisher: McGraw Hill]
4. Principles of Physical Chemistry, Puri, Sharma, Pathania [Publisher: VPC]
5. Physical Chemistry, Ira Levine, [Publisher: Pearson]

RAFFLES UNIVERSITY

B.Sc. (PCM+CBZ) I Year (II Semester)

Schedule per week Practical: 6
Examination Time : 4 Hrs **Maximum Marks: 50 (20+30)**
Subject : Chemistry Lab-II **Paper Code : CH-108**

UNIT-I (Inorganic)

Volumetric Analysis

Complexometric titrations: Determination of Hardness of Water by EDTA

Paper Chromatography

Qualitative Analysis of the any one of the following Inorganic cations and anions by paper chromatography(Pb^{+2}, Cu^{+2}, Ca^{+2}, Ni^{+2}, Cl^{-}, Br^{-}, I^{-}, PO^{-3}_{4} and NO^{-}_{3}).

UNIT-II (Physical)

1. To determine the surface tension of a given liquid by drop number method.
2. To determine the viscosity of a given liquid.
3. To determine the specific refractivity of a given liquid

UNIT-III (Organic)

To study the process of sublimation of camphor and phthalic acid.

RAFFLES UNIVERSITY

Schedule per week Practical: 6

Examination Time	**: 3 Hrs**	**Maximum Marks: 50 (20+30)**	
Subject	**: Inorganic Chemistry**	**Paper Code**	**: CH-201**

Note: *Examiner will set nine questions in all and the students will be required to attempt only five questions selecting one question from each unit which will be of 6 marks each****. Question number one is compulsory containing six short answer type*** *questions covering the entire syllabus and will be of 1 mark.*

UNIT–I

Chemistry of Elements of I transition series: Definition of transition elements, position in the periodic table, General characteristics & properties of I transition elements, Structures & properties of some compounds of transition elements-TiO_2, $VOCl_2$, $FeCl_3$, $CuCl_2$ and $Ni(CO)_4$

UNIT-II

Chemistry of Elements of IInd & IIIrd transition series: General characteristics and properties of the IInd and IIIrd transition elements Comparison of properties of 3d elements with 4d & 5d elements with reference only to ionic radii, oxidation state, magnetic and Spectral properties and stereochemistry.

UNIT-III

Coordination Compounds: Werner's coordination theory, effective atomic number concept, chelates, nomenclature of coordination compounds, isomerism in coordination compounds, valence bond theory of transition metal complexes

UNIT-IV

Non-aqueous Solvents: Physical properties of a solvent, types of solvents and their general characteristics, reactions in non-aqueous solvents with reference to liquid NH_3 and liquid SO_2

Acids and Bases, HSAB Concept: Arrhenius, Bronsted-Lowry, the Lux-Flood, Solvent system and Lewis concepts of acids & bases, relative strength of acids & bases, Concept of Hard and Soft Acids &Bases. Symbiosis, electronegativity and hardness and softness.

Suggested books:

1. Fundamental concepts of Inorganic Chemistry, A.K. Das [Publisher: CBS]
2. Inorganic Chemistry, Malik, Tuli Madan, [Publisher: S.Chand]
3. Principles of Inorganic Chemistry, Puri, Sharma, Pathania [Publisher: VPC]
4. Inorganic Chemistry, R.P. Sarkar [Publisher: NCBA]
5. Concise Inorganic Chemistry, J. D. Lee, [Publisher: Oxford]

RAFFLES UNIVERSITY

Schedule per week Practical: 6

Examination Time : 3 Hrs **Maximum Marks: 50 (20+30)**

Subject : Organic Chemistry **Paper Code : CH-203**

Note: *Examiner will set nine questions in all and the students will be required to attempt only five questions selecting one question from each unit which will be of 6 marks each.* ***Question number one is compulsory containing six short answer type*** *questions covering the entire syllabus and will be of 1 mark.*

UNIT–I

Alcohols: Monohydric alcohols nomenclature, methods of formation by reduction of aldehydes, ketones, carboxylic acids and esters. Hydrogen bonding. Acidic nature. Reactions of alcohols. Dihydric alcohols — nomenclature, methods of formation, chemical reactions of vicinal glycols, oxidative cleavage [$Pb(OAc)_4$ and HIO_4] and pinacol-pinacolone rearrangement.

Epoxides: Synthesis of epoxides. Acid and base-catalyzed ring opening of epoxides, orientation of epoxidering opening, reactions of Grignard and organolithium reagents with epoxides

UNIT-II

Phenols: Nomenclature, structure and bonding. Preparation of phenols, physical properties and acidic character. Comparative acidic strengths of alcohols and phenols, resonance stabilization of phenoxide ion.Reactions of phenols — electrophilic aromatic substitution, Mechanisms of Fries rearrangement, Claisen rearrangement, Reimer-Tiemann reaction, Kolbe's reaction and Schotten and Baumann reactions.

UNIT-III

Ultraviolet (UV) absorption spectroscopy: Absorption laws (Beer-Lambert law), molar absorptivity, presentation and analysis of UV spectra, types of electronic transitions, effect of conjugation. Concept of chromophore and auxochrome. Bathochromic, hypsochromic, hyperchromic and hypochromic shifts. UV spectra of conjugated enes and enones, Woodward- Fieser rules, calculation of λmax of simple conjugateddienes and -unsaturated ketones. Applications of UV Spectroscopy in structure elucidation of simple organic compounds.

UNIT-IV

Carboxylic Acids & Acid Derivatives: Nomenclature of Carboxylic acids, structure and bonding, physical properties, acidity of carboxylic acids, effects of substituents on acid strength. Preparation of carboxylic acids. Reactions of carboxylic acids. Hell-Volhard Zelinsky reaction. Reduction of carboxylic acids. Mechanism of decarboxylation. Structure, nomenclature and preparation of acid chlorides, esters, amides and acid anhydrides. Relative stability of acyl derivatives. Physical properties, interconversion of acid derivatives by nucleophilic acyl substitution. Mechanisms of esterification and hydrolysis (acidic and basic)

Suggested books:

1. Organic Chemistry, Subrata Sengupta [Publisher: Oxford]
2. Organic Chemistry Vol-I, I. L. Finar [Publisher: Pearson]
3. Organic Chemistry Vol-I, Nemai Tewari, [Publisher: McGraw Hill]
4. Organic Chemistry, Jerry March, [Publisher: Willey]
5. A guidebook to mechanism in organic chemistry, Peter Sykes, [Publisher: Pearson]

OR

RAFFLES UNIVERSITY

Schedule per week Practical:

Examination Time	**: 3 Hrs**	**Maximum Marks:**	**50 (20+30)**
Subject	**: Polymer Chemistry (Elective)**	**Paper Code**	**: CH-203**

Note: *Examiner will set nine questions in all and the students will be required to attempt only five questions selecting one question from each unit which will be of 6 marks each.* ***Question number one is compulsory containing six short answer type*** *questions covering the entire syllabus and will be of 1 mark.*

UNIT-I

Introduction and history of polymeric materials: Different schemes of classification of polymers, Polymer nomenclature, Molecular forces and chemical bonding in polymers, Texture of Polymers.

Functionality and its importance: Criteria for synthetic polymer formation, classification of polymerization processes, Relationships between functionality, extent of reaction and degree of polymerization. Bifunctional systems, Poly-functional systems.

UNIT-II

Kinetics of Polymerization: Mechanism and kinetics of step growth, radical chain growth, ionic chain (both cationic and anionic) and coordination polymerizations, Mechanism and kinetics of copolymerization, polymerization techniques. **Crystallization and crystallinity:** Determination of crystalline melting point and degree of crystallinity, Morphology of crystalline polymers, Factors affecting crystalline melting point.**Nature and structure of polymers-**Structure, Property relationships.

UNIT-III

Determination of molecular weight of polymers (Mn, Mw, etc) by end group analysis, viscometry, light scattering and osmotic pressure methods. Molecular weight distribution and its significance. Polydispersityindex. **Glass transition temperature** (Tg) and determination of Tg, Free volume theory, WLF equation, Factors affecting glass transition temperature (Tg).

UNIT-IV

Polymer Solution – Criteria for polymer solubility, Solubility parameter, Thermodynamics of polymer solutions, entropy, enthalpy, and free energy change of mixing of polymers solutions, Flory- Huggins theory, Lower and Upper critical solution temperatures.

Properties of Polymers (Physical, thermal, Flow & Mechanical Properties). Brief introduction to preparation, structure, properties and application of the following polymers: polyolefins, polystyrene and styrene copolymers, poly(vinyl chloride) and related polymers, poly(vinyl acetate) and related polymers, acrylic polymers, fluoro polymers, polyamides and related polymers. Phenol formaldehyde resins (Bakelite, Novalac), polyurethanes, silicone polymers, polydienes, Polycarbonates, Conducting Polymers, [polyacetylene, polyaniline, poly(p-phenylene sulphide polypyrrole, polythiophene)].

Suggested books:

Seymour's Polymer Chemistry, Marcel Dekker, Inc.

G. Odian: Principles of Polymerization, John Wiley.

3.F.W. Billmeyer: Text Book of Polymer Science, John Wiley.

4.P. Ghosh: Polymer Science& Technology, Tata Mcgraw-Hill.

5.R.W. Lenz: Organic Chemistry of Synthetic High Polymers.

RAFFLES UNIVERSITY

Schedule per week Practical: 6

Examination Time : 3 Hrs **Maximum Marks: 50 (20+30)**

Subject : Physical Chemistry **Paper Code : CH-205**

Note: *Examiner will set nine questions in all and the students will be required to attempt only five questions selecting one question from each unit which will be of 6 marks each.* ***Question number one is compulsory containing six short answer type*** *questions covering the entire syllabus and will be of 1mark.*

UNIT-I

Thermodynamics-I: Definition of thermodynamic terms: system, surrounding etc. Types of systems, intensive and extensive properties. State and path functions and their differentials. Thermodynamic process.Concept of heat and work. Zeroth Law of thermodynamics, First law of thermodynamics: statement, definition of internal energy and enthalpy. Heat capacity, heat capacities at constant volume and pressure and their relationship.

UNIT-II

Thermodynamics-II: Joule's law, Joule Thomson coefficient for ideal gas and real gas: and inversion temperature. Calculation of w q dU & dH for the expansion of ideal gases under isothermal and adiabatic conditions for reversible process, Temperature dependence of enthalpy, Kirchoffs equation. Bond energiesand applications of bond energies.

UNIT-III

Chemical Equilibrium: Equilibrium constant and free energy, concept of chemical potential, Thermodynamic derivation of law of chemical equilibrium. Temperature dependence of equilibrium constant; Van't Hoff reaction isochore, Van't Hoff reaction isotherm. Le-Chatetier's principle and Clausius-Clapeyron equation its applications.

UNIT-IV

Distribution Law: Nernst distribution law – its thermodynamic derivation, Modification of distribution law when solute undergoes dissociation, association and chemical combination. Applications of distributionlaw: (i) Determination of degree of hydrolysis and hydrolysis constant of aniline hydrochloride. (ii) Determination of equilibrium constant of potassium triiodide complex and process of extraction.

Suggested books:

1. Physical Chemistry, Peter Atkins, De Paula [Publisher: Oxford]
2. Physical Chemistry, P.C. Rakshit [Publisher: SBH]
3. A Textbook of Physical Chemistry Vol 2,3,5, K. L. Kapoor [Publisher: McGraw Hill]
4. Principles of Physical Chemistry, Puri, Sharma, Pathania [Publisher: VPC]
5. Physical Chemistry, Ira Levine, [Publisher: Pearson]

RAFFLES UNIVERSITY

SCHOOL OF BASIC AND APPLIED SCIENCES
Department of Chemistry

Schedule per week Practical: 6

Examination Time	**: 4 Hrs**	**Maximum Marks: 50 (20+30)**	
Subject	**: Chemistry Lab-III**	**Paper Code**	**: CH-207**

UNIT-I (Inorganic)

1. Gravimetric Analysis

Quantitative estimations of, Cu^{2+} as copper thiocyanate and Ni^{2+} as Ni – dimethylglyoxime.

2. Colorimetry:

To verify Beer - Lambert law for $KMnO_4/K_2Cr_2O_7$ and determine the concentration of the given $KMnO_4/K_2Cr_2O_7$ solution.

UNIT-II (Physical)

1. To determine the CST of phenol – water system.
2. To determine the solubility of benzoic acid at various temperatures and to determine the H of the dissolution process.

UNIT-III (Organic)

Laboratory Techniques

(a) Steam distillation (non evaluative) Naphthalene from its suspension in water
Separation of *o*-and *p*-nitrophenols

(b) Column chromatography (non evaluative) Separation of fluorescein and methyleneblue
Separation of leaf pigments from spinach leaves

Distribution of marks

1. UNIT-I	10 (6+4) marks
2. UNIT-II	10 (6+4) marks
3. UNIT-III	10 (6+4) marks
4. Viva-voce	10 (6+4) marks
5. Lab Record	10 (6+4) marks

RAFFLES UNIVERSITY

SCHOOL OF BASIC AND APPLIED SCIENCES
Department of Chemistry

Schedule per week Practical: 6
Examination Time : 3 Hrs **Maximum Marks: 50 (20+30)**
Subject : Inorganic Chemistry **Paper Code : CH-202**

Note: *Examiner will set nine questions in all and the students will be required to attempt only five questions selecting one question from each unit which will be of 6 marks each****. Question number one is compulsory containing six short answer type*** *questions covering the entire syllabus and will be of 1 mark.*

UNIT-I

Chemistry of f -block elements:
Lanthanides: Electronic structure, oxidation states and ionic radii and lanthanide contraction, complex formation, occurrence and isolation, lanthanide compounds.

UNIT-II

Chemistry of f -block elements
Actinides: General features and chemistry of actinides, chemistry of separation of Np, Pu and Am from U, Comparison of properties of Lanthanides and Actinides and with transition elements.

UNIT-III

Theory of Qualitative and Quantitative Inorganic Analysis-I:
Chemistry of analysis of various acidic radicals, Chemistry of identification of acid radicals in typical combinations, Chemistry of interference of acid radicals including their removal in the analysis of basic radicals.

UNIT-IV

Theory of Qualitative and Quantitative Inorganic Analysis-II:
Chemistry of analysis of various groups of basic radicals, Theory of precipitation, co- precipitation, Post-precipitation, purification of precipitates.

Suggested books:

1. Fundamental concepts of Inorganic Chemistry, A.K. Das [Publisher: CBS]
2. Inorganic Chemistry, Malik, Tuli Madan, [Publisher: S.Chand]
3. Principles of Inorganic Chemistry, Puri, Sharma, Pathania [Publisher: VPC]
4. Inorganic Chemistry, R.P. Sarkar [Publisher: NCBA]
5. Concise Inorganic Chemistry, J. D. Lee, [Publisher: Oxford]

OR

Schedule per week Lectures: 2

Examination Time	**: 3 Hrs**	**Maximum Marks: 50 (20+30)**	
Subject	**: Coordination Chemistry (Elective)**	**Paper Code**	**: CH-202**

Note: *Examiner will set nine questions in all and the students will be required to attempt only five questions selecting one question from each unit which will be of 6 marks each.* ***Question number one is compulsory containing six short answer type*** *questions covering the entire syllabus and will be of 1 mark.*

UNIT-I

Werner's theory, valence bond theory (inner and outer orbital complexes), electroneutrality principle andback bonding. Crystal field theory, measurement of 10 Dq (Δo), CFSE in weak and strong fields, pairing energies, factors affecting the magnitude of 10 Dq (Δo, Δt). Octahedral vs. tetrahedral coordination, tetragonal distortions from octahedral geometry Jahn-Teller theorem, square planar geometry. Qualitativeaspect of Ligand field and MO Theory.

IUPAC nomenclature of coordination compounds, isomerism in coordination compounds.Stereochemistry of complexes with 4 and 6 coordination numbers. Chelate effect, polynuclear complexes, Labile and inert complexes.

UNIT-II

Transition Elements: General group trends with special reference to electronic configuration, colour, variable valency, magnetic and catalytic properties, ability to form complexes. Stability of various oxidation states and e.m.f. (Latimer diagrams) Different between the first, second and third transition series. Chemistry of Cr, Mn, Fe and Co in various oxidation states with special reference to the followingcompounds: peroxo compounds of chromium, potassium dichromate, potassium permanganate, potassiumferrocyanide, potassium ferricyanide, sodium nitroprusside and sodium cobaltinitrite.

UNIT-III

Lanthanoids and Actinoids: Electronic configuration, oxidation states, colour, spectral and magnetic properties, lanthanide contraction, separation of lanthanides (ion-exchange method only).

UNIT-IV

Inorganic Reaction Mechanism : Introduction to inorganic reaction mechanisms. Substitution reactions insquare planar complexes, Trans- effect, theories of trans effect. Thermodynamic and Kinetic stability.

Suggested books:

1. Purcell, K.F & Kotz, J.C., Inorganic Chemistry W.B. Saunders Co, 1977.
2. Huheey, J.E., Inorganic Chemistry, Prentice Hall, 1993.
3. Cotton, F.A. & Wilkinson, G., Advanced Inorganic Chemistry Wiley-VCH, 1999
4. Basolo, F, and Pearson, R.C., Mechanisms of Inorganic Chemistry, John Wiley & Sons, NY, 1967.
5. Greenwood, N.N. & Earnshaw A., Chemistry of the Elements, ButterworthHeinemann, 1997.
6. Miessler, G. L. &. Tarr, Donald A. Inorganic Chemistry 3rd Ed.(adapted), Pearson, 2009

OR

Schedule per week Lectures: 2
Examination Time : 3 Hrs Maximum Marks: 50 (20+30)
Subject : Novel Inorganic Solids (Elective) Paper Code : CH-202

Note: *Examiner will set nine questions in all and the students will be required to attempt only five questions selecting one question from each unit which will be of 6 marks each.* ***Question number one is compulsory containing six short answer type*** *questions covering the entire syllabus and will be of 1 mark.*

UNIT-I

Synthesis and modification of inorganic solids: Conventional heat and beat methods, Co-precipitationmethod, Sol-gel methods, Hydrothermal method, Ion-exchange and Intercalation methods.

Inorganic solids of technological importance: Solid electrolytes – Cationic, anionic, mixed Inorganicpigments – coloured solids, white and black pigments.

One-dimensional metals, molecular magnets, inorganic liquid crystals.

UNIT-II

Nanomaterials: Overview of nanostructures and nanomaterials: classification. Preparation of gold and silver metallic nanoparticles, self-assembled nanostructures-control of nanoarchitecture onedimensional control. Carbon nanotubes and inorganic nanowires. Bioinorganic nanomaterials, DNA and nanomaterials, natural and antisical nanomaterials, bionano composites. Introduction to engineering materials for mechanical construction: Composition, mechanical and fabricating characteristics and applications of various types of cast irons, plain carbon and alloy steels, copper, aluminum and their alloys like duralumin, brasses and bronzes cutting tool materials, super alloys thermoplastics, thermosets and composite materials.

UNIT-III

Composite materials:

Introduction, limitations of conventional engineering materials, role of matrix in composites, classification, matrix materials, reinforcements, metal-matrix composites, polymer-matrix composites, fibre-reinforced composites, environmental effects on composites, applications of composites.

UNIT-IV

Speciality polymers: Conducting polymers - Introduction, conduction mechanism, polyacetylene, polyparaphenylene and polypyrole, applications of conducting polymers, Ion-exchange resins and their applications. Ceramic & Refractory: Introduction, classification, properties, raw materials, manufacturing and applications.

Suggested books:

1. Atkins, Peter, Overton, Tina, Rourke, Jonathan, Weller, Mark and Armstrong, Fraser Shriver& Atkins' Inorganic Chemistry, 5 th Edition, Oxford University Press 2011- 2012
2. Adam, D.M. Inorganic Solids: An introduction to concepts in solid-state structural chemistry, John Wiley and Sons, London, New York, Sydney, Toronto, 1974
3. Poole Jr., Charles P., Owens, Frank J., Introduction to Nanotechnology John Wiley and Sons, 2003.

RAFFLES UNIVERSITY

Subject : Organic Chemistry **Paper Code : CH-204**

Note: *Examiner will set nine questions in all and the students will be required to attempt only five questions selecting one question from each unit which will be of 6 marks each.* ***Question number one is compulsory containing six short answer type*** *questions covering the entire syllabus and will be of 1 mark.*

UNIT-I

Infrared (IR) absorption spectroscopy: Molecular vibrations, Hooke's law, selection rules, intensity and position of IR bands, measurement of IR spectrum, fingerprint region, characteristic absorptions of various functional groups and interpretation of IR spectra of simple organic compounds. Applications of IR spectroscopy in structure elucidation of simple organic compounds.

UNIT-II

Amines: Structure and nomenclature of amines, physical properties. Separation of a mixture of primary, secondary and tertiary amines. Structural features affecting basicity of amines. Preparation of alkyl and arylamines (reduction of nitro compounds, nitriles, reductive amination of aldehydic and ketonic compounds. Gabriel phthalimide reaction, Hofmann bromamide reaction. electrophilic aromatic substitution in aryl amines, reactions of amines with nitrous acid.

UNIT-III

Diazonium Salts: Mechanism of diazotization, structure of benzene diazonium chloride, Replacement of diazo group by H, OH, F, Cl, Br, I, NO2 and CN groups, reduction of diazonium salts to hyrazines, couplingreaction and its synthetic application.

Nitro Compounds: Preparation of nitro alkanes and nitro arenes and their chemical reactions. Mechanismof electrophilic substitution reactions in nitro arenes and their reductions in acidic, neutral and alkaline medium.

UNIT-IV

Aldehydes and Ketones: Nomenclature and structure of the carbonyl group. Synthesis of aldehydes and ketones with particular reference to the synthesis of aldehydes from acid chlorides, advantage of oxidation of alcohols with chromium trioxide (Sarett reagent) pyridinium chlorochromate (PCC) and pyridinium dichromate, Physical properties. Comparison of reactivities of aldehydes and ketones. Mechanism ofnucleophilic additions to carbonyl group with particular emphasis on benzoin, aldol, Perkin and Knoevenagel condensations. Condensation with ammonia and its derivatives. Wittig reaction. Mannich reaction. Oxidationof aldehydes, Baeyer–Villiger oxidation of ketones, Cannizaro reaction. MPV, Clemmensen, Wolff- Kishner,$LiAlH_4$ and $NaBH_4$ reductions.

Suggested books:

1. Organic Chemistry, Subrata Sengupta [Publisher: Oxford]
2. Organic Chemistry Vol-I, I. L. Finar [Publisher: Pearson]
3. Organic Chemistry Vol-I, Nemai Tewari, [Publisher: McGraw Hill]
4. Organic Chemistry, Jerry March, [Publisher: Willey]
5. Organic Chemistry, Clayden, Greeves, Warren [Publisher: Oxford]

B.Sc. (PCM+CBZ) II Year (IV Semester)

Schedule per week Practical: 6
Examination Time : 3 Hrs Maximum Marks: 50 (20+30)
Subject : Physical Chemistry Paper Code : CH-206

Note: *Examiner will set nine questions in all and the students will be required to attempt only five questions selecting one question from each unit which will be of 6 marks each.* ***Question number one is compulsory containing six short answer type*** *questions covering the entire syllabus and will be of 1 mark.*

UNIT-I

Thermodynamics-III: Second law of thermodynamics, need for the law, different statements of the law, Carnot's cycles and its efficiency, Carnot's theorem, Thermodynamics scale of temperature. Concept of entropy– entropy as a state function, entropy as a function of V & T, entropy as a function of P & T, entropychange in physical change, entropy as a criteria of spontaneity and equilibrium. Entropy change in ideal gases and mixing of gases.

UNIT-II

Thermodynamics-IV: Third law of thermodynamics: Nernst heat theorem, statement of concept of residual entropy, evaluation of absolute entropy from heat capacity data. Gibbs and Helmholtz functions; Gibbs function(G) and Helmholtz function (A) as thermodynamic quantities, A & G as criteria for thermodynamic equilibrium and spontaneity, their advantage over entropy change. Variation of G and A with P, V and T.

UNIT-III

Electrochemistry-III: Electrolytic and Galvanic cells, reversible & Irreversible cells, conventional representation of electrochemical cells, EMF of cell and its measurement, Wes ton standard cell, activity and activity coefficients, Calculation of thermodynamic quantities of cell reaction (G, H& K).Types of reversible electrodes metal-metal ion gas electrode, metal–insoluble salt anion and redox electrodes. Electrode reactions, Nernst equations, derivation of cell EMF and single electrode potential. Standard Hydrogen electrode, reference electrodes, standard electrodes potential, sign conventions, electrochemicalseries and its applications.

UNIT-IV

Electrochemistry-IV: Concentration cells with and without transference, liquid junction potential, application of EMF measurement i.e. valency of ions, solubility product activity coefficient, potentiometric titration (acid- base and redox). Determination of pH using Hydrogen electrode, Quinhydrone electrode and glass electrode by potentiometric methods.

Suggested books:

1. Physical Chemistry, Peter Atkins, De Paula [Publisher: Oxford]
2. Physical Chemistry, P.C. Rakshit [Publisher: SBH]
3. A Textbook of Physical Chemistry Vol 1,2,3, K. L. Kapoor [Publisher: McGraw Hill]
4. Principles of Physical Chemistry, Puri, Sharma, Pathania [Publisher: VPC]
5. Physical Chemistry, Ira Levine, [Publisher: Pearson]

B.Sc. (PCM+CBZ) II Year (IV Semester)

Schedule per week Practical: 6
Examination Time : 4 Hrs Maximum Marks: 50 (20+30)
Subject : Chemistry Lab-IV Paper Code : CH-208

UNIT-I (Inorganic)

Preparations: Preparation of Cuprous chloride, prussion blue from iron fillings, tetraammine cupric sulphate, chrome alum, potassium trioxalatochromate (III).

UNIT-II (Physical)

1. To determine the enthalpy of neutralisation of a weak acid/weak base vs. strong base/strong acid and determine the enthalpy of ionisation of the weak acid/weakbase.
2. To determine the enthalpy of solution of solid calcium chloride
3. To study the distribution of iodine between water and CCl4.

UNIT-III (Organic)

Systematic identification (detection of extra elements, functional groups, determination of melting point orboiling point and preparation of at least one pure solid derivative) of the following simple mono and bifunctional organic compounds: Naphthalene, anthracene, acenaphthene, benzyl chloride, *p*- dichlorobenzene, *m*-dinitrobenzene, *p*-nitrotoluene, resorcinol , hydroquinone, α-naphthol, β-naphthol, benzophenone, ethyl methyl ketone, benzaldehyde, vanillin, oxalic acid, succinic acid, benzoic acid, salicyclic acid, aspirin, phthalic acid, cinnamic acid, benzamide, urea, acetanilide, benzanilide, aniline hydrochloride, p- toluidine, phenyl salicylate (salol), glucose, fructose, sucrose, *o*-, *m*-, *p* nitroanilines, thiourea.

Distribution of marks

1. UNIT-I 10 (6+4) marks
2. UNIT-II 10 (6+4) marks
3. UNIT-III 10 (6+4) marks
4. Viva-voce 10 (6+4) marks
5. Lab Record 10 (6+4) marks

RAFFLES UNIVERSITY

Schedule per week Lectures : 2 Hrs

Examination Time	**: 3 Hrs**	**Maximum Marks: 50 (20+30)**
Subject	**: Inorganic Chemistry**	**Paper Code : CH-301**

Note: *Examiner will set nine questions in all and the students will be required to attempt only five questions selecting one question from each unit which will be of 6 marks each****. Question number one is compulsory containing six short answer type*** *questions covering the entire syllabus and will be of 1 mark.*

UNIT-I

Metal-ligand bonding in Transition Metal Complexes: Limitations of valence bond theory, an elementary idea of crystal-field theory, spectrochemical series, crystal field splitting in octahedral, tetrahedral and square planar complexes, factors affecting the crystal-field parameters.

UNIT-II

Thermodynamic and Kinetic Aspects of Metal Complexes: Jahn-Teller effect of the transition metal complexes, A brief outline of thermodynamic stability of metal complexes and factors affecting the stability, substitution reactions of square planar complexes of Pt (II).

UNIT-III

Magnetic Properties of Transition Metal Complexes: Types of magnetic behavior, spin-only formula, orbital contribution to magnetic moments, L-S coupling, spectroscopic ground states, application of magnetic moment data for 3d metal complexes.

UNIT-IV

Electron Spectra of Transition Metal Complexes: Types of electronic transitions, selection rules for d-d transitions, appearance of colour in transition metal complexes, Orgel-energy level diagram for d^1 and d^9 states, discussion of the electronic spectrum of $[Ti(H_2O)_6]^{+3}$ complex ion.

Suggested books:

1. Advanced Inorganic Chemistry, F.A. Cotton and Wilkinson, John Wiley.
2. Inorganic Chemistry, J.E. Huheey, HarperCollins.
3. Magnetochemistry, R.L. Carlin, Springer Verlog.
4. Magnetochemistry, A. Earnshaw.
5. Introduction to ligand fields, B.N. Figgis, Wiley Eastern-IIed.
6. Inorganic Chemistry, by Malik, Tuli Madan, S. Chand . & company.
7. Inorganic Chemistry B.Sc. -V, by Ramesh Kapoor and R S Chopra, R. Chand. & company.

B.Sc. (PCM+CBZ) III Year (V Semester)

Schedule per week Lectures : 2 Hrs

Examination Time	**: 3 Hrs**	**Maximum Marks: 50 (20+30)**
Subject	**: Organic Chemistry**	**Paper Code : CH-303**

Note: *Examiner will set nine questions in all and the students will be required to attempt only five questions selecting one question from each unit which will be of 6 marks each.* ***Question number one is compulsory containing six short answer type*** *questions covering the entire syllabus and will be of 1mark.*

UNIT-I

NMR Spectroscopy-I: Principle of nuclear magnetic resonance, introduction to proton NMR, number of signals, peak areas and integration, equivalent and nonequivalent protons positions of signals and chemicalshift, shielding and de-shielding of protons, proton counting, splitting of signals and coupling constants.

UNIT-II

NMR Spectroscopy-II: Factors affecting chemical shift, Discuss ion of proton NMR spectra of the molecules: ethyl bromide, n-propylbromide, isopropyl bromide, 1,1-dibromoethane, 1,1,2-tribromoethane, ethanol, acetaldehyde, ethyl acetate, toluene, benzaldehyde and acetophenone. Brief introduction and chemical shift values of carbon NMR. Simple problems on NMR spectroscopy for structure determination of organic compounds.

UNIT-III

Carbohydrates-I: Classification and nomenclature. Monosaccharides, mechanism of osazone formation, inter-conversion of glucose and fructose, chain lengthening and chain shortening of aldoses. Configuration of monosaccharides. Erythro and threo diastereomers. Conversion of glucose into mannose. Formation of glycosides, ethers and esters. Determination of ring size of glucose and fructose. Open chain and cyclic structure of D (+)-glucose &D (-) fructose. Mechanism of mutarotation. Structures of ribose and deoxyribose.

UNIT-IV

Carbohydrates-II: An introduction to disaccharides (maltose, sucrose and lactose) and polysaccharides (starch and cellulose) without involving structure determination.

Organometallic Compounds:

Organomagnesium compounds: the Grignard reagents-formation, structure and chemical reactions. Organozinc compounds: formation and chemical reactions. Organolithium compounds: formation and chemical reactions.

Suggested Books:

1. Principles of Biochemistry, A. L. Lehninger, Worth Publishers.
2. Biochemistry, L.Stryer, W.H.Freeman.
3. Biochemistry, J. David Rawn, Neil Patterson.
4. Biochemistry, Voet and Voet, John Wiley.
5. Organic chemistry For B. Sc. III Year By P Bhagchandani, Sahitayabhawan Publications.

RAFFLES UNIVERSITY

Schedule per week Lectures	**: 2 Hrs**		
Examination Time	**: 3 Hrs**	**Maximum Marks: 50 (20+30)**	
Subject	**: Physical Chemistry**	**Paper Code**	**: CH-305**

Note: *Examiner will set nine questions in all and the students will be required to attempt only five questions selecting one question from each unit which will be of 6 marks each.* ***Question number one is compulsory containing six short answer type*** *questions covering the entire syllabus and will be of 1 mark.*

UNIT-I

Quantum Mechanic s-I: Black-body radiation, Plank's radiation law, photoelectric effect, heat capacity of solids, Compton effect, wave function and its significance of Postulates of quantum mechanics , quantum mechanical operator, commutation relations, Hamiltonian operator, Hermitian operator, average value of square of Hermitian as a positive quantity, Role of operators in quantum mechanics, To show quantum mechanically that position and momentum cannot be predicated simultaneously, Determination of wave function & energy of a particle in one dimensional box, Pictorial representation and its significance,

UNIT-II

Physical Properties and Molecular Structure: Optical activity, polarization-(clausius-Mossottiequation). Orientation of dipoles in an electric field, dipole moment, measurement of dipole moment-temperature method and refractivity method, dipole moment and structure of molecules, Magnetic permeability, magnetic susceptibility and its determination. Application of magnetic susceptibility, magnetic properties-paramagnetism, diamagnetism and ferromagnetics.

UNIT-III

Spectroscopy-I: Electromagnetic radiation, regions of spectrum, basic features of spectroscopy, statementof Born-Oppenheimer approximation, Degrees of freedom.

Rotational Spectrum: Diatomic molecules. Energy levels of rigid rotator (semi-classical principles), selection rules, spectral intensity distribution using population distribution (Maxwell-Boltzmann distribution), determination of bond length, qualitative description of non-rigid rotor, isotope effect.

UNIT–IV

Spectroscopy-II, Vibrational spectrum: Infrared spectrum: Energy levels of simple harmonic oscillator, selection rules, pure vibrational spectrum, intensity, determination of force constant and qualitative relationof force constant and bond energies, effects of an harmonic motion and isotopic effect on the spectra, ideaof vibrational frequencies of different functional groups.

Raman Spectrum: Concept of polarizibility, pure rotational and pure vibrational Raman spectra of diatomic molecules, selection rules, Quantum theory of Raman spectra.

Text Books:

1. Physical Chemistry for B.Sc. Students by S C Khetarpal, R. Chand & Co, New Delhi
2. Principles of Physical Chemistry for B.Sc. Students by Puri, Sharma & Pathania
3. Introductory Quantum Chemistry, A.K. Chandra, Tata McGraw Hill.
4. Quantum Chemistry, I.M. Levine, Prentice Hall.
5. Basic Principles of Spectroscopy, G.M. Barrow, McGraw Hill.
6. Modern Spectroscopy, J.M. Hollas, John Wiley.
7. Quantum Chemistry, J. P. Lowe & K. Peterson, Academic Press (2005).

RAFFLES UNIVERSITY

Schedule per week Practical : 6 Hrs
Examination Time : 4 Hrs **Maximum Marks: 50 (30+20)**
Subject : Chemistry Lab-V **Paper Code : CH-307**

UNIT-I (Inorganic)

Semimicro qualitative analysis of mixture containing not more than four radicals (including interfering,Combinations and excluding insolubles):

Pb^{2+}, Hg^{2+} , Hg_2^{2+}, Ag^{+}, Bi^{3+}, Cu^{2+}, Cd^{2+}, As^{3+} , Sb^{3+}, Sn^{2+}, Fe^{3+} ,Cr^{3+}, Al^{3+} , Co^{2+}, Ni^{2+}, Mn^{2+}, Zn^{2+} , Ba^{2+} , Sr^{2+} , Ca^{2+}, Mg^{2+},

UNIT-II (Physical)

1. To determine the strength of the given acid solution (mono and dibasic acid) conductometrically.
2. To determine the solubility and solubility product of a sparingly soluble electrolyte conductometrically

UNIT-III (Organic)

Chromatography Method

Determination of Rf values and identification of organic compounds

(a) Separation of green leaf pigments (spinach leaves may be used)by paper chromatographic method
(b) Separation of a mixture of colored organic compounds using common organic solvents by TLC.

Distribution of marks

1. UNIT-I	10 (6+4) Marks
2. UNIT-II	10 (6+4) Marks
3. UNIT-III	10 (6+4) Marks
4. Viva-voce	10 (6+4) Marks
5. Lab Record	10 (6+4) Marks

Suggested Books:

1. Experiments and Techniques in Organic Chemistry, D. Pasto, C. Johnson and M. Miller,Prentice Hall.
2. Macroscale and Microscale Organic Experiments, K.L. Williamson, D.C. Heath.
3. Systematic Qualitative Organic Analysis, H. Middleton, Adward Arnold.
4. Handbook of Organic Analysis-Qualitative and Quantitative, H. Clark, Adward Arnold.
5. Vogel's Textbook of Practical Organic Chemistry, A.R. Tatchell, John Wiley.
6. Advanced practical chemistry, Jagdamba, Yadav and shrivastava, PragatiPrakasan
7. Advanced organic practical chemistry, J.N.Gurtu and R. Kappor, S. Chand

Schedule per week Lectures	**: 2 Hrs**		
Examination Time	**: 3 Hrs**	**Maximum Marks: 50 (20+30)**	
Subject	**: Inorganic Chemistry**	**Paper Code**	**: CH-302**

Note: *Examiner will set nine questions in all and the students will be required to attempt only five questions selecting one question from each unit which will be of 6 marks each****. Question number one is compulsory containing six short answer type*** *questions covering the entire syllabus and will be of 1 mark.*

UNIT–I

Molecular Orbital Theory: Drawbacks of VBT and introduction of LCAO method, Simple MO diagrams of homonuclear molecules - C_2, N_2, O_2, Calculation of Bond order, MO diagrams of halogensand correlation of color of complexes. Non-crossing rule and MO of heteronuclear molecules – CO andHX.

UNIT-II

Organometallic Chemistry: Definition, nomenclature and classification of organometallic compounds. π-acidity of ligands and its effect on stretching frequencies, 18 electron rule, Preparation, properties, andbonding of alkyls of Li, Al, Hg, Brief account of metal-ethylenic complexes – Zeises salt, Organometalliccatalysis – Oxidative addition and Reductive elimination, Hydrogenation of olefins.

UNIT-III

Bioinorganic Chemistry: Essential and trace elements in biological processes, metalloporphyrins withspecial reference to haemoglobin and myoglobin. Biological role of alkali and alkaline earth metal ionswith special reference to Ca^{+2}. Nitrogen fixation.

UNIT-IV

Silicones and Phosphazenes: Silicones and phosphazenes, their preparation, properties, structure and uses

Suggested Books:

1. Principles of Bioinorganic Chemistry, S.J. Lippard and J.M. Berg, University Science Books.
2. The Organometallic Chemistry of the Transition Metals, R.H. Crabtree, John Wiley.
3. Organometallics, A. Salzer, Ch. Elschenbrioch.VCH Publications.
4. Inorganic Chemistry, by Malik, Tuli Madan, S. Chand . & company.
5. Inorganic Chemistry, by James E. Huheey, E.A. Keiter, R. L. Keiter, O. K. Medhi
6. Inorganic Chemistry B.Sc. -I, by Ramesh Kapoor and R S Chopra, R. Chand & company.

RAFFLES UNIVERSITY

Schedule per week Lectures	**: 2 Hrs**		
Examination Time	**: 3 Hrs**	**Maximum Marks: 50(20+30)**	
Subject	**: Organic Chemistry**	**Paper Code**	**: CH-304**

Note: *Examiner will set nine questions in all and the students will be required to attempt only five questions selecting one question from each unit which will be of 6 marks each.* ***Question number one is compulsory containing six short answer type*** *questions covering the entire syllabus and will be of 1 mark.*

UNIT-I

Heterocyclic Compounds-I: Introduction, Molecular orbital picture and aromatic characteristics of pyrrole, furan, thiophene and pyridine. Methods of synthesis and chemical reactions with particular emphasis on the mechanism of electrophilic substitution. Mechanism of nucleophilic substitution reactions in pyridine derivatives. Comparison of basicity of pyridine, piperidine and pyrrole

UNIT-II

Heterocyclic Compounds-II: Introduction to condensed five and six- membered heterocycles. Prepration and reactions of indole, quinoline and isoquinoline with special reference to Fisher indole synthesis, Skraup synthesis and Bischler-Napieralski synthesis. Mechanism of electrophilic substitutionreactions of, quinoline and isoquinoline**. Organosulphur Compounds:** Nomenclature, structural features, Methods of formation and chemical reactions of thiols, thioethers, sulphonic acids, sulphonamides and sulphaguanidine. Synthetic detergents alkyland aryl sulphonates.

UNIT-III

Organic Synthesis *via* Enolates: Acidity of hydrogens, alkylation of diethyl malonate and ethylacetoacetate. Synthesis of ethyl acetoacetate: the Claisen condensation. Keto-enol tautomerism ofethyl acetoacetate.
Synthetic Polymers: Addition or chain-growth polymerization. Free radical vinyl polymerization, ionicvinyl polymerization, and Ziegler-Natta polymerization and vinyl polymers. Condensation or step growth polymerization. Polyesters, polyamides, phenol formaldehyde resins. Natural and synthetic rubbers.

UNIT-IV

Amino Acids, Peptides& Proteins: Classification, of amino acids. Acid-base behavior, isoelectric pointand electrophoresis. Preparation of α-amino acids. Structure and nomenclature of peptides and proteins. Classification of proteins. Peptide structure determination, end group analysis, selective hydrolysis of peptides. Classical peptide synthesis, solid–phase peptide synthesis. Structures of peptides and proteins: Primary & Secondary structure.

Suggested Books:

1. Sykes, P. A Guidebook to Mechanism in Organic Chemistry 6th Ed., Prentice-Hall (1996).
2. Finar, I. L. & Finar, A. L. Organic Chemistry Vol. 2, Addison-Wesley (1998).
3. Finar, I. L. Organic Chemistry Vol. 1, Longman (1998).
4. Natural Products, their chemistry and biological significance. J. Mann, R. S. Davidso

Schedule per week Lectures	**: 2 Hrs**		
Examination Time	**: 3 Hrs**	**Maximum Marks: 50(20+30)**	
Subject	**: Physical Chemistry**	**Paper Code**	**: CH-306**

Note: *Examiner will set nine questions in all and the students will be required to attempt only five questions selecting one question from each unit which will be of 6 marks each****. Question number one is compulsory containing six short answer type*** *questions covering the entire syllabus and will be of 1 mark.*

UNIT-I

Spectroscopy-III: -Electronic Spectrum: Concept of potential energy curves for bonding and antibonding molecular orbitals, qualitative description of selection rules and Franck- Condon principle. Qualitative description of sigma and pie and n molecular orbital (MO) their energy level and respectivetransitions.

UNIT-II

Photochemistry: Interaction of radiation with matter, difference between thermal and photochemical processes. Laws of photochemistry: Grotthus-Drapper law, Stark-Einstein law (law of photochemical equivalence) Jablonski diagram depiciting various processes occurring in the excited state, qualitative description of fluorescence, phosphorescence, non-radiative processes (internal conversion, intersystem crossing), quantum yield, photosensitized reactions-energy transfer processes (simple examples).

UNIT-III

Solutions: -Dilute Solutions and Colligative Properties: Ideal and non-ideal solutions, methods of expressing concentrations of solutions, activity and activity coefficient. Dilute solution, Colligative properties, Raoult'slaw, relative lowering of vapour pressure, molelcular weight determination, Osmosis law of osmotic pressure and its measurement, determination of molecular weight from osmoticpressure. Elevation of boiling point and depression of freezing point, Thermodynamic derivation of relation between molecular weight and elevation in boiling point and depression in freezing point. Experimental methods for determining various colligative properties. Abnormal molar mass, degree ofdissociation and association of solutes.

UNIT-IV

Phase Equillibrium: Statement and meaning of the terms- phase component and degree of freedom, thermodynamic derivation of Gibbs phase rule, phase equilibria of one component System, water and Sulpher systems. Phase equilibria of two component systems, solid-liquid equilibria, simple eutectic, Pb- Ag system, desilverisation of lead

Suggested books:

1. Physical Chemistry, Peter Atkins, De Paula [Publisher: Oxford]
2. Physical Chemistry, P.C. Rakshit [Publisher: SBH]
3. A Textbook of Physical Chemistry Vol 1,2,3, K. L. Kapoor [Publisher: McGraw Hill]
4. Principles of Physical Chemistry, Puri, Sharma, Pathania [Publisher: VPC]
5. Physical Chemistry, Ira Levine, [Publisher: Pearson]

Schedule per week Lectures : 6 Hrs
Examination Time : 4 Hrs **Maximum Marks: 50(30+20)**
Subject : Chemistry Lab-VI **Paper Code : CH-308**

UNIT-I (Inorganic Chemistry)
Semi micro qualitative analysis of mixture containing not more than four radicals (including interfering,Combinations and excluding insoluble's) NH_4^+, CO^{2-}, S^{2-}, SO_3^{2-}, SO_2^{2-}, NO_3^-, CH_3COO^-, Cl^-, Br^-, I^-, NO^-, SO^{2-}, $C_2O_4^{2-}$, PO^{3-}, BO_3^{3-}

UNIT-II (Physical Chemistry)

1. To determine the strength of given acid solution (mono and dibasic acid)/$KMnO_4$ – Mohrsalt potentiometrically.
2. To determine the molecular weight of a non-volatile solute by Rast method.
3. To standardize the given acid solution (mono and dibasic acid) pH metrically.

UNIT-III (Organic Chemistry) Synthesis of the following organic compounds:

(a) To prepare o-chlorobenzoic acid from anthranilic acid.
(b) To prepare p-bromoaniline from p-bromoacetanilide.
(c) To prepare m-nitroaniline from m-dinitrobenzene.
(d) To prepare S-Benzyl-iso-thiouronium chloride from thiourea

Distribution of marks

1. UNIT-I 10 (6+4) Marks
2. UNIT-II 10 (6+4) Marks
3. UNIT-III 10 (6+4) Marks
4. Viva-voce 10 (6+4) Marks
5. Lab Record 10 (6+4) Marks

Suggested Books:

1. Experiments and Techniques in Organic Chemistry, D. Pasto, C. Johnson and M. Miller, PrenticeHall.
2. Macroscale and Microscale Organic Experiments, K.L. Williamson, D.C. Heath.
3. Systematic Qualitative Organic Analysis, H. Middleton, Adward Arnold.
4. Handbook of Organic Analysis-Qualitative and Quantitative, H. Clark, Adward Arnold.
5. Vogel's Textbook of Practical Organic Chemistry, A.R. Tatchell, John Wiley.

Scheme of Examination and Syllabus

For B.Sc. (CBZ)

Subject: BOTANY

Semester I to VI (2022-2025)

RAFFLES
UNIVERSITY

SCHOOL OF BASIC AND APPLIED SCIENCES (SOBAS)

RAFFLES UNIVERSITY

Japanese Zone, National Highway-48, Neemrana-301705,District: Alwar,

RAJASTHAN, INDIA www.rafflesuniversity.edu.in

SCHOOL OF BASIC AND APPLIED SCINCES
Department of Botany
(Syllabus and Scheme of Studies w. e. f. 2022-23)

Course Specific Outcomes for Department of Botany (B.Sc. Medical)

On completion of the course the students will:

1. acquire the basic knowledge of plant sciences through theory and practical.
2. get immense knowledge of different specializations and biological processes of Botany such as plant taxonomy, developmental biology, biochemistry, physiology, morphology, anatomy, reproduction, genetics, plant breeding, biotechnology, evolution, ecology and molecular biology of different forms of life.
3. able to understand, identify, classify and compare the different groups of plants (from algae to angiosperms).
4. help students to understand the degree of genetic diversity and phylogeny of plants.
5. understand the economic importance of Algae, Fungi and other microbes in the field of Industry, Medicine and Agriculture that will help them to do advanced studies and serve the institutions, industry, and society efficiently.
6. be able to understand the contribution of plant sciences in the production of medicines and other natural plant-based products.
7. be able to understand the advanced techniques of applied sciences that will help students in finding career opportunities in higher education in the field of plant sciences.
8. be able to describe and perform certain fundamental and applied experiments in various fields of plant sciences.
9. possess minimum standards of communication skills expected from a Botany graduate in the country.

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B. Sc. I Year (I Semester)

Examination Time: 3 Hrs **Maximum Marks: 50 (20+30)**
Paper Title: Diversity of microbes and plant pathology
Paper Code: BOT-101 **Schedule per week Lectures: 3**

Note: Examiner will set nine questions and the students will be required to attempt five questions in all, Question number one is compulsory containing six short answer types' questions covering the entire syllabus and will be of 1 mark. Further examiner will be set two questions from each unit and the students will be required to attempt one question fromeach unit which will be of 6 marks each.

UNIT-I

Bacteria: Structure, nutrition, reproduction and economic importance; General account of cyanobacteria (with reference to *Nostoc*).

UNIT-II

Algae: General characters, classification upto classes (Lee 1980) and economic importance; Important features and life-history (excluding development) of *Volvox*, (Chlorophyceae),*Chara* (Charophyceae) *Vaucheria* (Xanthophyceae), *Ectocarpus* (Phaeophyceae) and *Polysiphonia* (Rhodophyceae).

UNIT-III

Viruses: General account of Viruses including structure of TMV and Bacteriophages.
General account of Lichens.

UNIT-IV

Fungi: General characters, classification upto classes (Ainsworth 1971) and economic importance; important features and life-history of *Phytophthora* (Mastigomycotina), *Mucor* (Zygomycotina), *Penicillium* (Ascomycotina), *Puccinia* (Basidiomycotina), *Colletotrichum* (Deuteromycotina).

SUGGESTED READINGS

1. Ahluwalia, A.S. (Ed.). Phycology: Principles, Processes and Applications. Daya Publishing House, New Delhi. 2003.

2. Alexopoulos, C.J., Mims, C.W., Blackwell, M. (1996). Introductory Mycology, John Wiley and Sons (Asia), Singapore. 4th edition.

3. Campbell, N.A., Reece J.B., Urry L.A., Cain M.L., Wasserman S.A. Minorsky P.V., Jackson R.B. (2008). Biology, Pearson Benjamin Cummings, USA.8th edition.

4. Dube, H.C. 1990. An Introduction to Fungi, Vikas Publishing House Pvt. Ltd., Delhi.

5. Kumar, H.D. (1999). Introductory Phycology. Affiliated East-West. Press Pvt. Ltd. Delhi. 2nd edition.

6. Lee, R.E. (2008). Phycology, Cambridge University Press, Cambridge.4th edition.

7. Mehrotra, R.S.& Aneja, K.R. 1990: An introduction of Mycology, New Age International Press, N. Delhi

8. Mehrotra, R.S. and Aggarwal, Ashok (2013) Fundamentals of Plant Pathology, Tata McGraw-Hill Publishing company Ltd, New Delhi

9. Pelczar, M.J. (2001) Microbiology, 5th edition, Tata McGraw-Hill Co, New Delhi.

10. Raven, P.H., Johnson, G.B., Losos, J.B., Singer, S.R. (2005). Biology. Tata McGraw Hill, Delhi.

11. Sahoo, D. (2000). Farming the ocean: seaweeds cultivation and utilization. Aravali International, New Delhi.

12. Sethi, I.K. and Walia, S.K. (2011). Text book of Fungi & Their Allies, MacMillan Publishers Pvt. Ltd., Delhi.

13. Sharma, O.P. 1992. Text Book of Thallophytes, McGraw Hill Publishing Co.

14. Sharma, P.D. 1991. The Fungi. Rastogi & Co., Meerut.

15. Smith, G.M. 1971. Cryptogamic Botany. Vol. I. Algae & Fungi. Tata McGraw Hill Publishing Co., New Delhi.

16. Thakur, A.K. and Bassi, S.K. (2008). Diversity of Microbes and Cryptogams. S. Chand & Co., Delhi.

17. Wiley J. M., Sherwood LM and Woolverton CJ. (2013) Prescott's Microbiology. 9th Edition. McGraw Hill International.

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B. Sc. I Year (I Semester)

Examination Time: 3 Hrs **Maximum Marks: 50 (20+30)**
Paper Title: Plant Ecology
Paper Code: BOT-103 **Schedule per week Lectures: 3**

Note: Examiner will set nine questions and the students will be required to attempt five questions in all, Question number one is compulsory containing six short answer types' questions covering the entire syllabus and will be of 1 mark. Further examiner will be set two questions from each unit and the students will be required to attempt one question fromeach unit which will be of 6 marks each.

UNIT-I

Introduction to Ecology: Definition; scope and importance; levels of organization. **Environment:** Introduction; environmental factors- climatic (water, humidity, wind, light, temperature), edaphic factors (soil profile, physico-chemical properties), topographic and biotic factors (species interaction). Adaptations of plants to water stress and salinity (morphological and anatomical features of hydrophytes, xerophytes and halophytes).

UNIT-II

Population Ecology: Basic concept; characteristics; biotic potential, growth curves; ecotypes and ecads. **Community Ecology:** Concepts; characteristics (qualitative and quantitative-analytical and synthetic); methods of analysis; ecological succession.

UNIT-III

Ecosystem: Structure (components) and functions (trophic levels, food chains, food webs, ecological pyramids and energy flow)

Biogeochemical Cycles: Carbon and Nitrogen; Hydrological (water) cycle.

UNIT-IV

Phyto-geography: Phyto-geographical regions of India; vegetation types of India (forests).

Environmental Pollution: Sources, types and control of air and water pollution.

Global Change: Greenhouse effect and greenhouse gases; impacts of global warming; carbon trading.

Suggested Readings

1. Botkin, D.B. and E.A. Keller, 2004. Environment Science: Earth as a Living Planet, John Wiley & Sons Inc., New York.
2. Kormondy, E.J. 1996: Concepts of Ecology, Prantice-Hall of India Pvt. Ltd., New Delhi.
3. Mackenzie, A. et al. 1999: Instant Notes in Ecology, Viva Books Pvt. Ltd., New Delhi.
4. Odum, E.P. 1983. Basic Ecology, Saunders, Philadelphia.
5. Sharma, P.D., 2010 Ecology and Environment. Rastogi Publications, Meerut, India. 8th edition.
6. Singh, J.S., Singh, S.P. and Gupta, S.R. 2006. Ecology, Environment and Resource Conservation, Anamaya Publishers, New Delhi.
7. Smith, R.L. 1996, Ecology and Field Biology, Harper Collins, New York.

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B. Sc. I Year (I Semester)

Examination Time: 4 Hrs **Maximum Marks: 50 (20+30)**
Paper Title: Botany Lab-I
Paper Code: BOT-105 **Schedule per week Lectures: 3**

1. Ecological experiment A & B (as per the list) 08

2. Write Ecological notes on the specimens C and D 05

3. Identify, classify and write short morphological notes giving well labelled relevant diagrams on the given specimens/slide A & B (one each from Algae & Fungi). 06

4. Write short note on given chart/Photograph/Specimen 6 & 7 (one from Viruses/Bacteria & one from Cyanobacteria/ Lichen). 03

5. Note-book 04

6. Viva-voce. 04

List of practical

1. **Viruses**: EMs/Models of viruses: T-Phage and TMV, Line drawing/Photograph of Lytic and Lysogenic Cycles.

2. **Bacteria**: Types of Bacteria from temporary/permanent slides/photographs; EM bacterium; Binary Fission; Conjugation; Structure of root nodule.

3. **Cyanobacteria &Algae**: Study of vegetative and reproductive structures of *Nostoc*, *Volvox*, *Chara*, *Vaucheria*, *Ectocarpus* and *Polysiphonia* through temporary preparations and permanent slides.

4. **Fungi**: Study of vegetative & reproductive structures of *Phytophthora*, *Mucor*, *Puccinia*, *Penicillium* & *Colletotrichum*: Asexual and sexual stages through temporary preparations and permanent slides.

5. **Lichens**: Study of growth forms of lichens (crustose, foliose and fruticose).

6. Study of instruments used to measure microclimatic variables: Soil thermometer, maximum and minimum thermometer, anemometer, psychrometer/hygrometer, rain gauge and lux meter.

7. Determination of pH, and analysis of two soil samples for carbonates, chlorides and sulphates by rapid field test.

8. Comparison of bulk density, porosity and rate of infiltration of water in soil of three habitats.

9. (a) Study of morphological adaptations of hydrophytes and xerophytes (four each).

10. (b) Study of biotic interactions of the following: Stem parasite (*Cuscuta*), Root parasite (*Orobanche*), Epiphytes (Orchid) and Predation (Insectivorous plants) using museum specimens/ live plants.

11. Determination of minimal quadrat size for the study of herbaceous vegetation in the college campus or nearby fields by species area curve method (species to be listed).

12. Quantitative analysis of herbaceous vegetation in the college campus or nearby fields for frequency and comparison with Raunkiaer's frequency distribution law.

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B. Sc. I Year (II Semester)

Examination Time: 3 Hrs **Maximum Marks: 50 (20+30)**
Paper Title: Biodiversity (Archegoniate)
Paper Code: BOT-102 **Schedule per week Lectures: 3**

Note: Examiner will set nine questions and the students will be required to attempt five questions in all, Question number one is compulsory containing six short answer types' questions covering the entire syllabus and will be of 1 mark. Further examiner will be set two questions from each unit and the students will be required to attempt one question from each unit which will be of 6 marks each.

UNIT-I

Bryophyta: General characters, classification upto classes (Smith, 1935), alternation of generations, structure and reproduction (excluding development) of *Marchantia* (Hepaticopsida), *Anthoceros* (Anthocerotopsida), *Funaria* (Bryopsida).

UNIT-II

Pteridophyta: General characters, classification upto classes (Proskauer1957), Alternation of generations.

Gymnosperms-General characteristics, classification up to family (Smith 1955).

UNIT-III

Pteridophyta: Structure and Reproduction (excluding development) of *Rhynia* (Psilopsida), *Selaginella* (Lycopsida), *Equisetum* (Sphenopsida) and *Pteris* (Pteropsida).

UNIT-IV

Gymnosperms- Morphology, anatomy and reproduction of *Cycas, Pinus and Ephedra* (developmental details not to be included); Ecological and economic importance.

SUGGESTED READINGS

1. Bhatnagar, S.P. & Moitra, A. (1996). Gymnosperms. New Age International (P) Ltd Publishers, New Delhi, India.

2. Campbell, N.A., Reece J.B., Urry L.A., Cain M.L., Wasserman S.A. Minorsky P.V., Jackson R.B. (2008). Biology, Pearson Benjamin Cummings, USA.8th edition.

3. Parihar, N.S. (1991). An introduction to Embryophyta. Vol. I. Bryophyta. Central Book Depot, Allahabad.

4. Puri, P., 1980, Bryophyta, Atma Ram & Sons, Delhi.

5. Raven, P.H., Johnson, G.B., Losos, J.B., Singer, S.R. 2005.Biology. Tata McGraw Hill, Delhi.

6. Sharma, O.P. 1990. Text Book of Pteridophyta, McMillan India Ltd.

7. Sharma, O.P. 1992. Text Book of Thallophytes, McGraw Hill Publishing Co.

8. Smith, G.M. 1971. Cryptogamic Botany, Vol. II, Bryophytes & Pteridophytes. Tata McGraw Hill Publishing Co., New Delhi.

9. Thakur, A.K. and Bassi, S.K. (2008). Diversity of Microbes and Cryptogams. S. Chand & Co., Delhi.

10. Vanderpoorten, A. & Goffinet, B. (2009) Introduction to Bryophytes. Cambridge University Press.

11. Vashishta, P.C., Sinha, A.K., Kumar, A., (2010). Pteridophyta, S. Chand. Delhi, India.

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B. Sc. I Year (II Semester)

Examination Time: 3 Hrs **Maximum Marks: 50 (20+30)**
Paper Title: Plant Taxonomy
Paper Code: BOT-104 **Schedule per week Lectures: 3**

Note: Examiner will set nine questions and the students will be required to attempt five questions in all, Question number one is compulsory containing six short answer types' questions covering the entire syllabus and will be of 1 mark. Further examiner will be set two questions from each unit and the students will be required to attempt one question from each unit which will be of 6 marks each.

UNIT-I

Taxonomy and systematics, fundamental components of taxonomy (identification, classification, description, nomenclature and phylogeny). Role of chemotaxonomy and cytotaxonomy in relation to taxonomy.

Botanical nomenclature, principles and rules, principle of priority. Type concept, author citation, taxonomic ranks. Keys to identification of plants.

UNIT-II

Herbarium: General introduction and importance of herbaria. Botanical gardens and their importance.

Documentation of Floristic Diversity: Brief idea about floras, monograph and journals. Flower and types of inflorescences.

UNIT-III

Types of classification: Artificial, natural and phylogenetic.

Bentham and Hooker system of classification (upto series), Angiosperm Phylogeny Group (APG)- general introduction.

UNIT-IV

Diversity of Flowering Plants: Diagnostic features and economic importance of the following families: Ranunculaceae, Brassicaceae, Malvaceae, Euphorbiaceae, Rutaceae, Leguminosae, Apocynaceae, Solanaceae, Asteraceae, Liliaceae and Poaceae.

Suggested Readings

1. B.P. Pandey. 2001. A Textbook of Botany: Angiosperms - Taxonomy, Anatomy, Embryology and Economic Botany. S Chand and Co Delhi.

2. Chopra, GL. 1984. Angiosperms: Systematic & Life-Cycle. Pradeep Publications.

3. Davis, P.H. and Heywood, V.H. 1963. Principles of Angiosperm Taxonomy, Oliver and Boyd, London.

4. Gifford, E.M. and Foster, A.S. 1988. Morphology and Evolution of Vascular Plants, W.H. Freeman & Company, New York.

5. Heywood, V.H. and Moore, D.M. (Eds.) 1984.Current Concepts in Plant Taxonomy. Academic Press, London.

6. Jeifrey, C. 1982. An introduction to Plant Taxonomy. Cambridge University Press, Cambridge, London.

7. Jones, S.B., Jr. Luchsinger, A.E. 1986. Plant Systematics (2nd edition). McGraw Hill Book Co.

8. Radford, A.E. 1986. Fundamentals of Plant Systematics. Harper and Row, New York.

9. Simpson, M.G. (2006). *Plant Systematics.* Elsevier Academic Press, San Diego, CA, U.S.A.

10. Singh and Jain, 2015. Taxonomy of Angiosperms 10 Edition. Rastogi Publication Meerut.

11. Singh, G. 2017. Plant Systematics Theory And Practice 3rd Edition, Oxford & IBH Publishing

12. Stace, C.A. 1989. Plant Taxonomy and Biosystematics (2nd edition). Edward Arnold, London.

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B. Sc. I Year (II Semester)

Examination Time: 4 Hrs **Maximum Marks: 50 (20+30)**
Paper Title: Botany Lab-II
Paper Code: BOT-106 **Schedule per week Lectures: 3**

1. Identify, classify and write short morphological notes giving well labelled relevant diagrams on the given specimens A, B & C (one each from Bryophytes, Pteridophytes & Gymnosperms). 06

2. Identify, giving two important characters of identification, the spots 1, 2 & 3 (one slide or material each from Bryophytes, Pteridophytes & Gymnosperms). 06

3. Describe/compare the given flowers A and B in semi-technical language giving V.S. of flowers, T.S. of ovaries, Floral Diagrams and Floral Formulae. Identify and assign them to their respective families giving reasons. 06

5. Note-book 04

6. Collection and Collection Report. 04

7. Viva-voce. 04

List of Practicals

1. ***Marchantia***- Morphology of thallus, W.M. rhizoids and scales, V.S. thallus with gemma cup, W.M. gemmae, V.S. antheridiophore, archegoniophore, L.S. sporophyte (temporary/permanent slides).
2. ***Anthoceros***- Morphology of thallus, W.M. rhizoids, V.S. thallus, VS Antheridia and Archegonia, L.S. sporophyte (temporary/permanent slides).
3. ***Funaria***- Morphology, W.M. leaf, rhizoids, operculum, peristome, annulus, spores, slides showing antheridial and archegonial heads, L.S. capsule (temporary /permanent slides).
4. ***Selaginella***- Morphology, W.M. leaf with ligule, T.S. stem, W.M. strobilus, W.M. microsporophyll and megasporophyll, L.S. strobilus (temporary/ permanent slide).

5. ***Equisetum***- Morphology, T.S. internode, L.S. strobilus, T.S. strobilus, W.M. sporangiophore.
6. ***Pteris***- Morphology, T.S. rachis, V.S. sporophyll, W.M. sporangium, W.M. spores, T.S. rhizome.
7. ***Cycas***- Morphology (coralloid roots, bulbil, leaf, megasporophyll), T.S. normal & coralloid root, T.S. rachis, T.S. leaflet and microsporophyll.
8. ***Pinus***- Morphology (long and dwarf shoots, W.M. dwarf shoot, male cones and female cones), T.S. Pinus needle, T.S. Stem and male cone.
9. ***Ephedra***- Morphology, T.S. internode, L.S./T.S. male and female strobili, W.M. spores (wet and dry), T.S. rhizome (temporary/permanent slide), T.S. stem (young & mature).
10. **Excursion Report**: Report on excursion tours with photographs, collection, preservation and preparation of herbarium sheets and specimens related to Archegoniates and Angiosperms. Mounting of a collected, properly dried and pressed specimen of minimum 20 wild plants with herbarium label.
11. Study of vegetative and floral characters of the one or two member of each family/sub-family mentioned in theory syllabus (Description, V.S. flower, section of ovary, floral diagram/s, floral formula/e and systematic position according to Bentham & Hooker's system of classification).

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B. Sc. II Year (III Semester)

Examination Time: 3 Hrs **Maximum Marks: 50 (20+30)**
Paper Title: Plant Anatomy
Paper Code: BOT-201 **Schedule per week Lectures: 3**

Note: Examiner will set nine questions and the students will be required to attempt five questions in all, Question number one is compulsory containing six short answer types' questions covering the entire syllabus and will be of 1 mark. Further examiner will be set two questions from each unit and the students will be required to attempt one question fromeach unit which will be of 6 marks each.

UNIT-I

Diversity in plant forms: Annuals, biennials and perennials.

Tissues: Meristematic and permanent (simple and complex).

Epidermis: Uniseriate and multiseriate, epidermal appendages and their morphological types.

UNIT-II

Leaf: Types of leaves (simple and compound); phyllotaxy. Anatomy of typical monocot and dicot leaf and cell inclusions in leaves; Leaf abscission.

Stomatal apparatus and their morphological types.

UNIT-III

Shoot system: Shoot apical meristem and its histological organizations (monocot and dicot stem); **Cambium:** Structure and functions; secondary growth in dicot stem; characteristics of growth rings; sap wood and heart wood, periderm.

Anomalous secondary growth (*Achyranthes* & *Boerhaavia*)

UNIT-IV

Root system: Root apical meristem; histological organization of monocot and dicot roots. Secondary growth in dicot root.

Structural modifications in roots: Storage (*Beta*), respiratory (*Rhizophora*), epiphytic (*Vanda*).

Anatomical aspects of adaptations in xerophytes, hydrophytes, halophytes.

Suggested Readings

1. Bryan G. Bowes 1999. A Colour Atlas of Plant Structure. Manson Publishing

2. Cutter, E.G. 1969. Plant Anatomy Part-I, Cells and Tissues, Edward Arnold, London.

3. Cutter, E.G. 1971. Plant Anatomy: Experiment and Interpretation. Part-II Organs, Edward Arnold London.

4. Esau, K. 1977. Anatomy of Seed Plants, 2nd Edition. John Wiley & Sons, New York.

5. Fahn, A. 1974. Plant Anatomy, 2nd Edition. Pergamon Press, Oxford.

6. Hartmann, H.T. and Kestler, D.E. 1976. Plant Propagation; Principles and Practices. 3rdEdition.Prentice Hall of India Pvt. Ltd. New Delhi.

7. King. J. 1997. Reaching for the Sun: How Plants Work. Cambridge University Press, Cambridge, U.K.

8. Mauseth, J.D. 1988. Plant Anatomy. The Benjamin/Cummings Publishing Company Inc., Menlo Park, California, USA.

9. Pandey, B.P 2012. Plant Anatomy. S. Chand & Co. Publisher

10. Raven, P.H. Evert, R.F. and Eichhorn, S.E. 1999. Biology of Plants.5th edition. W.R. Freeman and Co., Worth Publishers, New York.

11. Sharma MK. Plant Structure (An Introduction To Plant Anatomy) JBC Press

12. William C. Dickison 2015. Integrative Plant Anatomy. Academic Press

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B. Sc. II Year (III Semester)

Examination Time: 3 Hrs **Maximum Marks: 50 (20+30)**
Paper Title: Plant Embryology
Paper Code: BOT-203 **Schedule per week Lectures: 3**

Note: Examiner will set nine questions and the students will be required to attempt five questions in all, Question number one is compulsory containing six short answer types' questions covering the entire syllabus and will be of 1 mark. Further examiner will be set two questions from each unit and the students will be required to attempt one question fromeach unit which will be of 6 marks each.

UNIT-I

Flower-a modified shoot; functions of various floral parts.

Pollination (types and agencies); pollen germination (micro gametogenesis). Pollen-pistil interaction; self-incompatibility.

UNIT-II

Male gametophyte. Microsporangium, its wall and dehiscence mechanism. Microsporogenesis, pollen grains and its structure (pollen wall).

Structure of megasporangium (ovule) & its curvatures. Megasporogenesis and mega gametogenesis.

UNIT-III

Female gametophyte (monosporic, bisporic and tetrasporic)- organization and ultrastructure of mature embryo sac.

Double fertilization.

Endosperm types and their biological importance.

UNIT-IV

Embryogenesis in dicot and monocot; Polyembryony and apomixis.

Structure of dicot and monocot seed.

Fruit types; dispersal mechanisms in fruits and seeds.

Suggested Readings

1. B.M. Johri Editor (1984) Embryology of Angiosperms Springer Verlag

2. Bhojwani, S.S. & Bhatnagar, S.P. (2011). Embryology of Angiosperms. Vikas Publication House Pvt. Ltd. New Delhi. 5th edition.

3. Fageri, K. and Van der Pijl1979.The Principles of Pollination Ecology. Pergamon Press, Oxford.

4. Hartmann, H.T. and Kestler, D.E. 1976. Plant Propagation; Principles and Practices. 3rdEdition.Prentice Hall of India Pvt. Ltd. New Delhi.

5. King. J. 1997. Reaching for the Sun: How Plants Work. Cambridge University Press, Cambridge, U.K.

6. P. Maheshwari (1950) An Introduction to the Embryology of Angiosperms McGraw Hill

7. Proctor, M. and Yeo, P. 1973. The Pollination of Flowers. William Collins Sons, London.

8. Raven, P.H. Evert, R.F. and Eichhorn, S.E. 1999. Biology of Plants.5th edition. W. R. Freeman and Co., Worth Publishers, New York.

9. Thomas, P. 2000. Trees: Their Natural History. Cambridge University Press, Cambridge.

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B. Sc. II Year (III Semester)

Examination Time: 4 Hrs **Maximum Marks: 50 (20+30)**
Paper Title: Botany Lab-III
Paper Code: BOT-205 **Schedule per week Lectures: 3**

1. Cut Transverse Section and prepare a double-stained permanent mount of the given material A and B (from angiosperms). Identify giving reasons and show it to the examiner. 10

2. Identify, giving the important characters of identification, the spots 1, 2, 3 and 4 (one material/photograph/ slide from embryology of angiosperms). 08

3. Dissect out the globular/heart-shaped embryo from the given material. 04

7. Note-book 04

8. Viva-voce 04

List of Practicals

1. Study of meristems through permanent slides and photographs.
2. Tissues (parenchyma, collenchyma and sclerenchyma); Macerated xylary elements, Phloem (Permanent slides, photographs)
3. Stem: Monocot: *Zea mays*; Dicot: *Helianthus*; Secondary: *Helianthus* (Permanent slides preparation).
4. Root: Monocot: *Zea mays*; Dicot: *Helianthus*; Secondary: *Helianthus* (Permanent slides preparation).
5. Leaf: Dicot and Monocot leaf (Permanent slides).
6. Adaptive anatomy: Xerophyte (*Nerium* leaf); Hydrophyte (*Hydrilla* stem).
7. Structure of anther (young and mature), tapetum (amoeboid and secretory) (Permanent slides).
8. Types of ovules: anatropous, orthotropous, circinotropous, amphitropous/campylotropous (Permanent Slides).

9. Female gametophyte: *Polygonum* (monosporic) type of Embryo sac Development (Permanent slides/photographs).

10. Ultrastructure of mature egg apparatus cells through electron micrographs.

11. Pollination types and seed dispersal mechanisms (including appendages, aril, caruncle) (Photographs and specimens).

12. Dissection of embryo/endosperm from developing seeds.

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B. Sc. II Year (IV Semester)

Examination Time: 3 Hrs **Maximum Marks: 50 (20+30)**
Paper Title: Plant Physiology
Paper Code: BOT-202 **Schedule per week Lectures: 3**

Note: Examiner will set nine questions and the students will be required to attempt five questions in all, Question number one is compulsory containing six short answer types' questions covering the entire syllabus and will be of 1 mark. Further examiner will be set two questions from each unit and the students will be required to attempt one question fromeach unit which will be of 6 marks each.

UNIT-I

Plant-water Relations: Importance of water to plant life; physical properties of water; Imbibition, Diffusion, Osmosis and Plasmolysis; absorption and transport of water; transpiration-types, physiology of stomata, factors affecting transpiration, importance of transpiration.

UNIT-II

Mineral Nutrition: Essential macro and micro elements; criteria of essentiality of elements; Role of essential elements; mineral uptake; deficiency symptoms.

Transport of Organic Substances: Mechanism of phloem transport; source-sink relationship; factors affecting translocation

UNIT-III

Seed dormancy; Plant movements; Concept of photoperiodism; Physiology of flowering; Florigen concept; Physiology of senescence; Fruit ripening.

Growth and Development: Definitions; phases of growth and development.

UNIT-IV

Plant Hormones: Auxins, Gibberellins, Cytokinins, Abscisic acid and Ethylene, history of their discovery, mechanism of action.

Photo-morphogenesis: phytochromes and their discovery, physiological role and mechanism of action.

Suggested Readings

1. Dennis, D.T., Turpin, D.H., Lefebvre, D.D. and Layzell (eds.). 1997: Plant Metabolism (2nd Edition), Longman, Essex, England.

2. Galston, A.W. 1989: Life Processes in Plants, Scientific American Library, Springer-Verlag, New York, USA.

3. Harborne, J.B. (1973). Phytochemical Methods. John Wiley & Sons. New York.

4. Hopkins, W.G. and Huner, A. (2008). Introduction to Plant Physiology.John Wiley and Sons.U.S.A.4th edition.

5. Hopkins, W.G., 1995: Introduction to Plant Physiology, John Wiley & Sons, Inc., New York, USA.

6. Mohr, H. and Schopfer, P. 1995: Plant Physiology. Springer-Verlag, Berlin Germany.

7. Pandey, S.N &Sinha BK. 2018. Plant Physiology 4/Ed .Vikas Publishing House Pvt Ltd

8. Salisbury, F.B. and Ross, C.W. 1986: Plant Physiology. CBS Publishers and Distributors, New Delhi.

9. Taiz, L. and Zeiger, E. 2003: Plant Physiology. Panima Publishing Corporation, New Delhi.

10. Taiz, L., Zeiger, E., Moller, I.M. and Murphy, A. (2015). Plant Physiology and Development. Sinauer Associates Inc. USA. 6th edition.

11. Verma, V. 2015. Plant Physiology 2nd Ed. Athena Academic

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B. Sc. II Year (IV Semester)

Examination Time: 3 Hrs **Maximum Marks: 50 (20+30)**
Paper Title: Plant Metabolism
Paper Code: BOT-204 **Schedule per week Lectures: 3**

Note: Examiner will set nine questions and the students will be required to attempt five questions in all, Question number one is compulsory containing six short answer types' questions covering the entire syllabus and will be of 1 mark. Further examiner will be set two questions from each unit and the students will be required to attempt one question fromeach unit which will be of 6 marks each.

UNIT-I

Photosynthesis: Significance; historical aspects; photosynthetic pigments; action spectra and enhancement effects; concept of two photosystems; Z-scheme; photo-phosphorylation; Calvin cycle; C4 pathway; CAM plants; photorespiration.

UNIT-II

Respiration: ATP–the biological energy currency; aerobic and anaerobic respiration; Krebs cycle; electron transport mechanism (chemi-osmotic theory); redox -potential; oxidative phosphorylation; pentose phosphate pathway.

UNIT-III

Nitrogen metabolism: Biology of nitrogen fixation; importance of nitrate reductase and its regulation; ammonium assimilation.

Lipid metabolism: Structure and functions of lipids; fatty acid biosynthesis; B-oxidation; saturated and unsaturated fatty acids; storage and mobilization of fatty acids.

UNIT-IV

Basics of Enzymology: Discovery, nomenclature & characteristics of enzymes; concept of holoenzyme, apoenzyme, coenzyme & co-factors; regulation of enzyme activity.

Suggested Readings:

1. Hopkins, W.G. and Huner, A. (2008). Introduction to Plant Physiology. John Wiley and Sons.U.S.A.4th edition.

2. Taiz, L., Zeiger, E., Moller, I.M. and Murphy, A. (2015). Plant Physiology and Development. Sinauer Associates Inc. USA.6th edition.

3. Harborne, J.B. (1973). Phytochemical Methods. John Wiley & Sons. New York.

4. Dennis, D.T., Turpin, D.H., Lefebvre, D.D. and Layzell (eds.). 1997: Plant Metabolism (2nd Edition), Longman, Essex, England.

5. Galston, A.W. 1989: Life Processes in Plants, Scientific American Library, Springer-Verlag, New York, USA.

6. Hopkins, W.G., 1995: Introduction to Plant Physiology, John Wiley & Sons, Inc., New York, USA.

7. Mohr, H. and Schopfer, P. 1995: Plant Physiology. Springer-Verlag, Berlin Germany.

8. Salisbury, F.B. and Ross, C.W. 1986: Plant Physiology. CBS Publishers and Distributors, New Delhi.

9. Taiz, L. and Zeiger, E. 2003: Plant Physiology. Panima Publishing Corporation, New Delhi.

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B. Sc. II Year (IV Semester)

Examination Time: 4 Hrs **Maximum Marks: 50 (20+30)**
Paper Title: Botany Lab-IV
Paper Code: BOT-206 **Schedule per week Lectures: 3**

1. Devise experiments A and B to demonstrate the physiological process (as per the list). Perform it and show it to the examiners. 08

2. Comment on the physiological experiment C and D (Specimen/ set-up / Model / Chart). 04

3. Test for carbohydrates / Proteins / Fats. 06

4. Note Book and Report 08

5. Viva-voce. 04

List of Practicals

1. Demonstration of imbibition by plaster of Paris method.

2. Demonstration of Osmosis by potato osmoscope method.

3. To study the Osmotic pressure of onion scale/ Rhoeo leaf peel by plasmolytic method.

4. Calculation of stomatal index and stomatal frequency of a mesophyte and a xerophyte.

5. Demonstration of transpiration by Ganong's/ Farmer's potometer.

6. To separate of photosynthetic pigments by thin layer/paper chromatography.

7. Demonstration of Ascent of sap/Transpiration pull

8. To study the rate of photosynthesis under varying CO2 concentration using Wilmott's bubbler.

9. To study the effect of light intensity on oxygen evolution during photosynthesis Using Wilmott's bubbler.

10. Demonstration of aerobic & anaerobic respiration.

11. To study the evolution of heat during respiration

12. Demonstration of manometric determination of R. Q.

13. Demonstration of phototropism, geotropism and hydrotropism.

14. Simple tests for the detection of carbohydrates (monosaccharides, disaccharides and starch); Proteins and Fats.

15. Preparation of report on use of plant hormones in vegetative reproduction, seed germination etc.

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B. Sc. III Year (V Semester)

Examination Time: 3 Hrs **Maximum Marks: 50 (20+30)**
Paper Title: Economic Botany
Paper Code: BOT-301 **Schedule per week Lectures: 3**

Note: Examiner will set nine questions and the students will be required to attempt five questions in all, Question number one is compulsory containing six short answer types' questions covering the entire syllabus and will be of 1 mark. Further examiner will be set two questions from each unit and the students will be required to attempt one question fromeach unit which will be of 6 marks each.

UNIT-I

Origin, distribution, botanical description, brief idea of cultivation and uses of the following:

Food plants: Cereals (Rice, Wheat and Maize).

Pulses: Gram, Arhar and Pea. **Vegetables:** Potato, Tomato and Onion.

UNIT-II

Morphology of plant part used, brief idea of cultivation and uses of the following:

Spices: Coriander, Ginger, Turmeric and Cloves.

Fibers: Cotton, Jute and Flax.

Oils: Groundnut, Mustard and Coconut.

UNIT-III

Morphology of plant part used, brief idea of cultivation and uses of the following:

Medicinal Plants: *Cinchona*, *Rauwolfia*, *Atropa*, Opium, *Cannabis*, Neem, *Withania* and other industrially important medicinal plants.

Energy plantations and bio-fuels.

UNIT-IV

Botanical description and processing of:

Beverages: Tea and Coffee; **Rubber:** *Hevea*; **Sugar:** Sugarcane.

General account and sources of timber.

Suggested Readings:

1. Kocchar, S.L. 1998: Economic Botany in Tropics, 2nd edition, MacMillan India Ltd., New Delhi.
2. Kocchar, S.L. 2016. Economic Botany: A Comprehensive Study, 5 Ed, Cambridge India.
3. Sambammurthy, A.V.S.S. And Subramanyam, N.S. 1989: A Textbook of Economic Botany, Wiley Eastern Ltd., New Delhi.
4. Sharma, O.P. 1996: Hills Economic Botany (Late Dr. A.F. Hill adapted by O.P. Sharma), Tata McGraw Hill Co. Ltd., New Delhi.
5. Simpson, B.B. and Conner-Ogorzaly, M. 1986: Economic Botany- Plants in our World, McGraw Hill, New York.

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B. Sc. III Year (V Semester)

Examination Time: 3 Hrs **Maximum Marks: 50 (20+30)**
Paper Title: Plant Biotechnology
Paper Code: BOT-303 **Schedule per week Lectures: 3**

Note: Examiner will set nine questions and the students will be required to attempt five questions in all, Question number one is compulsory containing six short answer types' questions covering the entire syllabus and will be of 1 mark. Further examiner will be set two questions from each unit and the students will be required to attempt one question fromeach unit which will be of 6 marks each.

UNIT I

Historical perspective of plant tissue culture; Composition of media; Nutrient and hormone requirements; Totipotency; Organogenesis; Embryogenesis; Protoplast culture; Plant tissue culture applications (micropropagation, androgenesis, virus elimination, secondary metabolite production; Cryopreservation. Restriction Endonucleases- types and role.

UNIT II

Brief idea about cloning vectors- Ti plasmid, BAC, Lambda phage, M13phagemid, cosmid, shuttle vector; eukaryotic vectors (YAC).

Recombinant DNA, bacterial transformation and selection of recombinant clones, PCR mediated gene cloning; Genomic and cDNA libraries.

UNIT III

Methods of gene transfer- Agrobacterium mediated, electroporation, microinjection, microprojectile bombardment; Selection of transgenics– selectable marker and reporter genes (Luciferase, GUS, GFP).

Industrial enzymes (aspergillase, protease, lipase); Biosafety concerns.

UNIT IV

Applications of biotechnology-pest resistant (Bt-cotton); herbicide resistant plants (Round-Upready soybean); Transgenic crops with improved quality traits (FlavrSavr tomato, golden rice); Improved horticultural varieties (Moondust carnations).

Suggested Readings

1. BD Singh. Biotechnology. Kalyani Publications

2. Bhojwani, S.S. and Razdan, M.K., (1996). Plant Tissue Culture: Theory and Practice. Elsevier Science Amsterdam. The Netherlands.

3. Glick, B.R., Pasternak, J.J. (2003). Molecular Biotechnology- Principles and Applications of recombinant DNA. ASM Press, Washington.

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B. Sc. III Year (V Semester)

Examination Time: 4 Hrs **Maximum Marks: 50 (20+30)**
Paper Title: Botany Lab-V
Paper Code: BOT-305 **Schedule per week Lectures: 3**

1. Identify and Classify spots 1, 2, 3, and 4 from the point of view of economic importance and morphology of the plant part used. 08

2. Perform the Applied Botany experiment (as per the list). 04

3. Comment on the specimen A and B (Chart/ Model /Photograph from Biotechnology) 06

4. Note Book, Collection and field report. 08

5. Viva-voce. 04

List of Practicals

1. Study of economically important plants: Wheat, Rice, Gram, Pea, Arhar, Soybean, Black pepper, Ginger, Clove, Turmeric, Tea, Coffee, Cocoa, Cotton, Jute, Coir,Groundnut, Coconut and Mustard

2. Collection and preparation of report on various crops and economically important plants being cultivated/wildly available in your area.

3. Brief introduction to the components and working of the instruments- oven, autoclave, incubator, centrifuge and laminar air flow). Familiarization with basic equipment in tissue culture and Preparation of MS medium.

4. To prepare the slants and petri plates for plant tissue culture.

5. Demonstration of in vitro sterilization and inoculation methods using leaf and nodal explants of tobacco, Datura, Brassica etc.

6. Study of anther, embryo and endosperm culture, micropropagation, somatic embryogenesis & artificial seeds through photographs.

7. Study of methods of gene transfer through photographs: Agrobacterium-mediated,

direct gene transfer by electroporation, microinjection, microprojectile bombardment.

8. Study of steps of genetic engineering for production of Bt cotton, Golden rice, FlavrSavr tomato through photographs.

9. Isolation and quantification of genomic DNA from bacteria (*E. coli*) or Plants

10. Study of Blotting techniques: Southern, Northern and Western, DNA fingerprinting, DNA sequencing, PCR through photographs.

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B. Sc. III Year (VI Semester)

Examination Time: 3 Hrs **Maximum Marks: 50 (20+30)**
Paper Title: Cell Biology & Genetics
Paper Code: BOT-302 **Schedule per week Lectures: 3**

Note: Examiner will set nine questions and the students will be required to attempt five questions in all, Question number one is compulsory containing six short answer types' questions covering the entire syllabus and will be of 1 mark. Further examiner will be set two questions from each unit and the students will be required to attempt one question fromeach unit which will be of 6 marks each.

Unit I

Heredity: Brief life history of Mendel; Terminologies; Laws of Inheritance.

Modified Mandelian Ratios: Lethal Genes; Co-dominance, incomplete dominance; Gene interaction (9:7; 9:4:3; 13:3; 12:3:1, 15:1).

Linkage: Concept & history, complete & incomplete linkage.

Unit II

Cell organelles: Golgi Apparatus, Endoplasmic Reticulum, Lysosomes, Peroxisomes and Vacuoles. **Ultra-structure and function:** Chloroplast, Mitochondria, Nucleus and Nucleolus. **Cell Cycle:** General account and its Phases, Molecular basis of cell cycle control and checkpoints. **Cell Division:** Mitosis and Meiosis - Stages and Significance.

Unit III Cytoplasmic Inheritance: leaf variegation in *Mirabilis*
jalapa,
Chromosome theory of Inheritance. Sex-determination and Sex-linked Inheritance.
Crossing over: concept and significance, cytological proof of crossing over.
Mutations & Chromosomal Aberrations; Types of mutations, effects of different mutagens.
Numerical chromosomal changes: Euploidy, Polyploidy and Aneuploidy.
Structural chromosomal changes: Deletions, Duplications, Inversions & Translocations

Unit IV

Genetic Material: DNA - the genetic material, DNA structure and replication, DNA-Protein interaction, The Nucleosome Model, Genetic Code, Satellite and Repetitive DNA.

Gene Expression: Modern concept of gene; RNA; Ribosomes; Transfer of genetic information - transcription and translation.

Suggested Readings

1. Gardner EJ, Simmons MJ, Snustad DP (2008). Principles of Genetics. 8th Ed. Wiley India.
2. Griffiths, A.J.F., Wessler, S.R., Carroll, S.B., Doebley, J. (2010). Introduction to Genetic Analysis. W. H. Freeman and Co., U.S.A. 10th edition.
3. Klug WS, Cummings MR, Spencer, C, Palladino, M (2011). Concepts of Genetics, 10th Ed., Benjamin Cummings
4. Pierce BA (2011) Genetics: A Conceptual Approach, 4th Ed., Macmillan Higher Education Learning
5. Singh, BD. Genetics. Kalyani Publishers Delhi

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B. Sc. III Year (VI Semester)

Examination Time: 3 Hrs **Maximum Marks: 50 (20+30)**
Paper Title: Plant Breeding
Paper Code: BOT-304 **Schedule per week Lectures: 3**

Note: Examiner will set nine questions and the students will be required to attempt five questions in all, Question number one is compulsory containing six short answer types' questions covering the entire syllabus and will be of 1 mark. Further examiner will be set two questions from each unit and the students will be required to attempt one question fromeach unit which will be of 6 marks each.

Unit- I

Introduction and objectives of Plant Breeding: Breeding systems; modes of reproduction in crop plants; Important achievements and undesirable consequences of plant breeding.

Methods of crop improvement: Introduction; Centres of origin and domestication of crop plants; plant genetic resources; Acclimatization.

Unit II

Selection methods: For self-pollinated, cross pollinated and vegetatively propagated plants.

Hybridization: For self, cross and vegetatively propagated plants–Procedure, advantages and limitations.

Unit III

Quantitative inheritance: Concept, mechanism, examples. Monogenic vs. polygenic Inheritance. **Inbreeding depression and heterosis**: History, genetic basis of inbreeding depression and heterosis.

Unit IV

Crop improvement and breeding Applications.

Role of mutations, polyploidy, distant hybridization and role of biotechnology in crop improvement.

Suggested Readings

1. Acquaah, G. (2007). Principles of Plant Genetics & Breeding. Blackwell Publishing.
2. Chaudhari, H.K. (1984). Elementary Principles of Plant Breeding. Oxford – IBH. 2nd edition.
3. Griffiths, A.J.F., Wessler, S.R., Carroll, S.B., Doebley, J. (2010). Introduction to Genetic Analysis. W. H. Freeman and Co., U.S.A. 10th edition.
4. Poehlman JM and Sleper DA (1995) Breeding Field Crops, AVI. Publ., U.S.A.
5. Singh, B.D. (2005). Plant Breeding: Principles and Methods. Kalyani Publishers. 7th edition.

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B. Sc. III Year (VI Semester)

Examination Time: 3 Hrs **Maximum Marks: 50 (20+30)Paper Title: Botany Lab-VI**
Paper Code: BOT-306 **Schedule per week Lectures: 3**

1. Numerical regarding Genetics (Mendelian Inheritance or Gene Interaction) as per syllabus. 04
2. Identify and comment on the specimen A, B, C and D (Chart/ Model /Photograph) 08
3. Identify giving two important characters of identification of the given spots 1 and 2 (One each from mitosis and meiosis) 06
4. Note Book and Chart/Model/Report on any Genetics/Plant Breeding Phenomenon. 08
5. Viva-voce. 04

List of Practicals

1. Mendel's laws through seed ratios. Laboratory exercises in probability and chi-square.
2. Chromosome mapping using point test cross data.
3. Pedigree analysis for dominant and recessive autosomal and sex-linked traits.
4. Incomplete dominance and gene interaction through seed ratios (9:7, 9:6:1, 13:3,15:1,12:3:1, 9:3:4).
5. Cell Divisions: Mitosis Stages, Meiosis – Stages.
6. Photographs/Permanent Slides showing Translocation Ring, Laggards and InversionBridge.
7. Hybridization techniques - Emasculation, Bagging & Cross Pollination (For demonstrationonly).
8. Induction of polyploidy conditions in plants (For demonstration only).

Scheme of Examination and Syllabus

For B.Sc. (CBZ)

Subject: ZOOLOGY

Semester I to VI (2022-2025)

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SCHOOL OF BASIC AND APPLIED SCIENCES (SOBAS)

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Schedule per week Lectures: 3
Examination Time: 3 Hrs **Maximum Marks: 50(20+30)**
Subject: Life and Diversity from Protozoa to Helminthes **Paper Code: ZOO-101**

Note: *Examiner will set nine questions and the students will be required to attempt fivequestions in all, Question number one is compulsory containing six short answer types' questions covering the entire syllabus and will be of 1 mark each (Answer to each question should not exceed 20 words).* Answer to each part should not exceed 20 words. *Further examiner will set two questions from each unit and the students will be required to attemptone question from each unit which will be of 6 marks each.*

UNIT 1 - Phylum- Protozoa

(1) General characters and classification upto order level
(2) Biodiversity and economic importance of Protozoa
(3) Parasitic Protozoans: Life history, mode of infection and pathogenicity of *Entamoeba,Plasmodium, Trypanosoma, Leishmania* and *Giardia*

UNIT 2 - Phylum- Porifera

(1) General characters and classification up to order level
(2) Biodiversity and economic importance of Porifera
(3) Type study - *Sycon*
(4) Canal system in sponges
(5) Spicules in sponges

UNIT 3 - Phylum - Coelenterata

(1) General characters and classification up to order level
(2) Biodiversity, economic importance
(3) Type Study - *Obelia*
(4) Corals and coral reefs
(5) Polymorphism in Siphonophores

UNIT 4 - Helminths

(1) General characters and classification of Platyhelminthes
(2) General characters and classification of Aschelminthes
(3) Type study - *Fasciola hepatica* and *Ascaris*
(4) Helminths parasites: Brief account of life history, mode of infection and pathogenicity of *Schistosoma, Taenia, Ancylostoma, Trichinella, Wuchereria* and *Oxyuris*
(5) Parasitic adaptations

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Examination Time : 3 Hrs **Maximum Marks: 50(20+30)**
Subject : Cell biology **Paper Code: ZOO-103**

Note: *Examiner will set nine questions and the students will be required to attempt fivequestions in all, Question number one is compulsory containing six short answer types' questions covering the entire syllabus and will be of 1 mark each (Answer to each question should not exceed 20 words).* Answer to each part should not exceed 20 words. *Further examiner will set two questions from each unit and the students will be required to attemptone question from each unit which will be of 6 marks each.*

UNIT 1

1. Ultrastructure of different cell organelles of animal cell
2. Plasma Membrane: Fluid mosaic model, various modes of transport across the membrane, mechanism of active and passive transport, endocytosis and exocytosis.
3. Goigi complex: Structure, Associated enzymes and role of golgi-complex in animal cell

UNIT 2

1. Endoplasmic reticulum (ER): types, role of ER in protein synthesis and transportation in animal cell
2. Ribosomes: Types, biogenesis and role in protein synthesis.
3. Lysosomes: Structure, enzyme and their role; polymorphism

UNIT 3

1. Mitochondria: Mitochondrial DNA; as semiautonomous body, biogenesis, mitochondrial enzymes (only names), role of mitochondria
2. Cytoskeleton: Microtubules, microfilaments, centriole and basal body. Cilia and Flagella
3. Nucleus: Nuclear· membrane, nuclear lamina, nucleolus, fine structure of chromosomes, nucleosome concept and role of histones, euchromatin and heterochromatin, lampbrush and polytene chromosomes

UNIT 4

1. Mitosis and Meiosis (Cell reproduction).
2. Brief account of causes of cancer.
3. Microscopy: General principles of light, florescent and electron microscope.
4. Centrifugation techniques.

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Examination Time :3 Hrs **Maximum Marks: 50(20+30)**
Subject :Zoology Lab-I **Paper Code : ZOO-105**

(A) Classification up to orders with ecological note and economic importance ofthe following animal:

Protozoa : Lamination of cultures of *Amoeba, Euglena* and *Paramecium;* Permanent prepared slides: *Amoeba, Euglena, Trypanosoma,Noctiluca, Eimeria, Paramecium* (binary fission and conjugation), *Opalina, Verticella, Balantidium, Nyctotherus,* radiolarian andformaniferan ooze. Parazoa (Porifera): Specimens: Sycon. *Grantia, Euplectella, Hyalonema, Spongilla,Euspongia* Coelenterata : Specimens: *Porpita, Valella, Physalia, Aurelia, Rhyzostoma,Metridium, Millipora, Alcyonium, Tubipora, Zoanthus, Madrepora, Favia, Fungia,* and *Astrea,*Permanent prepared slides: *Hydra* (W.M.), *Hydra* with buds, *Obelia* (colony and medusa), *Sertularia, Plumularia, Tubularia, and Bougainvillea, Aurelia* (sense organs and stages of lifehistory) Platyhelminthes : Specimens: *Dugesia, Fasciola, Taenia, Echinococus,* Permannt prepared slides: *Miracidium, sporocyst, redia, cercaria,scolex* and *proglotttids; Taenia* (mature and gravid)Aschelminthes : Specimens: *Ascaris* (male & female), *Trichinella, Ancylostoma, Meloidogyne.*

(B) Study of the following permanent stained preparations: L.S. and TS.*Sycon;*gemmules, spicules and sponging fibres of*Sycon,*canalsystem of sponges, TS. *Hydra* (testis and ovary region). T.S. *Fasciola* (different regions). T.S. *Ascaris* (male and female).Temporary preparation of *Volvox, Paramecium,* Gemmules and spicules of *Sycon*, Preparation of permanent stained whole mounts of *Hydra, Obelia, Sertularia,Plumularia* and *Bougainvillea*, Pathogenic protozoans: Plasmodium, Giardia or as available, Pathogenic Helminthes:
Ancylostma; Wuchereria or as available

(C) Cell biology and Genetics:
Cell division: Prepared slides of stages of mitosis and meiosis,Temporary squash preparations of onion root tip / grasshopper testis for the study of mitosis using acetocarmine stain, Salivary gland and polytene chromosomes of *Drosophila*/*Chironomus*, Exercise based on mendel's law

(E) Project:

1. Parasitic adaptations (Protozoa to helminthes)
2. DNA: types, structure and its model preparation
3. Survey: Diversity of particular family/taxa in your surrounding area
4. Microscopy: principles and its significance
5. Staining techniques and their significance

Suggested readings

1. Barnes, RD. Invertebrate zoology. WG Saunders, Philadelphia.
2. P S Verma, E L Jordan. Invertebrate Zoology 25th Edition, 2001. S. Chand Publications, New Delhi.
3. Stephen A. Miller, John B. Harley, Zoology, 6th Edition 2005The McGraw-Hill Companies.
4. D. T. Anderson .Invertebrate Zoology. Second Edition, 1999 Oxford University Press

5. E. D. De Robertis,1987. Cell and Molecular Biology 8th Edition. Lippincott Williams & Wilkins
6. Benjamin A. Pierce. Genetics: A Conceptual Approach, 2014. W.H.Freeman & Co Ltd;
7. Janet Moore. An Introduction to the Invertebrates.2006. Cambridge University Press
8. Ahluwalia KB. Genetics. Wiley Eastern Ltd., New Delhi.
9. Jonathan, Slack. Genes. Oxford University Press, New Delhi.

RAFFLES UNIVERSITY

Schedule per week Lectures: 3

Examination Time: 3 Hrs **Maximum Marks: 50(20+30)**
Subject : Life and Diversity of Annelida to Hemichordata **Paper Code : ZOO-102**

Note: *Examiner will set nine questions and the students will be required to attempt five questions in all, Question number one is compulsory containing six short answer types' questions covering the entire syllabus and will be of 1 mark each (Answer to each question should not exceed 20 words).* Answer to each part should not exceed 20 words. *Further examiner will set two questions from each unit and the students will be required toattempt one question from each unit which will be of 6 marks each.*

UNIT 1- Phylum – Annelida

1. General characters and classification up to order level
2. Biodiversity and economic importance of Annelida
3. Type study - *Pheretima* (Earthworm)
4. Metamerism in Annelida
5. Trochophore larva:. Affinities, evolutionary significance

UNIT 2 - Phylum - Arthropoda

1. General characters and classification up to order level
2. Biodiversity and economic importance of insects
3. Type study – *Periplaneta*

UNIT 3- Phylum – Mollusca

1. General characters and classification up to order level
2. Biodiversity and economic importance
3. Type study - *Pila*
4. Torsion and detorsion in gastropoda
5. Respiration and foot

UNIT 4- Phylum - Echinodermata

1. General characters and classification up to order level
2. Biodiversity and economic importance
3. Type Study -*Asteries* (Sea Star)
4. Echinoderm larvae
5. Aristotle's Lantern

Phylum – Hemichordata

1. General characters and classification, Type study: *Balanoglossus*

RAFFLES UNIVERSITY

Schedule per week Lectures: 3

Examination Time : 3 Hrs Maximum Marks: 50(20+30)

Subject : Developmental Biology Paper Code : ZOO-104

Note: *Examiner will set nine questions and the students will be required to attempt five questions in all, Question number one is compulsory containing six short answer types' questions covering the entire syllabus and will be of 1 mark. Further examiner will be set two questions from each unit and the students will be required to attempt one question fromeachunit which will be of 6 marks each.*

UNIT 1

1. History and basic concepts : Historical review
2. Experimental Developmental Biology: Epigenesis, preformation, mosaic and regulativedevelopment
3. Branches and Significance of Developmental Biology

UNIT 2

1. Generalized structure of mammalian ovum & sperm, spermatogenesis and Oogenesis, different types of eggs, egg membranes.
2. Fertilization, parthenogenesis, changes in gametes, monospermy and polyspermy, planes and and patterns of cleavage.
3. Late Embryonic development: fate of germ layers, extra-embryonic membranes, implantation of embryo in humans, placenta structure, types and functions of placenta.

UNIT 3

1. Process of blastulation and fate-map construction in frog and chick.
2. Gastrulation in frog and chick upto the formation of three germinal layers.
3. Embryonic Induction (Primary organizers): Experimental evidences and characteristics, Neural Induction, role of grey crescent in neural induction, Regional specificity of primary inductor (organisers), Embryonic induction in different chordates
4. Chemical and genetic basis of neural induction

UNIT 4

1. Concepts of competence, determination and differentiation.
2. Repair and Regeneration: Concept, Degree of regenerative ability in non-chordates and chordates, categories and mechanism of regeneration, control of regeneration, factors affecting regeneration, physiological processes involved in regeneration.

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Subject : Zoology Lab-II **Paper Code : ZOO-106**

(A) Classification up to orders with ecological note and economic importance of the following group of animals:

1. Annelida Specimens: Pheretima, Heteronereis, Aphrodite, Chaetopterus, Arenicola, Tubifex and Pontobdella.
2. Arthropoda Specimens: Peripatus, Palaemon (Prawn), Lobster, Cancer (crab), Sacculina, Eupagurus (hermit crab), Lepas, Balanus, Cyclops, Daphnia, Lepisma, Periplaneta (cockroach), Schistocerca (locust), Poecilocerus (ak-hopper), Gryllus (cricket), Mantis (praying mantis),Cicada, Forticula (earwig), Dragon fly, termite queen, bug, moth, beetle, Polistes (wasp), Apis (honeybee), Bombyx (silk moth), Cimex (begbug), Pediculus (body louse). Millipedes, Scolopendra (centipedes), Palamnaeus (scorpion), Aranea (spider), Limulus (king crab).
3. Mollusca Specimens: Mytilus, Ostrea, Cardium, Pholas, Solen (razor fish), Pecten, Holiotis, Patella, Aplysia, Doris, Limax, Loligo, Sepia, Octopus, Nautilus (complete and T.S.), Chiton and Dentalium.
4. Echinodermata Specimens: Asterias, Echinus, Cucumara, Ophiothrix, Antedon and Asterophyton.
5. Hemichordata: Balanoglossus

(B) Study of the following permanent stained preparations:

1. T.S. Pheretima (pharyngeal and typhlosolar regions), Setae, septal nephridia and spermathecae of Pheretima.
2. Trachea and mouthpmts of cockroach.
3. Statocyst of Palaemon.
4. Glochidium larva of Anodonta; radula and osphradium of Pila.
5. T.S. Star fish (arm)
6. T.S. Balanoglossus (through various regions)

(C) Demonstration by C. D.:

1. Mouth parts and trachea of Periplanata (cockroach), radula of Pila; pedicillarae of Asterias.
2. Setae of earthworm, and mouth parts of Honey bee, House fly and cockroach.

(D) Preparation of models of the different systems of the following animals:

1. Earthworm: Digestive, reproductive and nervous systems.
2. Grasshopper/ cockroach: Digestive, reproductive and nervous systems.
3. Pila: Pallial complex, digestive and nervous systems

(E) Embryology:

1. Histological slides of frog: cleavage, blastula, gastrula, neurula and tailbud stage
2. Chick developmental study (slides): 18 hrs, 21 hrs, 33 hrs, 72 hrs and 96 hrs of incubation, primitive streak stage in embryo and study of various foetal membranes in a 10-12 day old chick embryo.

Suggested readings:

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1. Barrington, EJW. Invertebrate structure and function. East West Press Pvt. Ltd. New Delhi.
2. Parker and Haswell. Text book of zoology: invertebrates. Vol. 1. Lowpriced textbook. The Macmillan press Ltd.
3. R. L. Kotpal Modern Text Book of Zoology: Invertebrates, 2009. Rastogi Publications
4. P S Verma, E L Jordan . Chordate Zoology, 2009. S. Chand Publications, New Delhi.
5. Scott F. Gilbert, Susan R. Singer.Developmental Biology, 2010. Sinauer Associates.
6. Balinsky, BI. An introduction to Embryology. Saunders, Philadelphia.
7. Lewis, Wolpert. Development Biology. Oxford University Press, Delhi.

RAFFLES
UNIVERSITY

Schedule per week Lectures: 3

Examination Time : 3 Hrs Maximum Marks: 50(20+30) Subject : Developmental Biology Paper Code : ZOO-104

Note: Examiner will set nine questions and the students will be required to attempt five questions in all, Question number one is compulsory containing six short answer types' questions covering the entire syllabus and will be of 1 mark each (Answer to eachquestion should not exceed 20 words). Answer to each part should not exceed 20 words. Further examiner will set two questions from each unit and the students will be required to attempt one question from each unit which will be of 6 marks each.

UNIT-1

Chordates: General characteristics and classification, affinities and origin, Protochordates, Retrogressive metamorphosis, Agnatha: General features of living Agnatha and classification upto classes. Type study of Pteromyzon: Structure and life history

UNIT-2

Pisces: General features & Classification, Osmoregulation, migration and Parental care, Type study: Scoliodon

Amphibia: General features & Classification upto orders, Origin and evolution of terrestrial ectotherms/tetrapods, Parental care & paedomorphosis. Type study: Rana.

UNIT-3

Reptiles: General features & Classification upto orders, Origin of reptiles skulltypes, Poisonous and non-poisonous snakes in India, Biting mechanism in snakes

Aves: General features & Classification upto orders. Origin of birds, Flight adaptations, Migration.

UNIT-4

Mammals: General features & Classification upto orders. Origin of mammals, dentition, Type study: Rat.

Schedule per week Lectures: 3
Examination Time : 3 Hrs Maximum Marks: 50(20+30) Subject : Mammalian Physiology Paper Code : ZOO-203

Note: Examiner will set nine questions and the students will be required to attempt five questions in all, Question number one is compulsory containing six short answer types' questions covering the entire syllabus and will be of 1 mark each (Answer to eachquestion should not exceed 20 words). Answer to each part should not exceed 20 words. Further examiner will set two questions from each unit and the students will be required to attempt one question from each unit which will be of 6 marks each.

UNIT 1

Digestion - Brief introduction to digestive system, Buccal digestion; salivary secretion and digestion, Gastric digestion; gastric secretion and digestion, Intestinal digestion; pancreatic secretion, bile juices and digestion and small intestine and digestion and absorption in large intestine

UNIT 2

Osmoregulation and excretion - Osmoregulation , Mammalian excretory system; excretory organs and major associated blood vessels, kidney structure, nephron structure, Urine formation; ultra filtration, selective re-absorption and tubular secretion, Counter current multiplier system

UNIT 3

Respiration - Respiratory organs, Breathing mechanism, Respiratory pigments;properties and functions, External and internal respiration, Transport of gases.

UNIT 4

Circulation – Origina and conduction of heart beat, cardiac cycle, electrocardiogram, Blood pressure, Working of mammalian heart, Blood composition and function, Mechanism of blood clotting

Examination Time: 3 Hrs **Maximum Marks: 50(20+30)**

Subject : Zoology Lab-III **Paper Code : ZOO-205**

1. Classification upto orders, habit, habitats, external characters and economic importance (if any) of the following animals:-

Protochordata; Molqula, Hetryllus, Pyrosoma, Doliolum, Olikopleura, andAmphioxus.

Cyclostomata; Myxine, Petromyzon and Ammocoetus larva.

Chondrichthyes;Zygaena, Pristis, Narcine (electric ray), Trygon, Rhinobatus, Raja andChimaera.

Osteichthyes; Acipenser, Lepidosteus, Muraena, Mystus, Catla, Hippocampus,Syngnathus, Exocoetus, Anabas, Diodon, Ostraczion, Tetradon, Echinus,Lophius, Solea and Polypterus. Any of the Lung Fish

2. Preparation of models of the different systems of the following animals: Herdmania: General anatomy

Labeo (locally available fish): Digestive and reproductive systems: cranial nerves

3. Study of the skeleton of : Scoliodon, Labeo

4. Study of the prepared slides: Tornaria larva, T.S.Amphioxus(through differentregionds). Oikopleura, different types of scales

5. Make permanent stained preparations of the following:Salpa,Spicules, and Cycloid scales

6. Physiology practical; Estimation of abnormal constituents of urine (Albumin, sugar, ketone bodies), Use of respirometer, Haematein crystal preparation, Estimation of Hb, DLC of Man, RBC count, WBC count.

7. Project Report: Migration in fishes, faunal survey

8. Disaster Management Project Work: (Field Work, Case Studies.for details see the UGC Website

Examination Time: 3 Hrs **Maximum Marks: 50(20+30)**
Subject: Genetics and Immunology **Paper Code: ZOO-202**

Note: *Examiner will set nine questions and the students will be required toattempt five questions in all, Question number one is compulsory containing six short answer types' questions covering the entire syllabus and will be of 1 mark each (Answer to each question should not exceed 20 words).* Answer to each part should not exceed 20 words. *Further examiner will set two questions from each unit and the students will be required to attempt one question from each unit which will be of 6 marks each.*

Unit 1:

1. Basic principles of Heredity, basic idea on extensions and modifications of basic principles
2. Chromosomal theory of Inheritance.
3. Linkage and recombination : coupling and repulsion hypothesis, crossing over and chiasma formation
4. Multiple alleles, gene interactions (allelic and non-allelic)

UNIT II:

1. Variation; types, sources of variation.
2. Mutation; chromosome and gene mutations, implications of mutation
3. Sex linked Inheritance: Chromosomal system of sex determination, Haemophilia and Colour blindness in man, Eye colour in *Drosophila*, Non-disjunction of sex chromosomes in *Drosophila*

UNIT-III:

1. Human genetics: Human Karyotype, genetic counselling and testing, Chromosomal abnormalities involving autosomes and sex chromosomes, monozygotic and dizygotic twins, Inborn errors of metabolism (Alcaptonuria, Phenylketonuria, Albinism, Sickle-cell anaemia), DNA fingerprinting, genetic compatibility
2. Applied genetics; genetic engineering, implications, transgenic animals, eugenics, euthenics and euphenics.

UNIT IV:

Immunology - Innate and Acquired immunity, Antigen, Antibody, Humoral and cell- mediated immunity, Active and passive immunization, Blood groups and transfusions, tissue and organ transplants, Allergies, autoimmune diseases, immunodeficiency diseases.

Schedule per week Lectures: 3
Examination Time: 3 Hrs **Maximum Marks: 50(20+30)**
Subject: Mammalian Physiology-II **Paper Code: ZOO-204**

Note: *Examiner will set nine questions and the students will be required to attempt five questions in all, Question number one is compulsory containing six short answer types' questions covering the entire syllabus and will be of 1 mark each (Answer to each question should not exceed 20 words).* Answer to each part should not exceed 20 words. *Further examiner will set two questions from each unit and the students will be required to attempt one question from each unit which will be of 6 marks each.*

UNIT 1- Muscle physiology

1. Ultra structure of smooth, striated and cardiac muscles
2. Muscle contraction
3. Simple twitch and fatigue

UNIT 2- Nerve physiology

1. Structure of neuron
2. Conduction of nerve impulse through axon
3. Neurotransmitters
4. Synapses; ultrastructure and function

UNIT 3 - Endocrinology

1. Endocrine system; definition of endocrine, paracrine and autocrine system, significance of endocrine and neuro-endocrine system
2. Pituitary gland; structure, hormones and their functions
3. Thyroid gland; structure, hormones and their functions
4. Adrenal gland; structure, hormones and their functions
5. Pancreas; islets of langerhans, structure, hormones and their functions

UNIT 4 -Physiology of reproduction

1. Hormonal control of male and female reproduction
2. Implantation
3. Parturition and lactation in mammals
4. Reproductive cycle; oestrous and menstrual cycles
5. Menopause in human

Schedule per week Lectures: 3
Examination Time: 4 Hrs **Maximum Marks: 50(20+30)**
Subject: Zoology Lab-IV **Paper Code: ZOO-206**

1. Classification up to orders, habit, habitats, external characters and economic importance (if any) of the following animals:-

Amphibia: *Necturus, Proteus, Amphiuma, Salamandra, Amblystoma, Axolotle larva, Alytes,Bufo, Rana*
Reptilia: *Hemidactylus, Calotes, Draco, Varanus, Phrynosoma, Chamaeleon, Typhops,Python, Eryx, Ptyas, Bungarus, Naja, Hydrus, Viper, Crocodilus, Gavialis, Chelone* (Turtle) and *Testudo* (Tortoise)
Aves: *Casuarius, Arden, Anas, Milvus, Pavo, Eudynamis, Tyto* and *Alcedo,Halcyon* Mammalia: *Ornithorphynchus, Echidna, Didelphis, Macropus, Loris, Macaque,Hystrix,Funambulus, Telix, Panthera, Canis, Herpestes, Capra, Pteropus*

2. Preparation of models of the different systems of the following animals: *Hemidactylus;* Digestive, arterial, venous and urinogenital systemsRat : Digestive, arterial, venous and urinogenital systems
3. Study of the skeleton of*Rana*(Frog),*Varanus*,Pigeon or Gallus and*Orcyctolagus/*rat
4. Study of the following prepared slides: Histology of rat (compound tissues)
5. Study and collection of different types of feathers; Quill, Contour, Filoplume and Down feathers
6. Physiology practical; study of estrus cycle, ultrasound image of foetus, study of histological structure of major endocrine glands of mammals
7. Project Report: Survey of diversity, Parental care , Dentition in mammals, Migrationin birds

Suggested readings

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1. Bell JN and Davidson GH, Textbook of physiology and Biochemistry, ELBS.
2. Sastry, KV. Animal physiology & biochemistry. Rastogi publications, Meerut.
3. Taylor, DJ, Green, NPO, and Stout, GW. Biological Science. Cambridge lowprice edition. Cambridge University Press.
4. Schmidt-Nielsen. Animal physiology. Cambridge University Press.
5. David S. Goodsell The Machinery of Life, 2009. Springer-Verlag New York Inc.
6. Young J Z. The life of vertebrates, Osford University Press, London
7. Peter Holland. The Animal Kinggom. Oxford University Press, New Delhi.

RAFFLES UNIVERSITY

B. Sc. III Year (V Semester)

Schedule per week Lectures: 3

Examination Time : 3 Hrs **Maximum Marks: 50(20+30)**

Subject : Biochemistry **Paper Code : ZOO-301**

Note: Examiner will set nine questions and the students will be required to attempt five questions in all, Question number one is compulsory containing six short answer types' questions covering the entire syllabus and will be of 1 mark each (Answer to each question should not exceed 20 words). Answer to each part should not exceed 20 words. Further examiner will set two questions from each unit and the students will be required to attempt onequestion from each unit which will be of 6 marks each.

UNIT 1

1. Carbohydrates: structure, function and significance
2. Oxidation of glucose through glycolysis, Kreb's cycle and oxidative phosphorylation,
3. Elementary knowledge of inter conversion of glycogen and glucose in liver
4. Role of insulin and glucagon

UNIT 2

1. Lipids: structure, function and significance
2. Beta-oxidative pathway of fatty acids
3. Essential and non essential fatty acids
4. Brief account of biosynthesis of triglycerides,
5. Phospholipids and steroids

UNIT 3

1. Proteins: structure, function and significance
2. Essential and non essential amino acids
3. Transformation of amino acids; deamination, transamination, decarboxylation
4. Synthesis of protein and urea
5. Fate of ammonia (ornithine cycle)
6. Fate of carbon skeleton
7. Enzymes; types and mechanism of action

UNIT 4

1. Vitamins; sources and deficiency
2. Minerals; sources and deficiency
3. Nucleic acid; nucleotides, Catabolism and biosynthesis of nucleotides

RAFFLES UNIVERSITY

SCHOOL OF BASIC AND APPLIED SCIENCES

Department of Zoology

(Syllabus and Scheme of Studies w. e. f. 2022-23onwards)

B. Sc. III Year (V Semester)

Schedule per week Lectures: 3

Examination Time	**: 3 Hrs**	**Maximum Marks: 50(20+30)**
Subject	**: Ecology and Evolution**	**Paper Code : ZOO-303**

Note: Examiner will set nine questions and the students will be required to attempt five questions in all, Question number one is compulsory containing six short answer types' questions covering the entire syllabus and will be of 1 mark each (Answer to each question should not exceed 20 words). Answer to each part should not exceed 20 words. Further examiner will set two questions from each unit and the students will be required to attempt one question from each unit which will be of 6 marks each.

UNIT 1 - Introduction to Ecology

1. Relevance of studying ecology, its history, autecology, synecology
2. Species; Sympatric, parapatric and Allopatric
3. Abiotic Factors; Laws of limiting factors; Liebig's law of minimum and Shelford's law of tolerance, brief account of light and temperature as limiting factors, soil types and soil erosion

UNIT 2 - Population ecology

1. Unitary and modular populations
2. Population density, dispersion and demography
3. Exponential and logistic growth model
4. Population Growth regulation: Intrinsic mechanism and extrinsic mechanism
5. Age structure pyramids for the human population

UNIT 3 - Community and Ecosystem

1. Community structure, diversity index, ecotone/edge effect, island equilibriummodel
2. Succession, stages of primary succession, climax community
3. Community's interactions; types with examples, Niche concept, Gause's principle of competitive exclusion with laboratory and field examples, Lotka Volterra Equation forprey predator interaction
4. Energy flow and chemical cycling through an ecosystem

UNIT 4 - Evolution

1. History of evolutionary thoughts
2. Natural selection, speciation
3. Variations, isolation and adaptations
4. Palaeontology; fossils, geological divisions of the earth's crust, imperfection of the geological record
5. Study of extinct forms; Dinosaurus, Archaeopteryx

SCHOOL OF BASIC AND APPLIED SCIENCES

Department of Zoology

B. Sc. III Year (V Semester)

Schedule per week Lectures: 6

Examination Time : 4 Hrs **Maximum Marks: 50(20+30)**

Subject : Zoology Lab-V **Paper Code : ZOO-305**

1. Study of an ecosystem; pond/lake/reservoir
2. Calculating Shannon index of biodiversity for fauna/flora of the campus
3. Evolutionary evidences and/or its demonstration through models/video/CD etc
4. Adaptive modifications in feet and beaks of birds
5. Evolutionary evidences of man and horse
6. Visit to a fossil park/Birbal Sahani Paleontological Institute in Lucknow
7. Qualitative tests for identification of simple sugars, disaccharides and polysaccharides.
8. Detection of proteins, carbohydrates and lipids in animal tissue food sample.
9. Demonstration of the principle of paper chromatography
10. Study of human salivary amylase activity: Effect of temperature, pH, Concentration
11. Project Report : radio carbon dating, fossil collection, population study of any fauna in the university campus and elsewhere

Examination Time : 3 Hrs **Maximum Marks: 50(20+30)**
Subject : Environmental Biology & Ethology **Paper Code : ZOO-302**

Note: Examiner will set nine questions and the students will be required to attempt five questions in all, Question number one is compulsory containing six short answer types' questions covering the entire syllabus and will be of 1 mark each (Answer to each question should not exceed 20 words). Further examiner will be set two questions from each unit andthe students will be required to attempt one question from each unit which will be of 6 marks each.

UNIT 1

1. Environment and its concepts, global environment, hydrosphere, lithosphere and atmosphere
2. Natural resources; present status and future needs, conservation and management of natural resources; renewable (forest, wildlife, water) and non renewable (soil, minerals and energy)
3. Wildlife conservation; vanishing and threatened animals and plants in Rajasthan, wildlife management efforts by Government and Non government organizations (including wildlife Acts)

UNIT 2

1. Environmental pollution; general outline and various types of pollution (water, air, and soil), Sources and remedies for noise, radiation, industrial chemicals, agrochemicals, insecticides, pesticides and household pollutants
2. Green house effect, ozone layer depletion, El-Nino and La-Nino effects, fallout effects of radiation, nuclear accidents
3. Basic concepts of bioaccumulation, biomagnification, biodegradation of pollutants

UNIT 3

1. Impact of urbanization; development and distribution of urban centres, factors, problems and solutions of urbanization, brief idea of human population of India and Rajasthan
2. Space ecology; space ecosystem, space problems and their solutions, colonization

UNIT 4

1. Introduction and history of Ethology
2. Concepts of Ethology; fixed action pattern, sign stimulus, innate learning mechanism, motivation, imprinting and learning
3. Pheromones and their role in alarm spreading
4. Societies; characteristics and advantage with special reference to honey bee, and monkey
5. Biological rhythms and biological clocks
6. Methods of studying animal behaviour

Examination Time : 3 Hrs Maximum Marks: 50(20+30)Subject : Applied Zoology & Biostatistics Paper Code : ZOO-304

Note: Examiner will set nine questions and the students will be required to attempt five questions in all, Question number one is compulsory containing six short answer types' questions covering the entire syllabus and will be of 1 mark each (Answer to each question should not exceed 20 words). Further examiner will set two questions from each unit and the students will be required to attempt one question from each unit which will be of 6 marks each.

UNIT 1

Principles and practices of Vermiculture, Sericulture (including Ericulture), Lac culture, Apiculture, Prawn culture, Pisciculture, Pearlculture and Poultry keeping

UNIT 2

Pest; definition, types of pests, control (insecticides and plant protection appliances (like hand compression spray, hand rotating duster, bucket pump etc. and natural control),
Study of major crop pest; Jowar (stem borer, midge flies), cotton (red cotton bug, pink ballworm) etc.

UNIT 3

Introduction, scope and application of biostatistics
Scientific method, writing up an experiment, Hypothesis (null and alternative)
Basic concepts of statistics; presenting data (tabulations, graphical representation, frequencydistributions, samples and populations

UNIT 4

Elementary statistical methods in biology; measures of central tendency (mean, mode, median), measures of dispersion (standard deviation, standard error, variance), correlation and regression

SCHOOL OF BASIC AND APPLIED SCIENCES
Department of Zoology
(Syllabus and Scheme of Studies w. e. f. 2022-23 onwards)

B. Sc. III Year (VI Semester)
Schedule per week Lectures: 3

Examination Time : 3 Hrs **Maximum Marks: 50(20+30)**
Subject : Zoology Lab-VI **Paper Code : ZOO-306**

Environmental biology &Ethology

1. Chemical analysis of pond water for pH, alkalinity, acidity, dissolved oxygen,
2. Estimating water salinity in a given water sample/ TDS
3. Visiting nearby factory to study their control measures taken up for controlling varioustypes of pollution
4. Qualitative estimation of zooplankton in given sample of water
5. A visit to zoo/museum of natural history and wildlife sanctuary (where present0
6. Behavioural study in mammals/birds
7. Construction of frequency table, histograms, polygons and piecharts
8. Exercises on mean, mode and median, standard deviation, correlation and bar diagram.
9. Study of stored pests/agricultural pests
10. Project report:

a. Apiculture/Sericulture
b. Pollution control measures taken up by any industry
c. Hazardous waste treatment in your city

Suggested readings

1. Townsend C, Harper J and Michael Begon. Essentials of Ecology, Blackwell Science.
2. David, L, Nelson and Michael M Cox. Lehninger's principles of Biochemistry.
3. Bell JN and Davidson GH, Textbook of physiology and Biochemistry, ELBS.
4. Sastry, KV. Animal physiology & biochemistry. Rastogi publications, Meerut.
5. Taylor, DJ, Green, NPO, and Stout, GW. Biological Science. Cambridge low price edition.Cambridge University Press.
6. Gupta, PK. Environmental biology. Rastogi publications, Meertu.
7. Miller TG, Jr. environmental Science. Wordsworth publishing company.
8. Odum, EP. Fundamentals of ecology, WB Sanunders.
9. Chapman and Reiss. Ecology. Cambridge University Press.
10. Manning and Dawkins. An introduction to animal behavior. Cambridge University Press.
11. Mathur, R. Animal behavior. Rastogi publications, Meerut.
12. Frank and Althoen. Statistics. Cambridge University Press.
13. Wilson and Walker. Principles and techniques of practical biochemistry. Cambridge

University Press.

14. Harrison and de Mora. Introductory chemistry for the environmental science.Cambridge University Press.
15. Bailey. Statistical methods in biology. Cambridge University Press.
16. Brian & Deborah Charlesworth. Evolution. Oxford University Press.

SCHOOL OF ENGINEERING & TECHNOLOGY (SOET)

RAFFELSUNIVERSITY

NEEMRANA

Department of Mechanical Engineering

B.Tech (4 Years Degree Program)

Programme Educational Objective (PEO)

Programme Outcomes (POs)

Programme Specific Outcomes (PSOs)

Course Outcomes (COs)

RAFFLES
UNIVERSITY

Vision

To be a centre of excellence by producing high caliber, competent and self-reliant computer Science engineers, who possess scientific temperament and would engage in activities relevant to industries with ethical values and flair to research.

Mission

- To provide efficient engineers for global requirements by imparting quality education.
- To explore, create and develop innovations in various aspects of engineering through industries and institutions.
- To emphasize on practical skills and socially relevant technology

SCHOOL OF ENGINEERING AND TECHNOLOGY (SOE&T)
RAFFLES UNIVERSITY, NEEMRANA
Department of Mechanical Engineering
B.Tech (4 Years Degree Program)

PROGRAMME OUTCOMES (POS)

On successful completion of Graduate Program, Graduating Students/ Graduates will be able to

PO 1	Engineering Knowledge: Apply knowledge of mathematics, science, engineering fundamentals, and computer science & engineering to the solution of engineering problems.
PO 2	Problem Analysis: Identify, formulate, research literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.
PO 3	Design /Development of Solutions: Design solutions for complex engineering problems and design system components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal and environmental considerations.
PO 4	Conduct Investigations of Complex Problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of information to provide valid conclusions.
PO 5	Modern Tool Usage: Create, select and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO 6	The Engineer and Society: Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice.
PO 7	Environment and Sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge and need for sustainable development.
PO 8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	Individual and Team Work: Function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings.
PO 10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make

	effective presentations and give and receive clear instructions.
PO 11	Project Management and Finance: Demonstrate knowledge and understanding of engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments
PO 12	Life - Long Learning: Recognize the need for and have the preparation and ability to Engage in independent and life- long learning in the broadest context of technological Change

Program Education Objectives

PEO 1	To impart deep knowledge of mechanical engineering and interdisciplinary subjects.
PEO 2	To use modern tools in academic to enhance the technical skills of the students for implementation of the scientific concepts.
PEO 3	To prepare the students to address social, technical and engineering challenges innovatively.
PEO 4	To enhance various skills of the students involved in decision making.
PEO 5	To motivate and prepare the students to take-up career in different industries or to pursue higher studies in mechanical and interdisciplinary programs.

Program Specific Objectives

PSO 1	To impart proper knowledge of science and mechanical engineering related subjects to the students.
PSO 2	To enhance the skills of the students with the ability to implement the scientific concepts for betterment of the society.
PSO 3	To prepare the students to become innovators who can address social, technical and engineering challenges.

RAFFLES UNIVERSITY, NEEMRANA

SCHOOL OF ENGINEERING AND TECHNOLOGY (SOE&T)

B.Tech (1st Semester)

(Common to all branches)

S.No	Category	Code	Course Title	Hours Per Week			CIE	ESE	Total	Credits
				L	T	P				
1	BSC	BSC-101	Engineering Physics-I	3	1	THEORETICAL	40	60	100	4
2	BSC	BSC-102	Engineering Mathematics-I	3	1		40	60	100	4
3	ESC	ESC-101	Computer Fundamentals	3	1		40	60	100	4
4	ESC	ESC-102	Basics of Mechanical Engineering	3	1		40	60	100	4
5	MC	MC-I	Environmental Studies	2	0		40	60	100	0
6	HSMC	HSMC-101	Communicative English	3	0		40	60	100	3
7	ESC	ESC-103	Workshop Practice Lab	PRACTICAL	0	3	60	40	100	2
8	BSC	BSC-103	Engineering Physics-I Lab		0	2	60	40	100	1
9	ESC	ESC-104	Computer FundamentalsLab		0	2	60	40	100	1
10	HSMC	HSMC-102	Language Lab		0	2	60	40	100	1
			Total	**17**	**4**	**9**	**480**	**520**	**1000**	**24**

***CIE (Continues Internal Evaluation)**

***ESE (End Semester Exam)**

1. Engineering Physics (BSC-101)

Course Outcomes:

CO1: Understand and apply Maxwell's equations, which describe the fundamental laws of electromagnetism, including Gauss's law for electricity, Gauss's law for magnetism, Faraday's law of electromagnetic induction, and Ampère's law with Maxwell's addition.

CO2: Understand, apply, and manipulate Maxwell's equations to describe and analyze electromagnetic phenomena in both static and dynamic situations.

CO3: Understand and describe the impact of solid-state device capabilities and limitation on electronic circuit performance.

CO4: Understand the concepts of X-Rays and Ultrasonics.

CO5: Understand the basic concepts such as Nuclear Detectors, Characteristics of gas filled detectors and properties of Ionization chamber, proportional counter, G. M. Counter and Scintillation Counter.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	3	2	2		1			3				3	3	3	3
CO2	3	2	1		1			3	2			3	3	3	2
CO3	3	2	2		1		2	3	1		3	3	3	3	2
CO4	3	2	1		1		2	3	2			3	3	3	2
CO5	3	2	3		1			3	2		3	3	3	3	3

2. Engineering Mathematics-I (BSC-102)

Course Outcomes:

CO-1: To explore the fundamental knowledge of asymptote, curvature and their types.

CO-2: Use the Euler’s theorem, homogeneous function.

CO-3: Develop knowledge of double integration.

CO-4: Understand how to determine the natural of first order and higher order differential equation.

CO-5: Understand how to determine the nature of second order differential equation.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	3	3	2	3	1	2	1		2	2	1	2	3	3	2
CO2	3	3	3	3	2	2	1		1	1	1	1	3	3	2
CO3	3	3	3	3	3	2	2		2	2	2	2	3	3	2
CO4	3	3	3	3	3	2	2		2	1	1	1	3	2	2
CO5	3	2	1	1	3	3	2		1	1	1	2	3	2	3

3. Computer Fundamentals (ESC-102)

Course Outcomes:

CO1: Demonstrate knowledge on C Programming constructs learn to develop simple applications in C using basic constructs.

CO2: Design and implement applications using arrays and string

CO3: Develop and implement modular applications in C using functions

CO4: Develop applications in C using structures and pointers.

CO5: Design applications using sequential and random access file processing.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	3		1		2			2				3	3	3	3
CO2	3	1	1		2			2				3	3	3	3
CO3	3	2			2			2				3	3	3	3
CO4	3	3	2		2			2				3	3	3	3
CO5	3	2	1		2			2	1			3	3	3	3

4. Basics of MechanicalEngineering (ESC-102)

Course Outcomes:

CO1: Apply various laws of thermodynamics to various processes and real systems.

CO2: Familiarize you with the refrigerants, vapour compression refrigeration system and multi stage vapour compression system.

CO3: Under the basic concepts such as stress, strain, Hooks law, stress-strain diagram.

CO4: Familiarity with common manufacturing processes, such as machining, casting, welding, and their advantages and limitations.

CO5: Identify and analyze common machine elements and components, such as bearings, gears, shafts, and fasteners.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	3	3	2	1							3	3	3	3	3
CO2	3	3	2	1							3	3	3	3	3
CO3	3	3	2	1	2						3	3	3	3	3
CO4	3	3	2	1	2						3	3	3	3	3
CO5	3	3	2	1	2						3	3	3	3	3

5. Environmental Studies (MC-1)

Course Outcomes:

CO1: On completion of this course students will be able to describe the scientific inquiry in the field of modern ecology, explain the main limitations on patters of productivity, Energy Flow through the natural food chain and food webs, ecosystem dynamics and patterns in population and communities.

CO2: The students will understand the chemical properties of materials occurring in the environment, the phenomenon in the environment and apply the knowledge to various environmental processes.

CO3: Develop the ability to understand the patterns of air pollution dispersion with respect to micrometeorological changes.

CO4: The students will be able to describe the physical and chemical composition of water and wastewater and elucidate how and why these compositions fluctuate, main source of water pollution, the main types of pollutants and how each type can be controlled.

CO5: The students will understand the technical, legal and economic aspects of collection, transportation and management of hazardous wastes.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	1	1	1	1	2	2						1	2		
CO2		1	2	2									1	1	
CO3			2						1			1			
CO4	1			2			1						2		
CO5															

6. Communicative English (HSMC-101)

Course Outcomes:

CO1: Use English Language effectively in spoken and written forms.

CO2: Comprehend the given texts and respond appropriately.

CO3: Communicate confidently in various contexts and different cultures.

CO4: Acquire basic proficiency in English including reading and listening comprehension, writing and speaking skills.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1								3		3		3			2
CO2								3	2	3		3			2
CO3								3	2	3		3			2
CO4								3		3		3			2
CO5								3		3		3			2

RAFFLES UNIVERSITY, NEEMRANA

SCHOOL OF ENGINEERING AND TECHNOLOGY (SOE&T)

B.Tech (2nd Semester)

(Common to all branches)

S.No	Category	Code	Course Title	Hours Per Week			CIE	ESE	Total	Credits
				L	T	P				
1	BSC	BSC-104	ENGINEERING PHYSICS-II	3	1	THEORETICAL	40	60	100	4
2	BSC	BSC-105	Engineering Mathematics-II	3	1		40	60	100	4
3	ESC	ESC-105	Programming with 'C'	3	0		40	60	100	3
4	ESC	ESC-106	Basics of Electrical & Electronics Engineering	3	1		40	60	100	4
5	ESC	ESC-107	Engineering Mechanics	3	1		40	60	100	4
6	BSC	BSC-106	Engineering Chemistry	3	0		40	60	100	4
7	ESC	ESC-108	Basics of Electrical & Electronics Engineering Lab	PRACTICAL	0	2	60	40	100	1
8	BSC	BSC-107	Engineering Physics-II Lab		0	2	60	40	100	1
9	ESC	ESC-109	Engineering Drawing Lab		0	3	60	40	100	1
10	ESC	ESC-110	Programming with 'C' Lab		0	2	60	40	100	1
11	BSC	BSC-108	Engineering Chemistry Lab		0	2	60	40	100	1
			Total	**18**	**4**	**11**	**540**	**560**	**1100**	**28**

***CIE (Continues Internal Evaluation)**

***ESE (End Semester Exam)**

1. ENGINEERING PHYSICS-II (BSC-104)

Course Outcomes:

CO1: Students should be able to understand and apply Maxwell's equations, which are the fundamental equations describing the behavior of electric and magnetic fields.

CO2: Students should be able to understand the fundamental principles of quantum mechanics, including wave-particle duality, quantization of energy levels, and probabilistic nature.

CO3: Students should be able to understand the concept of semiconductors, insulators and Superconductivity

CO4: Students should understand the principles of X-ray generation and ultrasonic's.

CO5: Students should understand the concepts of nuclear decay, radioactive decay modes (alpha, beta, gamma), and the properties of different types of nuclear radiation.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	3	2	2		1			3				3	3	3	3
CO2	3	2	1		1			3	2			3	3	3	2
CO3	3	2	2		1		2	3	1		3	3	3	3	2
CO4	3	2	1		1		2	3	2			3	3	3	2
CO5	3	2	3		1			3	2		3	3	3	3	3

2. Engineering Mathematics-II (BSC-105)

Course Outcomes:

CO1: Explore the knowledge of integration and differentiation to solve the orthogonality of two spheres.

CO2: define the rank of matrix to find the nullity of matrix and calculate the Eigen values.

CO3: Develop the knowledge of integration and differentiation to solve the curl and gradients questions.

CO4: Explore the knowledge of half range Fourier sine and cosine series.

CO5: Use Lagrange's function to solve the differential problems.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	3	3	2	3	1	2	1		2	2	1	2	3	3	2
CO2	3	3	3	3	2	2	1		1	1	1	1	3	3	2
CO3	3	3	3	3	3	2	2		2	2	2	2	3	3	2
CO4	3	3	3	3	3	2	2		2	1	1	1	3	2	2
CO5	3	2	1	1	3	3	2		1	1	1	2	3	2	3

3. Programming with C (ESC-105)

Course Outcomes:

CO1: Demonstrate knowledge on C Programming constructs learn to develop simple applications in C using basic constructs

CO2: Design and implement applications using arrays and string

CO3: Develop and implement modular applications in C using functions

CO4: Develop applications in C using structures and pointers.

CO5: Design applications using sequential and random access file processing.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	3	3	2	3	2			2			2	3	3	3	3
CO2	3	3	2		2			2			2	3	3	3	2
CO3	3	3	2		2			2			2	3	3	3	2
CO4	3	3	3	3	2			2			2	3	3	3	2
CO5	3	2	3	3	2			2	3		2	3	3	3	3

4. Basics of Electrical Engineering (ESC-106)

Course Outcomes:

CO1: Students will gain knowledge regarding the various laws and principles associated with electrical systems.

CO2: Students will gain knowledge regarding DC network and apply them for practical problems.

CO3: Students will gain knowledge regarding various types' of semiconductors.

CO4: Student will gain knowledge about transistors and their application.

CO5: Student will gain knowledge on Basic Electronic Circuits and Instrumentation.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	3	3	1	2	1						2	1	1	1	
CO2	2	2	2	3	2						2	2	3		
CO3	3	1	2	2								1	1		
CO4	3	1	2	3	1							2		1	
CO5	3	2	2		2						3	2	1	2	

5. Engineering Mechanics (ESC-107)

Course Outcomes:

CO1: Students will understand the concepts of engineering mechanics.

CO2: Understand the phenomenon of friction and transmission of power and ability to solve problem related to the same.

CO3: Students will gain knowledge regarding center of gravity and moment of inertia and apply them for practical problems.

CO4: Modelling and analysis of forces systems acting on rigid bodies to evaluate position velocity and acceleration.

CO5: Fundamental understanding of mechanical vibrations and finding out natural frequency for mechanical systems. Application of free damped and forced vibrations on mechanical systems

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	3	2	1	3	2	2	3	3	3	3
CO2	3	3	3	3	3	3	2	1	2	2	2	3	3	3	3
CO3	3	3	3	3	3	2	2	1	2	2	2	3	3	3	3
CO4	3	3	3	3	3	3	3	1	2	2	2	3	3	3	3
CO5	3	3	3	3	3	3	3	1	2	3	2	3	3	3	3

6. Engineering Chemistry (BSC-106)

Course Outcomes:

CO1: Analyze the need, design and perform a set of experiments.

CO2: Identify the structure of unknown/new compounds with the help of new engg material.

CO3: Differentiate hard and soft water, solve the related numerical problems on water purification and its significance in industry and daily life.

CO4: Apply the principles of green chemistry in designing alternative reaction methodologies to minimize hazards and environmental degradation.

CO5: Understand the causes of corrosion, its consequences and methods to minimize corrosion to improve industrial designs.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	3	3	2	3	1	2	1		2	2	1	2	3	2	2
CO2	3	3	3	3	2	2	1		1	1	1	1	3	2	2
CO3	3	3	3	3	3	2	2		2	2	2	2	3	2	2
CO4	3	3	3	3	3	2	2		2	1	1	1	3	2	1
CO5	3	2	1	1	3	3	2		1	1	1	2	3	3	2

RAFFLES UNIVERSITY, NEEMRANA

SCHOOL OF ENGINEERING AND TECHNOLOGY (SOE&T)

Department of Mechanical Engineering

B.Tech (3rd Semester)

S. No.	Category	Code	Course Title	Hours Per Week			Credits	Marks		
				L	T	P		CIE	ESE	Total
1	BSC	BSC- 201	Mathematics III (Multidisciplinary	3	1	THEORY	4	40	60	100
2	PCC	PCC- ME-201	Strength of Materials (Major Core)	3	1		4	40	60	100
3	PCC	PCC -ME - 202	Thermodynamics (Major Core)	3	1		4	40	60	100
4		PCC- ME-203	Material Science and Engineering (Major Core)	3	0		3	40	60	100
5	PCC	PCC- ME - 204	Manufacturing Process I (Major Core)	3	0		3	40	60	100
6	MC	MC-III	Introduction of Indian Law (Value Added Courses)	2	0		0	40	60	100
7	PCC	PCC-M-205	Machine Drawing and Auto Cad Lab (Major (Core)	PRACTICAL		3	1	60	40	100
8	PCC	PCC-ME-206	Thermodynamics Lab (Minor Core)			2	1	60	40	100
9	PCC	PCC-ME-207	Manufacturing Process I Lab (Major Core)			2	1	60	40	100
10	PCC	PCC-ME-208	Strength of Materials Lab (Major Core)			2	1	60	40	100
11	PCC	PCC-ME 209	Material Science & Engineering Lab			2	1	60	40	100
TOTAL				**17**	**03**	**11**	**24**	**480**	**560**	**1100**

***CIE (Continues Internal Evaluation)**

***ESE (End Semester Exam)**

1. Mathematics III (BSC-201)

Course Outcomes:

CO1: To explore the fundamental knowledge of transforms and their types.

CO2: Laplace Transform and their applications.

CO3: Develop knowledge of double integration.

CO4: Explore the distribution in different situations.

CO-5: Use Analytic functions

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	3	3		3	2	2		1	2	1	2	3	3	2	3
CO2	3	3		3	2	2		1	1	1	2	3	2	2	3
CO3	3	3		2	2	2		1	2	1	2	3	3	2	3
CO4	3	2		3	2	2		1	1	1	2	3	3	2	3
CO5	3	2		3	2	2		1	1	1	2	3	3	2	3

2. Strength of Materials (PCC- ME-201)

Course Outcomes:

CO1: Apply materials and their elastic constants for composite bar subjected to various loads including thermal load.

CO2: Solve the problems on structural members subjected to Uni-axial load.

CO3: Construct Shear Force, Bending moment and Bending stress distribution in beams subjected to transverse load.

CO4: Determine the deflection of statically determinant beam.

CO5: Design Columns with different end conditions.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	3	2	3	3	3	3	1	1	2	2	2	3	3	3	2
CO2	3	2	3	3	3	3	1		2	2	2	3	3	3	2

CO3	3	2	3	3	3	2	1		3	2	2	3	3	3	2
CO4	3	2	3	3	3	2	1		3	2	2	3	3	3	2
CO5	3	2	3	3	3	3	1	1	2	2	2	3	3	3	2

3. Thermodynamics (PCC -ME -202)

Course Outcomes:

CO1: Apply various laws of thermodynamics to various processes and real systems.

CO2: Apply the concept of Entropy, Calculate heat, effort and other important thermodynamics properties for various ideal gas processes.

CO3: Estimate performance of various thermodynamics gas power cycles and gas refrigeration cycles and availability in each case.

CO4: Estimate stoichiometric air required for combustion, performance of vapour power cycle and vapour compression cycle.

CO5: Use psychometric charts and estimates various essential properties related to Psychrometry and process.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	1					2	3	3	3	2
CO2	3	3	3	3	3	1					2	3	3	3	2
CO3	3	3	3	3	3	1					2	3	3	3	2
CO4	3	3	3	3	3	1					2	3	3	3	2
CO5	3	3	3	3	3	1					2	3	3	3	2

4. Material Science and Engineering (PCC -ME -203)

Course Outcomes:

CO1. Identify and depict the crystal structure and their properties based on the structure.

CO2. Quantify the imperfections in a crystal.

CO3. Analyze the mechanical properties of engineering materials, draw the stress – strain diagrams.

CO4. Classify composite materials and their importance in engineering design and determine the type of fracture mechanism.

CO5. Outline heat treatment process to obtain required mechanical properties for a given alloy.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	3	3	3	3	2						3	3	3	3	3
CO2	3	3	3	3	2						3	3	3	2	3
CO3	3	3	3	3	2						3	3	3	2	3
CO4	3	3	3	3	2						2	3	3	3	2
CO5	3	3	3	3	2						2	3	3	3	2

5. Manufacturing Process- I (PCC -ME -204)

Course Outcomes:

CO1. To apply the knowledge of various manufacturing processes

CO2. To identify various process parameters and their effect on processes

CO3: Students should be able to design and analyze various manufacturing processes and tooling

CO4: To figure out the application of modernization in machining.

CO5: Get the knowledge of Jigs and Fixtures so as to utilize machine capability for variety of operations

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	3	3	3	3	3						3	3	3	3	3
CO2	3	3	3	3	3						3	3	3	3	3
CO3	3	3	3	3	3						3	3	3	3	3
CO4	3	3	3	3	3						2	3	3	3	3
CO5	3	3	3	3	3						2	3	3	3	3

6. Introduction of Indian Law (MC-1)

Course Outcomes:

CO1 Describe the Salient (Outstanding) features of Indian Constitution

CO2. Gain a deep understanding of the concept of equality as a fundamental human right and its significance in legal systems.

CO3. Students should be able to explain and analyze the three sub-clauses of Article 20 - protection against double jeopardy, protection against self-incrimination, and protection against retrospective criminal laws.

CO4. Students should be able to identify and understand the diverse minority communities in India and their unique cultural and educational needs.

CO5. Students should be familiar with the historical and socio-political context in which the original right to property provisions were framed.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1								2	2	3	3	3			2
CO2								2	2	3	3	3			2
CO3								2	2	3	3	3			2
CO4								2	2	3	3	3			2
CO5								2	2	3	3	3			2

RAFFLES UNIVERSITY, NEEMRANA

SCHOOL OF ENGINEERING AND TECHNOLOGY (SOE&T)

Department of Mechanical Engineering

B.Tech (4th Semester)

S. No.	Category	Code	Course Title	Hours Per Week			Credits	Marks		
				L	T	P		CIE	ESE	Total
1	PCC	PCC-ME-210	Kinematics of Machine (Minor Core)	2	1	THEORY	3	40	60	100
2	PCC	PCC-ME-211	Fluid Mechanics (Major Core)	3	0		3	40	60	100
3	PCC	PCC-ME-212	Manufacturing Process II (Major Core)	3	0		3	40	60	100
4	PCC	PCC ME 303	IC Engines (Major (Core)	2	1		3	40	60	100
5	PCC	PCC-ME-214	Industrial Engineering	2	1		3	40	60	100
6	PCC	PCC-ME-215	Design of Machine Element	2	1		3	40	60	100
7	PCC	PCC-ME-216	Kinematics of Machine Lab	2	0		1	40	60	100
8	PCC	PCC-ME-217	Fluid Mechanics Lab	PRACTICAL		2	1	60	40	100
9	PCC	PCC-ME-218	Manufacturing Process-II Lab			2	1	60	40	100
10	PCC	PCC-ME-219	Heat Transfer Lab			2	1	60	40	100
11	PCC	PCC ME 308	IC Engine Lab (Minor Core)			2	1	60	40	100
TOTAL				**16**	**03**	**06**	**22**	**460**	**540**	**1000**

***CIE (Continues Internal Evaluation)**

***ESE (End Semester Exam)**

1. Kinematics of Machine (PCC -ME-210)

Course Outcomes:

CO1: Designing a suitable mechanism depending on application

CO2: Drawing displacement diagrams and cam profile diagram for followers executing different types of motions and various configurations of followers,

CO3: Drawing velocity and acceleration diagrams for different mechanisms,

CO4: Selecting gear and gear train depending on application.

CO5: Understand the kinetics of the rigid bodies and solve simple problems using work-energy method.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	1					3	3	3	3	3
CO2	3	3	3	3	3	1					3	3	3	3	3
CO3	3	3	3	3	3	1					3	3	3	3	3
CO4	3	3	3	3	3	1					3	3	3	3	3
CO5	3	3	3	3	3	1					3	3	3	3	3

2. Fluid Mechanics (PCC -ME-211)

Course Outcomes:

CO1: To familiarize with the properties of fluids and fluid kinematics.

CO2: Apply Bernoulli's equation to fluid flow problems.

CO3: To understand the concept of dimensional analysis and incompressible flow.

CO4: Apply appropriate equations and principles to analyze pipe flow problems and turbulent flow.

CO5: Apply the boundary layer theory to determine lift and drag forces on a submerged body.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	3	3	3	3	2							3	3	2	3

CO2	3	3	3	3	2							3	3	2	3
CO3	3	3	3	3	2							3	3	2	3
CO4	3	3	3	3	2							3	3	2	3
CO5	3	3	3	3	2							3	3	2	3

3. Manufacturing Process-II (PCC -ME -212)

Course Outcomes:

CO1: Student should be able to apply the knowledge of various manufacturing processes.

CO2: Student should be able to identify various process parameters and their effect on processes.

CO3: Student should be able to design and analyze various manufacturing processes and tooling.

CO4: Student should be able to figure out application of modernization in machining.

CO5: Students should get the knowledge of Jigs and Fixtures so as to utilize machine capability for variety of operations.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	2					3	3	3	3	3
CO2	3	3	3	3	3	2					3	3	3	3	3
CO3	3	3	3	3	3	2					3	3	3	3	3
CO4	3	3	3	3	3	2					3	3	3	3	3
CO5	3	3	3	3	3	2					3	3	3	3	3

4. I.C Engines (PCC-ME-303)

Course Outcomes:

CO1: Understand different types of engines, applications, ideal cycles of operation and deviation with actual cycle and performance parameters

CO2: Understand fuel air cycles and deviations with actual cycles, effect of various operating variables of SI and CI engines, value timing diagrams and working of 2-S and 4-S engines.

CO3: Understand combustion phenomena in SI and CI engines and combustion chamber design, Knocking phenomena, fuel additives and different types of fuels.

CO4: Understand fuel supply systems, cooling systems and lubrication systems.

CO5: Apply basic calculations of the engine on performance and understand governing methods.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	3	3	3	3	2						3	3	3	3	3
CO2	3	3	3	3	2						3	3	3	3	3
CO3	3	3	3	3	2						3	3	3	3	3
CO4	3	3	3	3	2						3	3	3	3	3
CO5	3	3	3	3	2						3	3	3	3	3

5. Industrial Engineering (PCC -ME -214)

Course Outcomes:

CO1: Students will be able to understand the Basic Concepts of Industrial Engineering as well as the organization structures of Industry.

CO2: Students will be able to understand the Various Production Systems and Sale Forecasting Methods.

CO3: Students will be able to understand the concept of work study to improve productivity of men, machines and materials.

CO4: Students will be able to understand the Importance of Planning in the Industry

CO5: Students will be able to know the Importance of Inventory Control and Material Handling systems.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	3	2	3	2	3	2			1	2	3	3	3	3	3
CO2	3	2	3	2	3	2			1	2	3	3	3	3	3
CO3	3	2	3	2	3	2			1	2	3	3	3	3	3
CO4	3	2	3	2	3	2			1	2	3	3	3	3	3
CO5	3	2	3	2	3	2			1	2	3	3	3	3	3

6. Design of Machine Element (PCC -ME -215)

Course Outcomes:

CO1: To understand and apply principles of gear design for Spur, Helical, Bevel and Worm gear

CO2: To understand and analyse the concepts of Mechanical Joints like Riveted Joint, Welded Joints and Screwed Joints

CO3: To develop capability to design and analyse the Shaft diameter and different spring parameters.

CO4: To inculcate an ability to design belt drives and selection of belt, rope and chain drives.

CO5: To achieve an expertise in design of Sliding contact bearing in industrial applications.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	3	3	3	3	3						3	3	3	3	3
CO2	3	3	3	3	3						3	3	3	3	3
CO3	3	3	3	3	3						3	3	3	3	3
CO4	3	3	3	3	3						3	3	3	3	3
CO5	3	3	3	3	3						3	3	3	3	3

RAFFLES UNIVERSITY, NEEMRANA

SCHOOL OF ENGINEERING AND TECHNOLOGY (SOE&T)

Department of Mechanical Engineering

B.Tech (5th Semester)

S. No.	Category	Code	Course Title	Hours Per Week			Credits	Marks		
				L	T	P		CIE	ESE	Total
1	PCC	PCC ME 301	Dynamics of Machines (Major Core)	2	1	THEORY	3	40	60	100
2	PCC	PCC ME 302	Hydraulic Machines (Major Core)	2	1		3	40	60	100
3	PCC	HSMC 301	Principle of Management (Value Added Courses)	3	0		3	40	60	100
	PCC	PCC-ME-213	Heat Transfer (Major Core)	2	1		3	40	60	100
5	HSMC	PCC ME 304	Design of Transmission Systems (Major Core)	2	0		2	40	60	100
6	PEC	PCC ME 305	Measurement and Metrology (Multidisciplinary)	2	0		2	40	60	100
7	PCC	PCC ME 306	Hydraulic Machines Lab (Minor Stream)	PRACTICAL		2	1	60	40	100
8	PCC	PCC ME 307	Dynamics of Machines Lab (Major Core)			2	1	60	40	100
	PCC	PCC ME 308	Heat Transfer Lab (Minor Core)			2	1	60	40	100
	PCC	PCC-ME 309	Measurement & Metrology Lab			2	1	60	40	100
10	PROJ	PROJ ME 301	Industrial Training/ Project Seminar			2	1	60	40	100
TOTAL				**13**	**03**	**10**	**20**	**480**	**520**	**1000**

***CIE (Continues Internal Evaluation)**

***ESE (End Semester Exam)**

1. Dynamics of Machines (PCC-ME-301)

Course Outcomes:

CO1: To equip the student with fundamental knowledge of dynamics of machines so that student can appreciate problems of dynamic force balance, transmissibility of forces, isolation of systems, vibrations.

CO2: Compute frictional losses, torque transmission of mechanical systems.

CO3: Develop knowledge of analytical and graphical methods for calculating balancing of rotary and reciprocating masses.

CO4: Develop understanding of dynamic balancing, gyroscopic forces and moments.

CO5: Understand how to determine the natural frequencies of continuous systems starting from the general equation of displacement.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	3	3	3	3	3						3	3	3	3	3
CO2	3	3	3	3	3						3	3	3	3	3
CO3	3	3	3	3	3						3	3	3	3	3
CO4	3	3	3	3	3						3	3	3	3	3
CO5	3	3	3	3	3						3	3	3	3	3

2. Hydraulic Machines (PCC-ME -302)

Course Outcomes:

CO1: Work out the hydrodynamic force by liquid jet on plane surface and curved vanes for fixed and moving conditions.

CO2: Apprehend working of impulse and reaction turbine and their components parts.

CO3: Design and analysis performance characteristics of Pelton wheel, Kaplan turbine and Francis turbine

CO4: Comprehend working of different types of pumps and work out the efficiency of Centrifugal pump.

CO5: Compare hydropower plants with other types of power plants and calculate load factor and capacity factor for the hydropower plants.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	3	3	2	2	2							3	3	3	3
CO2	3	3	2	2	2							3	3	2	3
CO3	3	3	2	2	2							3	3	2	3
CO4	3	3	2	2	2							3	3	3	3
CO5	3	3	2	2	2							3	3	2	3

3. Principle of Management (HSMC-301)

Course Outcomes:

CO1: Identify and apply appropriate management techniques for managing business

CO2: Have a conceptual knowledge about the planning and decision making

CO3: Apply the concept of organizing for the effective functioning of a management

CO4: Evaluate leadership style to anticipate the consequences of each leadership style

CO5: Demonstrate the techniques for controlling and coordination

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	3	3	3	2	3	2	3	3	3	3	3	3	3	3	3
CO2	3	3	3	2	3	2	2	3	3	3	3	3	3	3	3
CO3	3	3	3	2	3	2	2	3	3	3	3	3	3	3	3
CO4	3	3	3	2	3	2	3	3	3	3	3	3	3	3	3
CO5	3	3	3	2	3	2	3	3	3	3	3	3	3	3	3

4. Heat Transfer (PCC -ME -213)

Course Outcomes:

CO1: Apply the principles of heat transfer to analyze and solve practical engineering problems.

CO2: Demonstrate proficiency in conducting experiments related to heat transfer.

CO3: Analyze and design heat exchangers and other heat transfer equipment.

CO4: Apply computational tools and software for heat transfer analysis.

CO5: Evaluate and select appropriate heat transfer techniques for specific engineering applications.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	3	3	3	3	3						3	3	3	2	2
CO2	3	3	3	3	3						3	3	3	2	2
CO3	3	3	3	3	3						3	3	3	2	2
CO4	3	3	3	3	3						3	3	3	2	2
CO5	3	3	3	3	3						3	3	3	2	2

5. Design of Transmission Systems (PCC-ME-304)

Course Outcomes:

CO1: Apply materials and their elastic constants for composite bar subjected to various loads including thermal load.

CO2: Solve the problems on structural members subjected to Uni-axial load.

CO3: Construct Shear Force, Bending moment and Bending stress distribution in beams subjected to transverse load.

CO4: Able to Determine the deflection of statically determinant beam.

CO5: Able to Design Columns with different end conditions.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	3	3	3	3	3						3	3	3	3	3
CO2	3	3	3	3	3						3	3	3	3	3
CO3	3	3	3	3	3						3	3	3	3	3
CO4	3	3	3	3	3						3	3	3	3	3
CO5	3	3	3	3	3						3	3	3	3	3

6. Measurement and Metrology (PCC-ME-305)

Course Outcomes:

CO1: Develop a solid understanding of the fundamental principles and concepts of measurement, including units, standards, and measurement systems.

CO2: Gain knowledge about the role of limits, fits, and tolerances in ensuring proper assembly and functionality of mechanical components.

CO3: Gain a comprehensive understanding of various measuring instruments used for dimensional measurement, such as calipers, micrometers, gauges, and dial indicators. Understand their working principles, features, and applications.

CO4: Gain proficiency in using thread gauges, thread micrometers, and other specialized measuring instruments for thread measurement.

CO5: Develop a comprehensive understanding of the geometric principles and concepts related to machine tools.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	3	3	3	3	3		2				3	3	3	3	3
CO2	3	3	3	3	3		2				3	3	3	3	3
CO3	3	3	3	3	3		2				3	3	3	3	3
CO4	3	3	3	3	3		2				3	3	3	3	3
CO5	3	3	3	3	3		2				3	3	3	3	3

RAFFLES UNIVERSITY, NEEMRANA

SCHOOL OF ENGINEERING AND TECHNOLOGY (SOE&T)

Department of Mechanical Engineering

B.Tech (6th Semester)

S. No.	Category	Code	Course Title	Hours Per Week			Credits	Marks		
				L	T	P		CIE	ESE	Total
1	PCC	PCC-ME 310	Automobile Engineering	3	0	THEORY	3	40	60	100
2	OEC	PCC-ME 311	Mechanical Vibration	3	1		4	40	60	100
3	OEC	PCC-ME 312	Operation Research	3	1		4	40	60	100
4	PCC	PEC ME 301-303	Professional Elective-1 Multidisciplinary	3	1		4	40	60	100
5	OEC	OEC-301-303	Open Elective I (Multidisciplinary)	3	0		3	40	60	100
6	OEC	OEC-304-306	Open Elective II (Value Added Courses)	3	0		3	40	60	100
7	PCC	PCC-ME 313	Automobile Engineering Lab	PRACTICAL		2	1	60	40	100
8	PCC	PCC-ME 314	Mechanical Vibration Lab			2	1	60	40	100
TOTAL				**18**	**03**	**04**	**23**	**360**	**480**	**800**

***CIE (Continues Internal Evaluation)**

***ESE (End Semester Exam)**

1. Automobile Engineering (PCC-ME -310)

Course Outcomes:

CO1: Identify the different parts of the automobile

CO2: Explain the working of various parts like engine, transmission, clutch, Brakes

CO3: Describe how the steering and the suspension systems operate.

CO4: Understand the environmental implications of automobile emissions

CO5: Develop a strong base for understanding future developments in the automobile industry

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	1	2				3	3	3	3	3
CO2	3	3	3	3	3	1	2				3	3	3	3	3
CO3	3	2	3	3	3	1	2				3	3	3	3	3
CO4	3	2	3	3	3	1	2				3	3	3	3	3
CO5	3	3	3	3	3	1	2				3	3	3	3	3

2. Mechanical Vibration (PCC-ME -311)

Course Outcomes:

CO1: Obtain equations of motion to understand the behavior of oscillatory systems.

CO2: Understand the fundamentals of various damping systems to reduce vibration.

CO3: Learn various vibration excitations, practical aspects of isolations, and vibration measuring instruments.

CO4: Analyze the mathematical modeling of the two degrees of freedom systems and various vibration-absorbing devices.

CO5: Understand the characteristics of noise, sound, and its relationship with power and intensity.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	2	2				3	3	3	3	3
CO2	3	3	3	3	3	2	2				3	3	3	3	3
CO3	3	3	3	3	3	2	2				3	3	3	3	3
CO4	3	3	3	3	3	2	2				3	3	3	3	3
CO5	3	3	3	3	3	2	2				3	3	3	3	3

3. Operation Research (PCC-ME-312)

Course Outcomes:

CO1: Solve linear programming problems using appropriate techniques and optimization solvers, interpret the results obtained.

CO2: Determine optimal strategy for Minimization of Cost of shipping of products from source to Destination/ Maximization of profits of shipping products using various methods, Finding initial basic feasible and optimal solution of the Transportation problems

CO3: Optimize the allocation of resources to Demand points in the best possible way using various techniques and minimize the cost or time of completion of number of jobs by number of persons.

CO4: Model competitive real-world phenomena using concepts from game theory.

CO5: Formulate Network models for service and manufacturing systems, and apply operations research techniques and algorithms to solve these Network problems

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	3	3	3	3	3	2			2	2	3	3	3	2	3
CO2	3	3	3	3	3	2			2	2	3	3	3	2	3
CO3	3	3	3	3	3	2			2	2	3	3	3	2	3
CO4	3	3	3	3	3	2			2	2	3	3	3	2	3
CO5	3	3	3	3	3	2			2	2	3	3	3	2	3

4. Tribology (PCC-ME-302)

Course Outcomes:

CO1: Understand the different techniques used to solve mechanical engineering problems.

CO2: Derive and use 1-D and 2-D element stiffness matrices and load vectors from various methods to solve for displacements and stresses.

CO3: Apply mechanics of materials and machine design topics to provide preliminary results used for testing the reasonableness of finite element results.

CO4: Explain the inner workings of a finite element code for linear stress, displacement, temperature and modal analysis.

CO5: Use commercial finite element analysis software to solve complex problems in solid mechanics and heat transfer.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	3	3	2	2	3						1	3	3	3	2
CO2	3	3	2	2	3						1	3	3	3	2
CO3	3	3	2	2	3						2	3	3	3	2
CO4	3	3	2	2	3						2	3	3	3	2
CO5	3	3	2	2	3						1	3	3	3	2

5. Total Quality Management (OEC-302)

Course Outcomes:

CO1: To understand and apply the principles of total quality management.

CO2: Choose appropriate statistical techniques for improving processes.

CO3: Develop the organizational, competitive and economic potential of quality.

CO4: Integrate biblical principles with the practice of total quality management.

CO5: Identify requirements of quality improvement programs

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	2	2	1	3	3	1	3	3	2	1	3	3	3	3	2
CO2	2	2	1	3	3	1	3	3	2	1	3	3	3	3	2
CO3	2	2	1	3	3	1	3	3	2	1	3	3	3	3	2
CO4	2	2	1	3	3	1	3	3	2	1	3	3	3	3	2
CO5	2	2	1	3	3	1	3	3	2	1	3	3	3	3	2

RAFFLES UNIVERSITY, NEEMRANA

SCHOOL OF ENGINEERING AND TECHNOLOGY (SOE&T)

Department of Mechanical Engineering

B.Tech (7th Semester)

S. No.	Category	Code	Course Title	Hours Per Week			Credits	Marks		
				L	T	P		CIE	ESE	Total
1	PCC	PCC-ME-401	Computer Aided Design (Major Core)	3	0	THEORY	3	40	60	100
2	PCC	PCC-ME-402	Refrigeration and Air Conditioning (Major Core)	3	1		4	40	60	100
3	HSMC	HSMC-401	Engineering Economics (Value Added Courses)	3	0		3	40	60	100
4	PEC	PEC-ME 401-403	Professional Elective-II (Skill Enhancement Course)	4	0		4	40	60	100
5	OEC	OEC-401-403	Open Elective-III	3	1		3	40	60	100
6	PCC	PCC-ME-403	Refrigeration and Air Conditioning Lab (Minor Stream)	PRACTICAL		2	1	60	40	100
7	PROJ	PROJ-ME-402	Project-I			12	6	120	80	200
8	PROJ	PROJ-ME-401	Industrial Training /Project Seminar			2	2	120	80	200
TOTAL				**16**	**02**	**16**	**26**	**500**	**500**	**1000**

***CIE (Continues Internal Evaluation)**

***ESE (End Semester Exam)**

1. Computer Aided Design (PCC-ME-401)

Course Outcomes:

CO1: Provide basic foundation in CAD, computer graphics and Coordinate systems etc.

CO2: Understand and develop the Mathematical representations of curves used in geometric construction

CO3: Understand and develop the Mathematical representations of solids used in geometric construction

CO4: Understand the concepts of Scan Conversion, Rendering, Rasterising polygons and Hidden surface removal etc.

CO5: Creation of part drawings and 3D models using CAD techniques.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	3	3	3	2	3				2		2	3	3	3	2
CO2	3	3	3	2	3				2		2	3	3	3	2
CO3	3	3	3	2	3				2		2	3	3	3	2
CO4	3	3	3	2	3				2		2	3	3	3	2
CO5	3	3	3	2	3				2		2	3	3	3	2

2. Refrigeration and Air Conditioning (PCC-ME-402)

Course Outcomes:

CO1: Familiarize you with the terminology associated with refrigeration and air-conditioning.

CO2: To cover the basic principle of psychrometric and applied psychrometric.

CO3: Familiarize you with load calculation and duct design.

CO4: Familiarize you with the refrigerants, vapour compression refrigeration system and multi stage vapour compression system.

CO5: Understand the concept of vapour compression refrigeration system and other cooling system.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	3	3	3	3	2		2				2	3	3	3	3
CO2	3	3	3	3	2		2				2	3	3	3	3
CO3	3	3	3	3	2		2				2	3	3	3	3
CO4	3	3	3	3	2		2				2	3	3	3	3
CO5	3	3	3	3	2		2				2	3	3	3	3

3. Engineering Economics (HSMC-401)

Course Outcomes:

CO1: To understand the core economic terms, concepts and theories.

CO2: Identify the key elements of the demand and supply model and use it to critically analyze the real world examples.

CO3: Compare and contrast economic profits with accounting profits

CO4: Identify economic indicators and utilize them to articulate the state of the economy and prescribe monetary and fiscal policy

CO5: To have a conceptual knowledge about the role of government in countries economical changes.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	1	1	2			2	2				3	3		2	2
CO2	1	1	2			2	2				3	3		2	2
CO3	1	1	2			2	2				3	3		2	2
CO4	1	1	2			2	2				3	3		2	2
CO5	1	1	2			2	2				3	3		2	2

4. Welding Technology (PCC-ME-401)

Course Outcomes:

CO1: Identify the various materials for manufacturing process for a particular application.

CO2: Analyze gating systems and discuss mechanization procedures in foundries.

CO3: Explain various core making processes and special casting processes.

CO4: Select the various types of Fabrication Process for Mechanical applications.

CO5: To select and apply knowledge, techniques, skills, and modern tools of the Welding Processes.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	3	2			3		2				1	3	3	1	3
CO2	3	2			3		2				2	3	3	1	3
CO3	3	2			3		2				2	3	3	1	3
CO4	3	2			3		2				1	3	3	1	3
CO5	3	2			3		2				1	3	3	1	3

5. Non-Conventional Energy Sources (OEC-401)

Course Outcomes:

CO1: Demonstrate the generation of electricity from various non-Conventional sources of energy, have a working knowledge on types of fuel cells.

CO2: Estimate the solar energy, Utilization of it, Principles involved in solar energy collection and conversion of it to electricity generation.

CO3: Explore the concepts involved in wind energy conversion system by studying its components, types and performance.

CO4: Illustrate ocean energy and explain the operational methods of their utilization.

CO5: Acquire the knowledge on Geothermal energy.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	3	2	3	2	3		1				1	3	3	1	3
CO2	3	2	3	2	3		1				2	3	3	1	3
CO3	3	2	3	2	3		1				2	3	3	1	3
CO4	3	2	3	2	3		1				1	3	3	1	3
CO5	3	2	3	2	3		1				1	3	3	1	3

RAFFLES UNIVERSITY, NEEMRANA
SCHOOL OF ENGINEERING AND TECHNOLOGY (SOE&T)
Department of Mechanical Engineering
B.Tech (8th Semester)

S. No.	Category	Code	Course Title	Hours Per Week			Credits	Marks		
				L	T	P		CIE	ESE	Total
1	PCC	PCC-ME-404	Power Plant Engineering (Major Core)	3	0	THEORY	3	40	60	100
3	HSMC	HSMC-402	Entrepreneurship Development & Management	3	0		3	40	60	100
3	PCC	PEC-ME-405	CNC Machines and Automation (Skill Enhancement Course)	3	1		4	40	60	100
4	PEC	PEC-ME-404-406	Professional Elective-III	3	0		3	40	60	100
5	PEC	PEC-ME-407-409	Professional Elective-IV	3	0		3	40	60	100
6	OEC	OEC-404-406	Open Elective-IV	3	0		3	40	60	100
	PCC	PCC-ME-407	CNC Machine and Automation Lab (Minor Stream)	0	0	Practical	2	60	40	100
9	PROJ	PROJ-ME-403	Major Project II (Research Project) and Dissertation)	0	0		6	360	240	600
TOTAL				**06**	**02**	**20**	**20**	**560**	**440**	**1000**

***CIE (Continues Internal Evaluation)**

***ESE (End Semester Exam)**

1. Power Plant Engineering (PCC-ME-404)

Course Outcomes:

CO1: Enable students to understand about different types of power plants and boilers and combined power plant

CO2: Identify elements and their functions and operations of steam power plants.

CO3: Identify elements and their functions and operations of nuclear and hydel power plants

CO4: Identify elements and their functions and operations of diesel and gas turbine power plants

CO5: To illustrate the students to get the exposure of different renewable energy resources and to understand the economics of power plants and pollution control techniques.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	3	3	3	2	2	2	3		2		3	3	3	3	3
CO2	3	3	3	2	2	2	3		2		3	3	3	3	3
CO3	3	3	3	2	2	2	3		2		3	3	3	3	3
CO4	3	3	3	2	2	2	3		2		3	3	3	3	3
CO5	3	3	3	2	2	2	3		2		3	3	3	3	3

2. Entrepreneurship Development & Management (HSMC-402)

CO1: Demonstrate the meaning, functions, types and roles of an entrepreneur and entrepreneurship

CO2: Develop and strengthen entrepreneurial behaviour, quality and motivation.

CO3: Understand and analyse how sales are often conducted by agents and middlemen and to examine the legal liability arising in commercial agency.

CO4: To impart information about the process, procedure and rules and regulations for setting up new projects.

CO5: Apply preventive measures to be followed for effective management of entrepreneurship.

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	2	2	1	3	3	1	3	3	2	1	3	3	3	3	2
CO2	2	2	1	3	3	1	3	3	2	1	3	3	3	3	2
CO3	2	2	1	3	3	1	3	3	2	1	3	3	3	3	2
CO4	2	2	1	3	3	1	3	3	2	1	3	3	3	3	2
CO5	2	2	1	3	3	1	3	3	2	1	3	3	3	3	2

3. CNC Machines and Automation (PEC-ME-405)

Course Outcomes:

CO1: Able to read and measure part drawings and design callouts correctly without any difficulty.

CO2: Able to Understand fundamentals of NC/CNC Machine for producing quality Product of complexity.

CO3: Able to interpret manually program correctly a CNC machine to reduce waste.

CO4: Capable to use conversation of M & G codes by reading the program and knowing what action the machine intends to take thereby confirming the intended Action.

CO5: Able to use NC Programming through CAD/CAM and able to produce as per Design and proper functioning Maintenance and Trouble Shooting of CNC machine tools to maintained market demand in time.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	3	3	3	3	3				1	2	2	3	3	3	3
CO2	3	3	3	3	3				1	2	2	3	3	3	3
CO3	3	3	3	3	3				1	2	2	3	3	3	3
CO4	3	3	3	3	3				1	2	2	3	3	3	3
CO5	3	3	3	3	3				1	2	2	3	3	3	3

4. Rapid Prototyping (PECC-ME-405)

Course Outcomes:

CO1: Describe product development, conceptual design and classify rapid prototyping systems; explain stereo lithography process and applications.

CO2: Identify the process photopolymers, photo polymerization, layering technology, laser and laser scanning.

CO3: Applying of measurement and scaling technique for prototype manufacturing.

CO4: Identify the Rapid Prototyping Data Formats

CO5: Application for powder based rapid prototyping systems

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	3	3	3	2	2	2	3		2		3	3	3	3	3
CO2	3	3	3	2	2	2	3		2		3	3	3	3	3
CO3	3	3	3	2	2	2	3		2		3	3	3	3	3
CO4	3	3	3	2	2	2	3		2		3	3	3	3	3
CO5	3	3	3	2	2	2	3		2		3	3	3	3	3

5. Advanced Manufacturing Process (PEC-ME-409)

Course Outcomes:

CO1: Compare advanced manufacturing machining, classification, material applications in material removal process, the principle and processes of ultrasonic machining and abrasive jet machining

CO2: Understand the principle, working and applications of chemical and thermal metal removal processes.

CO3: Identify the principle, working and applications of advanced casting processes.

CO4: Understanding the principle, working and applications of advanced welding processes.

CO5: Understand the principles, working and applications of metal forming process.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	3	3	3	3	3						3	3	3	3	3
CO2	3	3	3	3	3						3	3	3	3	3
CO3	3	3	3	3	3						3	3	3	3	3
CO4	3	3	3	3	3						2	3	3	3	3
CO5	3	3	3	3	3						2	3	3	3	3

6. Utilization of Electrical Power and Traction (OEC-404)

Course Outcomes:

CO1: Compare advanced manufacturing machining, classification, material applications in material removal process, the principle and processes of ultrasonic machining and abrasive jet machining

CO2: Apply an appropriate measurement and analysis technique of artificial lighting for different specific purposes..

CO3: Describe what happens to the ions in electrolysis and Be able to predict the products of electrolysis of metal halides.

CO4: Able to understand the maintaining stability, provide optimum propulsion at all speeds, and reduce driver workload.

CO5: Able to draw curve between speed time and speed distance to achieve traction motor control.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	3	2	3	3	2						3	3	3	3	3
CO2	3	3	2	3	2						3	3	3	3	3
CO3	3	3	2	3	2						3	3	3	3	3
CO4	3	3	3	3	2						2	3	3	3	3
CO5	3	3	3	3	2						2	3	3	3	3

BACHELOR'S DEGREE PROGRAMME (B.Tech)

Choice Based Credit System

Syllabi

Academic Curricula-2022-26

Department Mechanical Engineering

RAFFLES
UNIVERSITY

Raffles University, Neemrana, Rajasthan [INDIA]-301705

www.rafflesuniversity.edu.in

B. Tech. I Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
04	3	1	0	BSC 101	ENGINEERING PHYSICS-I	BSC

UNIT I

Interference: **Coherent sources, conditions for sustained interference, Analytical treatment of interference, Division of Wave-Front – Fresnel‟s Biprism, Division of Amplitude- Interference by a plane parallel film, Wedge-shaped film, Newton‟s Rings, Michelson Interferometer, applications (Resolution of closely spaced spectral lines, determination of wavelengths).**

UNIT II

Diffraction: **Difference between interference and diffraction Fraunhofer and Fresnel diffraction. Fraunhofer diffraction through a single slit, Plane transmission diffraction grating, absent spectra, dispersive power, resolving power and Rayleigh criterion of resolution.**

UNIT III

Polarisation: **Polarised and unpolarised light, Uniaxial crystals, optic axis, double refraction,Nicol prism, quarter and half wave plates, Detection and Production of different types of polarized light, Polarimetry; Optical and specific rotation, Biquartz and Laurent‟s half shade polarimeter.**

Laser and Fibre Optics: **Spontaneous and Stimulated emission, Laser principle, Einstein‟s coefficients, characteristics of laser beam-concept of coherence, spatial and temporal coherence, He-Ne and semiconductor lasers (simple ideas), applications.**
Propagation of light in optical fibres, numerical aperture, V-number, single and multimode fibres, Elementary idea of attenuation and dispersion, applications.

UNIT IV

Electrostatics: **Dielectric polarization, dielectric relaxation process, types of polarization, relation between E,P and D, Gauss‟s law in the presence of a dielectric, Energy stored in a uniform electric field, dielectric losses and variation with frequency.**

Electrodynamics: **Maxwell‟s field equations –significance, differential and integral form, Maxwell‟s equations in different media- free space, dielectric and conductor.**

UNIT V

Special Theory of Relativity: **Inertial and non-inertial frames, Galilean transformations, Michelson‟s Morley Experiment, Postulates of Special Theory of Relativity, Lorentz transformations, Consequences of LT (length contraction and time dilation), addition ofvelocities, variation of mass with velocity, mass energy equivalence.**

Text and Reference books:

1. Perspectives of Modern Physics - Arthur Beiser (TMH)
2. Optics – Ajoy Ghatak (TMH)
3. Modern Physics for Engineers – S.P.Taneja (R. Chand)
4. Engineering Physics – Satya Prakash (Pragati Prakashan)
5. Modern Engineering Physics – A.S.Vasudeva (S. Chand)
6. Engineering Physics (Vol-1)- S.L. Gupta (Dhanpat Rai)
7. Fundamentals of Physics – Resnick & Halliday (Asian Book)
8. Introduction to Electrodynamics – D.J. Griffith (Prentice Hall)

B. Tech. I Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
04	3	1	0	BSC 102	ENGINEERING MATHEMATICS-I	BSC

UNIT I

Differential Calculus: **Asymptotes (Cartesian Coordinates Only), Curvature (Cartesian Coordinates Only), Concavity, Convexity and Point of Inflexion (Cartesian Coordinates Only), Successive differential.**

UNIT II

Differential Calculus: **Partial Differentiation, Euler‟s Theorem on Homogeneous Functions, Approximate Calculations, Maxima & Minima of Two and More Independent Variables, Lagrange‟s Method of Multipliers.**

UNIT III

Integral Calculus: **Surface and Volumes of Solids of Revolution, Double Integral, Double Integral by changing into polar form , Areas & Volumes by Double Integration ,Change of Order of Integration, Beta Function and Gamma Function (Simple Properties).**

UNIT IV

Differential Equations: **Differential Equations of First Order and First Degree - Linear Form, Reducible to Linear form, Exact Form, Reducible to Exact Form, and Linear Differential Equations of Higher Order with Constant Coefficients Only.**

UNIT V

Differential Equations: **Second Order Ordinary Differential Equations with Variables Coefficients, Homogeneous and Exact Forms, Change of Dependent Variable, Change ofIndependent Variable, and Method of Variation of Parameters.**

Text and Reference books:

1. Advanced Engineering Mathematics, Erwin Kreyszig, Wiley 9th Edition.
2. Calculus and Analytical Geometry, Thomas and Finney, Narosa Publishing House. New Delhi.
3. A Text Book of Differential Equations, M.Ray and Chaturvedi, Students Friends & Co. Publisher, Agra

4.Higher Engineering Mathematics, B.V.Ramana, Tata McGraw Hill.

B. Tech. I Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
04	3	1	0	ESC 101	COMPUTER FUNDAMENTALS	ESC

UNIT I

Introduction to Computer: **Definition of Computer, Evolution of Computer, Generations of Computer, types of Computer, classification of Computer, Input/output Devices, Arithmetic and Logical Unit, Central Processing Unit, Control Unit, Memory, Several Registers. Hardware and Software.**

Introduction to Software and Hardware, types of Software, difference between System Software and Application Software, Files, types of Files, Random Access File, Direct Random Access File, Pseudo code.

UNIT-II

Operating System and Memory: **Introduction to Operating System, Functions of Operating System, Types of Operating system, Introduction to Linux, Introduction to Memory, Primary Memory, types of Primary Memory, Secondary Memory, types of Secondary Memory, Extended Memory, Flash Memory.**

UNIT III

Number System and Arithmetic Core: **Binary Number System, Octal Number System, Hexadecimal Number System, BCD Codes, Addition, Subtraction, Multiplication and Division of Binary Number Systems.**

Conversions: **Conversion of Decimal to Binary, Binary to Decimal, Decimal to Octal,Binary to Octal, Octal to Decimal, Decimal to Hexadecimal, Hexadecimal to Decimal.**

UNIT IV

Boolean Algebra And Logic Gates: **Basic Boolean functions, Logic Gates, AND, OR, NAND, NOR Gates, Logic Circuits, Converting expression to Logic Circuits, Universal NAND Gate, Universal NOR Gate , Exclusive OR and Equivalence functions, Design of Combinational Circuit, Full and Half Adder, Parallel Binary Adder.**

UNIT V

Programming and Languages: **Introduction to Programming, Procedural Programming, Structural Programming, Object Oriented Programming, Machine Level Language, Assembly Language, Higher Level Language, Translator, Assembler, Linker, Loader, Advantages and Limitations of Programming Languages, Algorithms and Flow Charts.**

Text and Reference books::

1. E Balagurusamy Fundamentals of Computer TMH Publications.
2. Rajaraman, V. (2004). Introduction to Information Technology. PHI.
3. PK Sinha Computer Fundamentals Sixth Edition BPB Publications.
4. Norton, P. (2001). Introduction to computers. TMH
5. Ram, B. (2003). Computer Fundamentals. New Age Publications

B. Tech. I Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
04	3	1	0	ESC 102	BASICS OF MECHANICAL ENGINEERING	ESC

UNIT I

Basic Concepts of Thermodynamics: **Macroscopic and Microscopic Approaches, Thermodynamic Systems, Surrounding and Boundary, Thermodynamic Properties – Intensive and Extensive, Thermodynamic Equilibrium, State, Path, Process and Cycle, Concept of Thermodynamic Work and Heat, Zeroth Law of Thermodynamics, Energy and First law of Thermodynamics, First law applied to non-flow processes, Internal Energy and Enthalpy. Numerical Problems.**

UNIT II

I.C. Engines: **Introduction, classification, Constructional details and working of 2 stroke & 4 stroke petrol engine & diesel engine, Otto, diesel and dual cycles, simple problems on Otto & diesel cycles.**

Refrigeration, Air-Conditioning: **Refrigerants: properties of refrigerants, list of commonly used refrigerants. Refrigeration –Definitions – Refrigerating effect, Ton of Refrigeration, Ice making capacity, COP, Relative COP, unit of Refrigeration. Principle and working of vapor compression refrigeration and vapour absorption refrigeration: Principles and applications of air conditioners, Room air conditioner.**

UNIT III

Simple Lifting Machines: **Definition of machine, velocity ratio, Mechanical advantage, Efficiency, Laws of machines, Reversibility of machine, Wheel and axle, Differential pulley block, Single, Double and Triple start worm and worm wheel, Simple and compound screwjacks, Problems.**

Basics of Power Transmission: **Transmission of mechanical power: introduction belt drives, gear drives, their advantages and disadvantages. Introduction to brakes and clutches.**

UNIT IV

Stresses and Strains: **Introduction, Concept & types of Stresses and Strains, Poisons ratio, stresses and Strains in simple and compound bars under axial loading, Stress– Strain diagrams, Hook's law, Elastic constants and Mechanical Properties of metals like mild steel and cast iron.**

UNIT V

Basics of Manufacturing Processes and Measurements: **Brief introduction to classification of different manufacturing processes: Primary shaping processes, metal cutting processes, joining processes, finishing processes and processes bringing change in properties, Working principle, parts and specification of commonly used machine tools in workshop such as Lathe, Shaper and**

Milling. Measuring Instruments: introduction to slip gauges, Go and No Go gauges, dial gauges,vernier calliper, micrometer, sine bar, vernier height gauges.

Text and Reference Books:

1. Basics of Mechanical Engineering- R.K Rajput Laxmi Pub, Delhi.

2. Elements of Mechanical Engineering- D.S Kumar, S.K Kataria and Sons.

3. Engineering Thermodynamics- P.K Nag TMH, New Delhi.

4. Workshop Technology Vol I & II –Hazra & Chaudhary, Asian Book Comp., New Delhi.5.Engineering Thermodynamics- C.P Arora, Pub- TMH, New Delhi.

6. Manufacturing Science- Amitabha Ghosh & Ashok Kumar Malik, - East- West Press.

7. Manufacturing Process & Systems- Oswald, Munoz, John Wiley.

8. Workshop Technology Vol I, II & III- Chapman, WAJ, Edward Arnold.

9. Basics of Mechanical Engineering – Vineet Jain, Dhanpat Rai Publications

10. Automobile Engineering by Dr Kirpal Singh, standard Publishers Distributors

B. Tech. I Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
00	2	0	0	MC-I	ENVIRONMENTAL STUDIES	MC

UNIT I

Multidisciplinary Nature Environmental Studies: Definition, scope and importance. Need for public awareness.

Natural Resources: Renewable and Non-Renewable Resources: Natural resourcesand associated problems:

- Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.
- Water resources: Use and over-utilization of surface and ground water.
- Mineral resources: Use and exploitation, environmental effects of extracting and mineral resources, case studies.
- Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems.
- Energy resources: Renewable and non- renewable energy sources, use of alternate energy sources. Case studies.
- Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification.
- Role of an individual in conservation of natural resources.

UNIT II

Ecosystems:

Concept of an ecosystem. Structure and function of an ecosystem. Producers, consumers anddecomposers.

- Energy flow in the ecosystem. Ecological succession. Food chains, food webs and ecological pyramids. Nutrient cycling; biogeochemical cycle, N_2 Cycle, H_2O Cycle, Carbon cycle.

  a) Introduction & characteristic features, structure and function of the following ecosystem/ Biomes: a) Forest ecosystem b) Grassland ecosystem c) Desert ecosystem

  d) Aquatic ecosystems (fresh & Marine)

UNIT III.

Biodiversity and its Conservation:

- Introduction – Definition: genetic, species and ecosystem diversity.
- Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic andoption values.
- Bio geographical classification of India.
- Biodiversity at global, National and local levels.
- India as a mega-diversity nation. Hot-spots of biodiversity. Endangered and endemic species of India.
- Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts. Conservation of biodiversity: in-situ and ex-situ conservation of biodiversity.

UNIT IV

Environmental Pollution:

- Definition, Causes, effects and control measures of: a) Air pollution b) Water pollution c) Soil pollution d) Noise pollution e) Nuclear hazards
- Role of an individual in prevention of pollution.
- Solid waste Management: Causes, effects and control measures of urban and industrial wastes. Disaster management: floods, earthquake, cyclone and landslides.

UNIT V

Social Issues and the Environment:

- Sustainable development; From Unsustainable to Sustainable development urban problems related to energy. Water conservation, rain water harvesting, watershed management. Resettlement and rehabilitation of people; its problems and concerns.
- Environmental Issues and possible solutions. Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents.
- Environment Protection Act. Air (Prevention and Control of Pollution) Act. Water (Prevention and Control of Pollution) Act
- Wildlife Protection Act.
- Public awareness & measures.

Text and Reference books:

1. Perspectives in Environmental Studies by A. Kaushik and C. P. Kaushik, New age international publishers.
2. Environmental Studies by Benny Joseph, Tata McGraw Hill Co, New Delhi
3. Environmental Science: towards a sustainable future by Richard T. Wright. 2008 PHL Learning Private Ltd. New Delhi.
4. Environmental Engineering and science by Gilbert M. Masters and Wendell P. Ela 2008 PHI Learning Pvt Ltd.
5. Environmental Science by Daniel B. Botkin& Edwards A. Keller, Wiley

INDIA edition.
6. Fundamentals of Ecology by Odum, E.P., Barrick, M. and Barret, G.W. Thomson Brooks/Cole Publisher, California, 2005.

B. Tech. I Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
03	3	0	0	HSMC 101	COMMUNICATIVE ENGLISH	HSMC

UNIT I

Basic Functional English

1. The English „Alphabet‟ with emphasis on Vowels‟ and their sounds.
2. Introduction to various Parts of Speech – Noun, Verb, Adjective, Adverb, Pronoun, Preposition, Conjunction, Interjection.
3. Simple Present Tense.
4. Introduction to sentence composition – Subject and Predicate, Subject-Verb agreement, construction of Simple Sentences.
5. Articles – Uses and exceptions.
6. Vocabulary – Synonyms, Antonyms, Homonyms.
7. Commonly Mispronounced and misspelled words.
8. Common technical/ scientific/ legal terminologies
9. Question Formation – Close ended, open ended, and tag questions.

UNIT II

Communicative English

1. English in every-day communication – greeting people, introducing oneself, giving public speeches and presentations, public speaking, making an argument, persuading someone, participating in interviews and group discussions, situational role plays, etc.
2. Politeness and etiquette in daily communications – Minding the Ps and Qs (please, quite, kindly, excuse me, pardon me, thank you, bless you, pleasure, etc).
3. *May* and *Can* for permission and possibility; *Could* for permission and possibility in the past; *Could* for politeness in the present.
4. *May* and *Might* for possibility; *Can* and *Be able to* for ability.
5. *Ought*, *Should*, *Must*, *Have to*, *Had to*, and *Need to* for obligation.

UNIT III

Reading Comprehension

1. Close reading and comprehension.
2. Summary paraphrasing. CV writing, official letters, memo, precise, and reports.
3. Analysis and interpretation of key texts.

UNIT IV

Oral Presentation

1. Oral presentation (with PPTs or PREZI) of reports, arguments, summary and analysis of texts, etc.
2. Extempore, speech delivery, Just a Minute Exercise
3. Group Discussion and PI

UNIT V

Introduction to Business Communication:

Definition, objectives, importance, elements, process, forms, models, levels of analysis of business communication, principles of effective communication, barriers to communication. Types of communication, formal and non-formal, verbal and non-verbal.

Text and Reference books:

1. Communication Skills for Engineers and Scientists, Sangeeta Sharma & Binod Mishra, PHILearning Pvt. Ltd.
2. English for Engineers: Made Easy, Aeda Abidi & Ritu Chaudhary, CengageLearning, (New Delhi)
3. A Practical Course for Developing Writing Skills in English, J.K. Gangal, PHI Learning Pvt. Ltd., New Delhi.
4. Intermediate Grammar, Usage and Composition, Tickoo, A. E. Subramaniam & P. R.Subramaniam, Orient Longman (New Delhi)
5. The Written Word , Vandana R. Singh, Oxford University Press (New Delhi)
6. The Great Short Stories edited by D.C. Datta, Ram Narain Lal Publishers (Allahabad)
7. Professional Communication, Kavita Tyagi & Padma Misra, PHI Learning Pvt. Ltd., NewDelhi.
8. "Learn Correct English: Grammar, Usage and Composition" by Shiv K. Kumar &
9. Hemalatha Nagarajan, Pearson (New Delhi).
10. "Current English Grammar and Usage with Composition" by R.P. Sinha, Oxford
11. University Press (New Delhi).
12. "Grammar of the Modern English Language", by Sukhdev Singh & Balbir Singh, (New Delhi).

B. Tech. I Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
02	0	0	3	ESC 103	WORKSHOP PRACTICE LAB	ESC

Carpentry Shop

1. T – Lap joint
2. Bridle joint

Foundry Shop

1. Mould of any pattern
2. Casting of any simple pattern

Welding Shop

1. Gas welding practice by students on mild steel flat
2. Lap joint by gas welding
3. MMA welding practice by students
4. Square butt joint by MMA welding
5. Lap joint by MMA welding
6. Demonstration of brazing

Machine Shop Practice

1. Job on lathe with one step turning and chamfering operations
2. Job on shaper for finishing two sides of a job
3. Drilling two holes of size 5 and 12 mm diameter on job used / to be used for shaping
4. Grinding a corner of above job on bench grinder

Fitting and Smithy Shop

1. Finishing of two sides of a square piece by filing
2. Tin smithy for making mechanical joint and soldering of joint
3. To cut a square notch using hacksaw and to drill three holes on PCD and tapping

Text and Reference books :

1. Mechanical Workshop Practice, K.C. John, PHI Learning , New Delhi.
2. Elements of Workshop Technology Hajra & Choudhary, Media Promoters & Publisher.
3. Workshop Technology , W.A.J.Chapman, CBS Publisher & Distributor New Delhi.

B. Tech. I Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
01	0	0	2	BSC 103	ENGINEERING PHYSICS-I LAB	BSC

List of Experiments:

1. To determine the specific rotation of Glucose (Sugar) solution using a polarimeter.
2. To convert a Galvanometer in to an ammeter of range 1.5 amp. and calibrate it.
3. To convert a Galvanometer in to a voltmeter of range 1.5 volt and calibrate it.
4. To study the variation of a semiconductor resistance with temperature and hence determine the Band Gap of the semiconductor in the form of reverse biased P-N junction diode.
5. To measure the height of a terrestrial objects using Sextant.
6. To find out the horizontal component of earth‟s magnetic field by using tangent galvanometer.
7. To determine the wave length of monochromatic light with the help of Fresnel‟s biprism.

B. Tech. I Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
01	0	0	2	HSMC 102	LANGUAGE LAB-I	HSMC

List of Experiments:

1. Phonetic Symbols and Transcriptions
2. Word Formation
3. Affixes
4. Listening and speaking Skills.
5. Words often Mis-spelt and Mis- Pronounced
6. One Word for Many.
7. Synonyms and Antonyms.
8. Seminar Presentation.
9. Group Discussion.
10. Job Interview
11.

Text and Reference books:

1. Advanced Manual for Communication Laboratories and Technical Report Writing, D. Sudha Rani, Pearson, (New Delhi)
2. A Course in Phonetics and Spoken English, J. Sethi & P.V. Dhamija, PHI Learning Pvt. Ltd. (New Delhi)
3. English Language Laboratories: A Comprehensive Manual, Nira Konar, PHI Learning Pvt **.Ltd. (New Delhi)**
4. Communication Skills for Engineers and Scientists, Sangeeta Sharma and Binod Mishra, PHI Learning Pvt. Ltd.(New Delhi).
5. Oxford English Learning Package.(With CDs: Headway Series)
6. Tata McGraw Hills English Learning Package (With CDs) 7. "Oxford Advanced Learners" Dictionary" published by Oxford University Press (New Delhi)

B. Tech. II Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
04	3	1	0	BSC 104	ENGINEERING PHYSICS-II	BSC

UNIT I

Electromagnetic Theory (EMT): **Motion of Charged Particles in crossed electric & magnetic fields, Velocity Selector & Magnetic focussing, Gauss law, continuity equation, inconsistency in Ampere's Law, Maxwell's equations (differential and integral forms), poynting vector, Poynting Theorem (Statement only), propagation of plane electromagnetic waves in conducting and non- conducting medium.**

UNIT II

Quantum Mechanics & Statistical Physics: **De-Broglie Hypothesis, Davisson Germer experiment, wave function and its properties, expectation value, Wave Packet, Uncertainity principle. Schrodinger Equation for free Particle, Time Dependent Schrodinger Equation, Particle in a box (1-D), Single step Barrier, Tunneling effect.**
Qualitative Features of Maxwell Bollzman, Bose-Einstein and Fermi-Dirac statistics distribution,functions & their comparison (no derivation)

UNIT III

Solid State Physics**: Formation of energy bands in metals, semiconductors and insulators; intrinsic and extrinsic semiconductors, Fermi energy levels for doped, undoped semiconductors and pn junction; Tunnel diode, Zener diode.**
Superconductivity: Meissner Effect, Type I and Type II Superconductors, BCS theory

(Qualitative only), London's equation, properties of superconductors & applications.

Unit IV

X-Rays**: production and properties, Crystalline and Amorphous solids (Brief) Bragg's Law,**
Applications.
Ultrasonics: **Introduction, Production of Ultrasonics (Magentostriction and piezoelectric methods), engineering applications.**

Unit V

Nuclear Radiation: Nuclear Detectors, Characteristics of gas filled detectors: general considerations, Constructions, Working and properties of: Ionization chamber, proportional counter, G. M.Counter and Scintillation Counter.

Text and Reference Books:

1. Concept of Modern Physics: A. BEISER
2. Quantum Physics: Greiner
3. Introduction to Electrodynamics: Griffith
4. Introduction to Superconductivity: Michael Tinkham
5. A Textbook of Nanoscience and Nanotechnology: T Pradeep
6. Electromagnetic waves and Radiating Systems: Jordan & Balmain
7. Solid State Physics: Kittel
8. Solid State Physics: R.L. Singhal
9. Quantum Mechanics: Schiff

B. Tech. II Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
04	3	1	0	BSC 105	ENGINEERING MATHEMATICS-II	BSC

Unit I

Coordinate Geometry of Three Dimensions: **Equation of a sphere, Intersection of a sphere and a plane, tangent plane, Intersection of two spheres, orthogonality of two spheres, Right circular cone. Right circular cylinder.**

Unit II

Matrices: **Rank of a matrix, Rank of matrix by reducing to normal forms, Consistency of systems of linear simultaneous equations and its solution, Eigen values and Eigen vectors,Cayley Hamilton theorem (without proof), Diagonalization of matrix.**

Unit III

Vector Calculus: **Scalar and vector field, differentiation & integration of vector functions, Gradient, Divergence, Curl and Differential Operator, Line, Surface and volume Integrals.**

Unit IV

Application of Vector Calculus: **Green's Theorem in a Plane, Gauss's and Stoke's Theorem (without proof) and their Applications. Fourier Series: Expansion of simple functions in Fourier Series, half range Fourier sine and cosine series, change of interval. Harmonic Analysis.**

Unit V

Differential Equations: **Series Solutions of Second Order Linear Differential Equations with Variable Coefficients (Complementary Functions only), Partial Differential Equations of First Order : Lagrange's Form, Standard Forms, Charpit's Method .**

Text and Reference books:

1. Advanced Engineering Mathematics, Erwin Kreyszig, Wiley 9th Edition.

2. Calculus and Analytical Geometry, Thomas and Finney, Narosa Publishing House N. Delhi.

3. A Text Book of Differential Equations, M.Ray and Chaturvedi, Students Friends & Co.Publisher, Agra.

4. Higher Engineering Mathematics, B.V.Ramana, Tata Mcgraw Hill.

B. Tech. II Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
03	3	0	0	ESC 105	PROGRAMMING WITH 'C'	ESC

UNIT I

Introduction to Programming: **Concept of algorithms, Flow Charts, Data Flow diagrams etc., Introduction to the Editing tools such as vi or MS-VC editors, Concepts of the finite storage, bits bytes, kilo, mega and gigabytes. Concepts of character representation, Number System & BinaryAirthmatic.**

UNIT II

Programming using C**: The emphasis should be more on programming techniques rather than the language itself. The C Programming language is being chosen mainly because of the availability of the compilers, books and other reference materials.**

Example of some simple C program. Concept of variables, program statements and function callsfrom the library (Print f for example)

UNIT III

Operation Using C: **C data types, int, char, float etc., C expressions, arithmetic operation, relational and logic operations, C assignment statements, extension of assignment of the operations. C primitive input output using getchar and putchar, exposure to the scanf and printf functions, C Statements, conditional executing using if, else. Optionally switch and break statements may be mentioned.**

UNIT IV

Iterations and Subprograms: Concept of loops, example of loops in C using for, while and do-while. Optionally continue may be mentioned. One dimensional arrays and example of iterative programs using arrays, 2-d arrays Use in matrix computations. Concept of Sub-programming, functions Example of functions. Argument passing mainly for the simple variables.

UNIT V

Pointers and Strings: **Pointers, relationship between arrays and pointers Argument passing using pointers Array of pointers. Passing arrays as arguments. Strings and C string library.**

Structure and Unions. Defining C structures, passing strings as arguments Programming examples.

Text and Reference Books:

1. Yashwant Kanetkar, "Let us C", BPB Publications, 2nd Edition, 2001.

2. Herbert Schildt, "C:The complete reference", Osbourne Mcgraw Hill, 4th Edition, 2002.

3. Raja Raman, "Computer Programming in C", Prentice Hall of India, 1995.

4. Kernighan & Ritchie, "C Programming Language", The (Ansi C Version), PHI, 2nd Edition.

B. Tech. II Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
04	3	1	0	ESC 106	BASIC ELECTRICAL ENGINEERING	ESC

UNIT - I

A.C. CIRCUITS**: Sinusoidal signal, instantaneous and peak values, RMS and average values,phase angle, polar & rectangular, exponential , R,L and C components, behaviors of these components in A.C. circuits. Concept of complex power, power factor.**

SERIES AND PARALLEL A.C. CIRCUITS: Series and parallel A.C. circuits, series andparallel resonance, Q factor, cut-off frequencies and bandwidth.

UNIT -II

DC NETWORK THEOREMS: **Thevenin's theorem, Norton's theorem, superposition theorem, maximum power transfer theorem, Star to Delta & Delta to Star transformation. Nodaland Loop methods of analysis**

UNIT - III

THREE PHASE CIRCUITS**: Phase and line voltages and currents, balanced star and delta circuits, Relation between star and delta quantities, power equation, measurement of power bytwo wattmeter method.**

UNIT - IV

1-ϕ TRANSFORMERS: **Principle of operation, construction & working of transformer, E.M.F- Equation, Phasor –diagrams, Voltage Regulation, S.C and O.C Test , losses and Efficiency , Auto Transformer.**

BASIC INSTRUMENTS: **Basics of Moving coil & Moving Iron instruments, Basics of indicating instruments – Wattmeter & Single phase Energy Meter.**

UNIT - V

D.C. Machine**: Principle of operation, construction, working & applications of D.C machines,Types of Machine.**

Induction motor**: Principle of operation, construction, working & applications, Types of motors,slip concept.**

Synchronous motor: Principle, construction, Types of motors.

TEXT REFERENCE BOOKS:

1. Basic Electrical Engg (2nd Edition) : Kothari & Nagarath, TMH
2. Electrical Technology (Vol-I) : B.L Theraja & A K Theraja, S.Chand
3 .**Electrical Engineering Fundamentals : Deltoro, PHI**
3. **Network Analysis :Valkenburg, PHI**

B. Tech. II Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
04	3	1	0	ESC 107	ENGINEERING MECHANICS	ESC

UNIT-I

Introduction of Engineering Mechanics: **Basic concepts System of Forces- Coplanar Concurrent Forces - Components in Space - Resultant- Moment of Forces and its ApplicationCouples and Resultant of Force System - Equilibrium of System of Forces- Free body diagrams- Equations of Equilibrium of Coplanar Systems and Spatial Systems.**

UNIT –II

Friction: **Types of friction - Limiting friction - Laws of Friction - static and Dynamic Frictions - Motion of Bodies - Wedge, Screw jack and differential Screw jack.**

Transmission of Power: **Belt Drivers - Open, Crossed and compound belt drives -length of belt - tensions - tight side - slack side - Power transmitted and condition for maximum power.**

UNIT -III

Center of Gravity & Moment of Inertia: **Centroids - Theorem of Pappus- Centroids of Composite figures - Centre of Gravity of Bodies - Area moment of Inertia: - polar Moment of Inertia - Transfer - Theorems - Moments of Inertia of Composite Figures - product of Inertia -Transfer Formula for product of Inertia. Moment of Inertia of Masses - Transfer Formula for Mass Moments of Inertia - Mass moment of inertia of composite bodies.**

UNIT -IV

Kinematics: **Rectilinear and Curve linear motion - Velocity and Acceleration - Motion of a Rigid Body - Types and their Analysis in Planar Motion.**

Kinetics: **Analysis as a particles and Analysis as a Rigid Body in Translation - Central Forces of motion - Equations of Plane Motion - Fixed Axis Rotation - Rolling Bodies - Work-Energy Method - Equation for Translation - Work-Energy application to Particle Motion, Connected System- Fixed axis Rotation and Plane Motion.**

UNIT -V

Mechanical Vibrations: **Definitions, Concepts - Simple Harmonic motion - free vibrations - Simple and compound pendulums - torsional vibrations.**

Shear Force & Bending Moment Diagrams & Trusses: **Support Reactions, Shear force and bending moment Diagram for Cantilever & simply supported beam with concentrated, distributed load and Couple. Application of Equilibrium Concepts: Analysis of plane Trusses:Method of joints, Method of Sections.**

B. Tech. II Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
03	3	0	0	BSC 106	ENGINEERING CHEMISTRY	BSC

UNIT I

Chemical Bonding**: Potential Energy curve for H_2 molecule, co-ordinate bond, Werner's theory, effective atomic numbers, isomerism in co-ordinate compounds. Hydrogen bonding, Vander Waal's forces, hybridization including d-orbitals, Valence shell Electron Repulsion Theory (VSEPR). Discussion of structures of IF_3, $SnCl_2$, CO_3^{2-}, Molecular Orbital theory, Linear combination of atomic orbitals (LCAO) method. Structures of simple heteronuclear diatomic molecules such as CO, NO, HF, HCl.**

UNIT II

Gaseous State: **Gas laws and Kinetic theory of gases, Distribution of molecular velocities, Mean free path, Real gases – non ideal behaviour, causes of deviation from ideal behaviour, Vander Waal's equation. Liquefaction of gases. Numericals based on above topics.**

Thermo chemistry: **Hess's Law, Heat of a reaction, Effect of temperature on heat of reaction at constant pressure (Kirchoff's eq.), heat of dilution, heat of hydration, heat of neutralization and heat of combustion, Flame temperature.**

UNIT III

Catalysis: **Criteria for catalysis : Homogeneous catalysis – acid-base, Enzymatic catalysis, Catalysis by metal salts, Heterogeneous catalysis, concepts of promoters, inhibitors and poisoning, physiosorption, chemisorption, surface area.**

The Phase Rule: **Definitions of various terms, Gibb's Phase rule, Application of phase rule to one component system – the water system and Sulphur system. Two component system : Lead – Silver, $FeCl_3$ – water, Na_2SO_4 – water.**

UNIT IV

Polymers and Composites: **Functionality, Degree of polymerization, concept of molecular weight (number average, weight average & numerical based on them), Linear, branched and cross-linked polymers, Tacticity of polymers, Homo and Copolymers (Classification based on repeat unit), Structure – property relationship of polymers. Industrial applications of important thermoplastic, thermosetting polymers, Elastomers, Natural**

Polymers. Conducting Polymers : Properties and applications.

UNIT V

Alkenes: **Nomenclature of alkenes, mechanisms of dehydration of alcohols and dehydrohalogenation of alkyl halides, The Saytzeff rule, Hofmann elimination, physical properties and relative stabilities of alkenes. Chemical reactions of alkenes and mechanisms involved in hydrogenation, electrophilic and free radical additions, Markownikoff's rule, hydroborationoxidation, oxymercurationreduction, ozonolysis, hydration, hydroxylation and oxidation with KMnO4.**

Text and Reference Books:

1. Inorganic Chemistry (Latest ed.) By J.D. Lee
2. Chemistry in Engineering & Technology (Vol I & II) (Latest ed.) By J.C. Kuriacose & J.Rajaram
3. Principles of Physical Chemistry (Latest ed.) By Puri, Sharma & Pathania
4. Polymer Science (Latest ed.) By V.R. Gowarikar, N.V. Viswanathan & Jayadev Sreedha

B. Tech. II Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
01	0	0	2	ESC 108	BASIC ELECTRICAL ENGINEERING LAB	ESC

List of Experiments:

1. To study working principle of Fluorescent Tube Light.
2. To study working of single phase Induction motor & vary its speed by single phaseAuto- Transformer.
3. To prepare connections of Ceiling Fan & vary its speed by regulator.
4. To study working of three phase Induction motor & vary its speed by three phase Auto- Transformer.
5. To study Stair – Case wiring.
6. To study Thevenin & Nortons Theorem
7. To study & verify Superposition Theorem
8. To study & verify Maximum power Transfer Theorem.
9. To study speed control of D.C motor.
10. To study open circuit & short circuit test of single phase Transformer.
11. To study power measurement by two wattmeter method.
12. To study the frequency response of series RLC circuit.

B. Tech. II Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
01	0	0	2	BSC 107	ENGINEERING PHYSICS-II LAB	BSC

List of Experiments:

1. To study and plot V-I characteristics of PN junction diode.

2. To Study and plot V-I characteristics Zener Diode.

3. To draw common emitter characteristics of a transistor and calculate transistor characteristicsparameters.

4. To draw common base characteristics of a transistor and calculate transistor characteristicsparameters.

5. To plot the waveform of the half wave rectifier and find the ripple factor for H.W.R.

6. To plot the waveform of the full wave bridge rectifier and analyze its output.

7. To study verify the truth table of all the logic gate.

8. To study Cathode Ray Oscilloscope (CRO).

B. Tech. II Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
02	3	0	3	ESC 109	ENGINEERING DRAWING LAB	ESC

UNIT - I

Introduction: **Drawing Instruments and their uses, BIS conventions, Lettering, dimensioning Line conventions and free hand practicing.**

UNIT - II

Orthographic Projections: **Introduction, Definitions - Planes of projection, reference line and conventions employed, Projections of points in all the four quadrants, Projections of straight lines (located in First quadrant/first angle only), True and apparent lengths, True and apparent inclinations to reference planes. Projections of plane surfaces–triangle, square, rectangle, rhombus, pentagon, hexagon and circle, planes in different positions by change of position method only.**

UNIT - III

Projections of Solids (First Angle Projection Only): Introduction, Definitions – Projections of right regular tetrahedron, hexahedron (cube), prisms, pyramids, cylinders and cones in different positions.

UNIT - IV

Sections And Development of Lateral Surfaces of Solids: Introduction, Section planes, Sections, Section views, Sectional views, Apparent shapes and True shapes of Sections of right regular prisms, pyramids, cylinders and cones resting with base on HP.

UNIT - V

Isometric Projection (Using Isometric Scale Only): **Introduction, Isometric scale, Isometric projection of simple plane figures, Isometric projection of tetrahedron, hexahedron(cube), right regular prisms, pyramids, cylinders, cones, spheres, cut spheres.**

TEXT AND REFERENCE BOOKS:

1. Engineering Drawing - N.D. Bhatt & V.M. Panchal, 48th edition, 2005-CharotarPublishing House, Gujarat
2. Engineering graphics for degree - K.C. John, 2nd Edition, 2009 – PHI Learning PrivateLimited.

3. Engineering Graphics - K.R. Gopalakrishna, 32nd edition, 2005- Subash PublishersBangalore

4. Engineering Graphics and Drafting :P.S. Gill, Milenium Edition, S.K. Kataria and Sons.

B. Tech. II Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
01	0	0	2	ESC 110	PROGRAMMING WITH 'C' LAB	ESC

List of Experiments:

1. Write a program to produce ASCII equivalent of given number
2. Write a program to find divisor or factorial of a given number.
3. Write a program to evaluate the following algebraic expressions after readingnecessary values from the user

   (ax+b)/(ax-b)

   2.5 log x-cos 30+|x^2-y^2|+sqrt

   (2xy)(x^5+10x^4+8x^3+4x+2
4. Write a program to find sum of a geometric series
5. Write a program to cipher a string
6. Write a program to check whether a given string follows English capitalization rules
7. Write a program to find sum of the following series1+ 1/2+ 1/3 +___+1/20
8. Write a program to search whether a given substring exist in an input string or not and thendelete this string from input string.
9. Write a recursive program for tower of Hanoi problem
10. The fibonacci sequence of numbers is 1,1,2,3,5,8……. Based on the recurrence relation

    F(n)=F(n-1)+F(n-2)for n>2

    Write a recursive program to print the first m Fibonacci number
11. Write a menu driven program for matrices to do the following operation depending onwhether the operation requires one or two matrices
    a) Addition of two matrices
    b) Subtraction of two matrices
    c) Finding upper and lower triangular matrices
    d) Trace of a matrix
    e) Transpose of a matrix
    f) Check of matrix symmetry
    g) Product of two matrices.
12. Write a program that takes two operands and one operator from the user perform

theoperation and then print the answer

13. Write a program to print the following outputs:



14. Write functions to add, subtract, multiply and divide two complex numbers (x+iy) and (a+ib)Also write the main program.
15. Write a menu driven program for searching an sorting with following options:-
    a) Searching (1) Linear searching
    (2) Binary searching
    b) Sorting (1) Insersection sort
    (2) Selection sorting
16. Write a program to copy one file to other, use command line arguments.
17. Write a program to mask some bit of a number (using bit operations)
18. An array of record contains information of managers and workers of a company. Print allthe data of managers and workers in separate files.

B. Tech. II Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
01	0	0	2	BSC 108	ENGINEERING CHEMISTRY LAB	ESC

List of Experiments

1. Determine the heat of hydration of $CuSO_4.5H_2O/FeSO_4.7H_2O$.

2. Determine the heat of neutralization of strong Acid (say H_2SO_4/HCl) with strong base (NaOH).

3. Determine the heat of neutralization of Weak Acid with strong base.

4. Determine the molecular weight of a substance by Rast Method.

5. Determine the reaction rate constant for 1^{st} order reaction.

6. Determine the surface tension of a liquid using drop weight method.

7. To determine the viscosity of the given liquid (density to be determined).

8. Preparation of a Polymer.

9. To determine the cell constant of a conductivity cell.

10. Titration of strong acid/strong base conduct metrically.

Text and Reference Books:

1. Practical Physical Chemistry (Latest ed.), By B.D. Khosla, A. Gulati & V.C. Garg

2. Laboratory Manual on Engineering Chemistry (Latest ed.), By S.K. Bhasin and Sudha Rani

Mechanical Engineering (B. Tech.) III Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
04	3	1	0	BSC201	MATHEMATICS-III	BSC

Unit -I

Fourier transform: Discrete and Fast Fourier transform Complex form of Fourier transform and its inverse, Fourier sine and cosine transform and their inversion. Properties of F-transform, Convolution theorem for F-transform, Parse Val's identity of for F-transforms Applications of Fourier transform for the solution of partial differential equations having constant coefficients with special reference to heat equation and wave equation.

Unit -II

Laplace transform, Inverse transform, properties, Transforms of derivatives and integrals, Unit step function, Dirac's delta function, Differentiation and integration of transforms, Applications to differential equations.

Unit -III

Statistical Techniques: Discrete and Continuous random variables–Moments–Moment generating functions – Binomial, Poisson, Geometric, Uniform, Exponential, Gamma and Normal distributions, Moments, Moment generating functions, Curve fitting, Method of least squares, Fitting of straight lines, Polynomials, Exponential curves etc., Correlation, Linear, non – linear

Unit -IV

Functions of Complex Variable: Definition, Exponential function, Trigonometric and Hyperbolic functions, Logarithmic functions. Limit and Continuity of a function, Differentiability and Analyticity.

Unit -V

Cauchy-Riemann equations: Necessary and sufficient conditions for a function to be analytic, polar form of the Cauchy-Riemann equations. Harmonic functions, application to flow problems. Integration of complex functions.

Text and Reference books:

1. Chandrika Prasad, Mathematics for Engineers, Prasad Mudralaya
2. Jeffrey, Advanced Engineering Mathematics , ELSEVIER
3. Chandrika Prasad , Advanced Mathematics for Engineers, Prasad Mudralaya
4. Grewal B. S., Higher engineering Mathematics, Khanna Publication, New Delhi
5. Keyszig E., Advanced Engineering Mathematics, Wiley Eastern Publication
6. Peter V. O. Neil, Advanced Engineering mathematics, Thomson Publication

Mechanical Engineering (B. Tech.) III Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
04	3	1	0	PCC-ME 201	Strength of Material	PCC

Unit -I

Deformation in solids- Hooke's law, stress and strain- tension, Concept of factor of safety, compression and shear stresses- elastic constants and their relations- volumetric, linear, Equations of static equilibrium, Concept of free body diagram, Composite bars, Thermal stresses and principal stresses and principal planes- Mohr's circle

Unit –II

Beams and types transverse loading on beams- shear force and bend moment diagrams- Types of beam supports, simply supported and over-hanging beams, cantilevers. Theory of bending of beams, bending stress distribution and neutral axis, shear stress distribution, point and distributed loads.

Unit -III

Moment of inertia about an axis and polar moment of inertia, deflection of a beam using double integration method, computation of slopes and deflection in beams, Maxwell's reciprocal theorems.

Unit –IV

Torsion: Torsional shear stress in solid, hollow and stepped circular shafts, angular deflection and power transmission capacity, Strain energy in torsion, Stresses in members subjected to combined axial, bending and torsional loads.

Unit –V

Axial and hoop stresses in cylinders subjected to internal pressure, deformation of thick and thin cylinders, deformation in spherical shells subjected to internal pressure

Columns and struts: Equilibrium, buckling and stability, Short, long and intermediate columns, Euler's formula for crippling load for columns, different end conditions, equivalent length, Eccentric loading Rankine formula and other empirical relations.

Text and Reference books:

1. James M. Gere, Mechanics of Materials, Cengage Learning (Brooks\Cole).
2. Ryder G.H., Strength of Materials, Macmillan India.
3. Sadhu Singh, Strength of Materials, Khanna Publishers.

Mechanical Engineering (B. Tech.) III Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
04	3	1	0	PCC-ME 202	THERMODYNAMICS	PCC

Unit -I

Definition of thermodynamics, Fundamental concepts and definitions: Dimensions and units, Microscopic and Macroscopic approaches, Systems, Surroundings and Universe, Concept of Continuum, Control system boundary, Control volume, Thermodynamic properties, Thermodynamic Equilibrium types, Thermodynamic state, path, process and cycle, Reversibility and Irreversibility, Quasi static process, Energy and its forms, Work and Heat, Ideal gas, Real gas, Ideal Gas laws, Law of corresponding states, Dalton's law, Amagat's law, Property of mixture of gases.

Zeroth law of thermodynamics: Zeroth law of thermodynamics, Temperature and it's Measurement, Temperature scales.

Unit -II

First law of thermodynamics: Thermodynamic definition of work, Thermodynamic processes, Calculation of work in various processes and sign convention, Non-flow work and flow work, Joules' experiment, First law of thermodynamics, Internal energy and enthalpy, First law of thermodynamics applied to open systems, Steady flow systems and their analysis, Steady flow energy equation, Boilers, Condensers, Turbine, Throttling process, Pumps etc. First law analysis for closed system (non-flow processes), Analysis of unsteady processes such as filling and evacuation of vessels with and without heat transfer, Limitations of first law of thermodynamics, PMM-I.

Unit -III

Second law: Devices converting heat to work, Thermal reservoir, Heat engines, Efficiency, Devices converting work to heat, Heat pump, refrigerator, Coefficient of Performance, Reversed heat engine, Kelvin Planck statement of second law of thermodynamics, Clausius statement of second law of thermodynamics, Equivalence of two statements of second law of thermodynamics, Reversible and irreversible processes, Carnot cycle and Carnot engine, Carnot theorem and it's corollaries, thermodynamic temperature scale, PMM-II.

Unit -IV

Entropy : Clausius inequality, Concept of Entropy, Entropy change in different thermodynamic processes, TDS equation, Principle of entropy increase, T-S diagram, Statement of the third law of thermodynamics.

Availability and Irreversibility: Available and unavailable energy, Availability and Irreversibility, Second law efficiency, Helmholtz & Gibb's function.

Unit -V

Properties of steam and thermodynamics cycles: Pure substance, Property of steam, Triplepoint, Critical point, Sub-cooled liquid, Saturation states, Superheated states, Phase transformation process of water, Graphical representation of pressure, volume and temperature, P-T & P-V diagrams, T-S and H-S diagrams, use of property diagram, Steam-Tables &Mollier charts, Use of steam tables and R134a tables; Saturation tables; Superheated tables; Identification of states & determination of properties.

Text and Reference books:

1. Engineering Thermodynamics by P.K.Nag, Tata McGraw Hill Pub.
2. Thermodynamics by J. P. Holman, McGraw Hill.
3. Engineering Thermodynamics by Jones and Dugans, PHI Learning Pvt. Ltd.
4. Fundamentals of Thermodynamics by Sonntag, Wiley India Pvt. Ltd.
5. Fundamentals of Classical Thermodynamics by Van Wylen, John wiley& sons.
6. Engineering Thermodynamics by R.K.Rajput.
7. Engineering Thermodynamic, Moran, M. J. and Shapiro, H. N., 1999, John Wiley and Sons.

Mechanical Engineering (B. Tech.) III Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
3	3	0	0	PCC-ME 203	Material Science & Engineering	PCC

Unit-I

Crystal Structure: Unit cells, Metallic crystal structures, Ceramics. Imperfection in solids: Point, line, interfacial and volume defects; dislocation strengthening mechanisms and slip systems, critically resolved shear stress.

Unit - II

Mechanical Property measurement: Tensile, compression and torsion tests; Young's modulus, relations between true and engineering stress-strain curves, generalized Hooke's law, yielding and yield strength, ductility, resilience, toughness and elastic recovery; Hardness: Rockwell, Brinell and Vickers and their relation to strength.

Unit -III

Alloys, substitutional and interstitial solid solutions- Phase diagrams: Interpretation of binary phase diagrams and microstructure development; eutectic, peritectic, peritectoid and monotectic reactions. Iron Iron-carbide phase diagram and microstrctural aspects of ledeburite, austenite, ferrite and cementite, cast iron.

Unit - IV

Heat treatment of Steel: Annealing, tempering, normalising and spheroidising, isothermal transformation diagrams for Fe-C alloys and microstructure development. Continuous cooling curves and interpretation of final microstructures and properties- austempering, martempering, case hardening, carburizing, nitriding, cyaniding, carbo-nitriding, flame and induction hardening, vacuum and plasma hardening

UNIT - V

Alloying of steel, properties of stainless steel and tool steels, maraging steels- cast irons; grey, white, malleable and spheroidal cast irons- copper and copper alloys; brass, bronze and cupro-nickel; Aluminium and Al-Cu – Mg alloys- Nickel based superalloys and Titanium alloys

Text and Reference books:

1. W.D. Callister, Jr, - Material Science & Engineering Addition, Wiley Publishing Co.
2. Van Vlash - Elements of Material Science & Engineering, John Wiley & Sons.
3. S. K. Hazra Choudhary– Material Science & Processes, Media Promoters & Publishers
4. VanVlash - Elements of Material Science & Engineering, John Wiley & Sons.
3. V. Raghvan Material Science, Prentice Hall of India

Mechanical Engineering (B. Tech.) III Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
03	3	0	0	PCC-ME 204	MANUFACTURING PROCESSES- I	PCC

Unit-I

Metal Casting Processes: Advantages and limitations, sand mold making procedure. Patterns: Pattern materials, pattern allowances, types of pattern, color coding. Molding materials: Molding sand composition, sand preparation, Sand molding processes. Cores: Types of cores, core prints, chaplets, and chills. Gating systems: Gates and risers. Melting practice: Cupola furnace, Defects in castings and their remedies, Precision Investment Casting, Centrifugal Casting, and Continuous Casting.

Unit-II

Metal Forming Processes: Nature of plastic deformation, hot working and cold working .Principles of rolling, roll passes, roll pass sequences. Forging: Forging operations, smith forging, drop forging, press forging, forging defects.

Unit-III

Extrusion and Sheet Metal Operations: Extrusion principle, hot extrusion, cold extrusion, wire drawing, swaging, tube making. Sheet metal operations: Press tools operations, shearing action, drawing dies, spinning, bending, stretch forming, embossing and coining.

Unit-IV

Welding Process: Principles of welding, brazing and soldering, Classification of Welding Processes, gas welding and cutting process, equipment. Arc welding power source and consumables. Resistance welding: Principle and equipments, resistance spot welding, resistance seam welding, electro slag welding, forge welding.

Unit-V

Advance Welding Processes: Tungsten inert gas welding (TIG), metal inert gas welding (MIG), MMAW, electron beam welding, friction welding, and diffusion welding: their working principle, equipments, parameters and applications.

Powder Metallurgy: Powder manufacturing, compaction and sintering processes. Advantages and applications of Powder Metallurgy.

Text and Reference books:

1. Principles of Manufacturing Materials & Processes – Campbell J. S., Publisher – McGraw Hill.

2. Manufacturing Science - Ghosh A; Mallik A.K. Affiliated East-West Press Pvt. Ltd., New Delhi

3. Manufacturing Processes- H S Shan, Cambridge University Press 2nd Edition 2017.

4. Production Technology – P C Sharma –S.Chand publications, New Delhi.

5. Elements of Manufacturing Processes – B.S. NagendraParasher, RK Mittal, PHI N. Delhi

MANDATORY COURSES

Mechanical Engineering (B. Tech.) III Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
2	2		0	MC-III	Introduction to Indian Law	MC

Unit – I

Salient features of the Indian constitution. Preamble Definition of State (Art. 12) Doctrines of Ultra-virus, severability, eclipse, waiver (Art, 13)

Unit – II

Right to equality (Art. 14) Prohibition of discrimination, Rights to equality of opport UNITy (Art. 15-16) Right to freedom under Article 19: Freedom of association; Freedom of movement; Freedom of residence; Freedom of assembly; Freedom of association; Freedom of movement; Freedom of residence; Freedom of occupation, trade and business; Right to take out processions; Right of the State to impose reasonable restrictions

Unit – III

Protection in respect of Conviction under Article 20, Ex-post-facto law; Double jeopardy; Self-incrimination; Right of Life and Personal Liberty (Act. 21), Protection in respect of arrest and detention Right to freedom of Religion (Articles 25-28)

Unit – IV

Cultural and Education Rights (Articles 29-30) Enforcement of Fundamental Right, Writ Jurisdiction of the Supreme Court and High Court (Article 32, 226)

Unit – IV

Right to property before and after the Constitution 42nd Amendment Act, 1976 Abolition of Untouchability, Titles (Articles 17-18) Right against exploitation (Articles 23, 24)

Text and Reference Books:

Austin Granville: Constitution of India: Cornerstone of a Nation; and Working A Democratic constitution Narender Kumar: Constitutional Law of India.

Basu D. D: Shorter Constitution of India

Jain, M.P.: Constitutional Law of India,

Seervai, H.M.: Constitutional Law of India, Vols. I-III

Mechanical Engineering (B. Tech.), III Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
02	0	0	3	PCC-ME 205	Machine Drawing and Auto CAD Lab	PCC

SECTION A- MACHINE DRAWING

Introduction graphic language classification of drawing, principal of drawing, IS codes for machine drawing, lines, scales, section dimensioning, standard abbreviation, – Limits , fits and Tolerance (Dimensional and Geometrical tolerance) , Surface finish, Gears : Gear terminology, I.S. convention representation of assembly of spur gears, helical gears, bevel gears , worm and worm wheel.

Orthographic projections: principle of first and third angle projection, orthographic views from isometric views of machine parts / components. Drawing of sectional views:- Coupling, Crankshaft, Pulley, Piston and Connecting rod, Cotter and Knuckle joint. Riveted Joint and Welded Joint. Free hand sketching: Need for free hand sketching of standard parts and simple machines components.

Assembly drawing with sectioning and bill of materials from given detailed drawings of assemblies: Lathe Tail stock, Machine vice, Pedestal bearing

Assembly drawing with sectioning and bill of materials from given detailed drawings of assemblies Steam stop valve, Stuffing box, Drill jigs and Milling fixture.

SECTION B- Auto CAD

1. Setting up of drawing environment by setting drawing limits, drawing units, naming the drawing, naming layers, setting line types for different layers using various type of lines in engineering drawing, saving the file with .dwg extension.

2. Layout drawing of a building using different layer and line colors indicating all Building details. Name the details using text commands, Make a title Block.

3. To Draw Orthographic projection Drawings (Front, Top and side) of boiler safety valve giving name the various components of the valve.

4. Make an Isometric dimensioned drawing of a connecting Rod using isometric grid and snap.

5. Draw quarter sectional isometric view of a cotter joint.

6. Draw different types of bolts and nuts with internal and external threading in Acme and square threading standards. Save the bolts and nuts as blocks suitable for insertion.

7. Draw 3D models by extruding simple 2D objects, dimension and name the objects.

8. Draw a spiral by extruding a circle.

Text and Reference Books:

1. Machine Drawing - N D Bhatt and V M Panchal, Charotar Publishing House.

2. A Text Book of Machine Drawing - P S Gill Pub.: S K Kataria& Sons.

3. Engineering Graphics with Auto CAD 2002 -JamesD.Bethune, Pearson Education.

4. A Text Book of Machine Drawing LaxmiNarayana and Mathur, M/s. Jain Brothers, New Delhi.

5. Machine drawing by N Sidheshwar, Kannaieh, V S Sastry, TMH., New Delhi.

Mechanical Engineering (B. Tech.) III Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
1	**0**	**0**	**2**	**PCC-ME 206**	**THERMODYNAMICS LAB**	**PCC**

LIST OF EXPERIMENTS

1. Study of temperature and its measuring devices.
2. Study of determination of Calorific Value of Fuels by using different calorimeters
3. Determinations of exhaust gas analysis by using Orsat Apparatus
4. Study and comparison of SI and CI Engines (Cut Models).
5. To draw valve timing diagram for a single cylinder diesel engine.
6. To perform constant speed load test on a single cylinder diesel engine and to plot performance curves: indicated thermal efficiency, brake thermal efficiency, mechanical efficiency Vs. Brake power.
7. To perform constant speed load test on computerized test rig and to plot performance curves along with pressure-theta diagram.
8. Morse Test: To estimate the Indicated Power, Friction Power and Mechanical Efficiency of a multi-cylinder Petrol Engine.
9. Study of two stage reciprocating compressor.

Mechanical Engineering (B. Tech.) III Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
1	**0**	**0**	**2**	**PCC-ME 207**	**Manufacturing Science –I lab**	**PCC**

LIST OF EXPERIMENTS

1. To study and observe various stages of casting through demonstration of Sand Casting Process.
2. To prepare a pattern for given object for lost form casting.
3. To study and observe through demonstration the metal forming processes (Rolling, Forging and Sheet metal forming).
4. To manufacture a small object using hot forging technique.
5. To prepare a sheet metal product (square container).
6. To study and observe the welding and brazing techniques through demonstration and practice (Gas, MIG, TIG, Plastic, Brazing)
7. To prepare a butt joint with mild steel strip using GMAW & MMAW technique.
8. To prepare a butt joint with mild steel strips using brazing technique.

Mechanical Engineering (B. Tech.) III Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
1	**0**	**0**	**2**	**PCC-ME 208**	**STRENGTH OF MATERIAL LAB**	**PCC**

LIST OF EXPERIMENTS

1. To perform Tensile/Compressive/Shear/torsion test on a given material and to determine its various mechanical properties under tensile/compression/Shear/torsional loading
2. To determine Rockwell/Brinell hardness of a given material
3. To study the impact testing machine and perform the impact Tests (Charpy test).
4. To study the impact testing machine and perform the impact Test(Izod test)
5. To perform Bending test and to determine the Young's Modulus of Elasticity via deflection of beam.
6. Creep testing on creep testing machine
7. To draw shear Force, Bending Moment Diagrams for a simply Supported Beam under Point and Distributed Loads.
8. Compression and tensile test on helical springs.

Mechanical Engineering (B. Tech.) III Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
1	**0**	**0**	**2**	**PCC-ME 209**	**Material Science & Engineering Lab**	**PCC**

LIST OF EXPERIMENTS

1. 1. Classification of about 25 specimens of materials/machine parts into

(i) Metals and non-metals
(ii) Metals and alloys
(iii) Ferrous and nonferrous metals
(iv) Ferrous and non-ferrous alloys

2. Study of various crystals structures and defects in crystals through models.(Bravais Lattice structures).
3. Study of brittle and ductile fracture.
4. Metallographic examination /micro structural analysis of materials.
5. Grain Size determination of a given specimen.
6. Comparative study of microstructures of different given specimens (mild steel, gray C.I.)Heat treatment experiments such as annealing, normalizing, quenching, case hardening and comparison of hardness before and after.
7. Annealing of Steel -Effect of annealing temperatures and time on hardness.
8. Study of Microstructure and hardness of steel at different rates of cooling. Microstructure examination of white cast iron.
9. Study of Iron-Carbon Equilibrium Diagram and sketch the various structures present at room temperature.
10. Heat treatment experiments such as annealing, normalizing, quenching, case hardening and comparison of hardness before and after.

Reference and Text Books:

1. Vander Voort, Metallography: Principles and Practice, McGraw-Hill, 1984
2. Prabhudev K.H., Handbook of Heat Treatment of Steels, Tata McGraw-Hill, 2000.
3. Sadhu Singh, Machine Design, Khanna Publishers, New delhi, 1997.
4. Abdul Mubeen, Machine Design, Khanna Publishers 1995.

Mechanical Engineering (B. Tech.), IV Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
04	3	1	0	PCC-ME 210	KINEMATICS OF MACHINES	PCC

Unit -I

Classification of mechanisms- Basic kinematic concepts and definitions- Degree of freedom, mobility- Grashof's law, Kinematic inversions of four bar chain and slider crank chains- Limit positions- Mechanical advantage- Transmission angle- Description of some common mechanisms- Quick return mechanism, straight line generators- Universal Joint- Rocker mechanisms

Unit – II

Displacement, velocity and acceleration analysis of simple mechanisms, graphical velocity analysis using instantaneous centers, velocity and acceleration analysis using loop closure equations- kinematic analysis of simple mechanisms- slider crank mechanism dynamics Coincident points- Coriolis component of acceleration- introduction to linkage synthesis three position graphical synthesis for motion and path generation

Unit – III

Classification of cams and followers- Terminology and definitions- Displacement diagrams- Uniform velocity, parabolic, simple harmonic and cycloidal motions- derivatives of follower motions- specified contour cams- circular and tangent cams- pressure angle and undercutting, sizing of cams, graphical and analytical disc cam profile synthesis for roller and flat face followers

Unit – IV

Involute and cycloidal gear profiles, gear parameters, fundamental law of gearing and conjugate action, spur gear contact ratio and interference/undercutting- helical, bevel, worm, rack & pinion gears, epicyclic and regular gear train kinematics

Unit – V

Surface contacts- sliding and rolling friction- friction drives- bearings and lubrication friction clutches- belt and rope drives- friction in brakes

Text and Reference Books:

1. Thomas Beven, Theory of Machines, Longman's Green & Co., London.
2. W. G. Green, Theory of Machines, Blackie & Sons, London
3. V. P. Singh, Theory of Machines, DhanpatRai.
4. Gosh and Malik, Theory of Mechanism and Machines, East-west Pvt. Ltd. 1988.

Mechanical Engineering (B. Tech.), IV Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
04	3	1	0	PCC-ME 211	FLUID MECHANICS	PCC

Unit -I

Fluid Properties and Fluid Statics: Definition, Distinction between solid and fluid Modules and dimensions, Properties of fluids - density, specific weight, specific volume, specific gravity, temperature, viscosity, compressibility, vapour pressure, capillary and surface tension. Pascal law, absolute, gauge and vacuum pressures, Pressure measurements by manometers and pressure gauges. Archimedes principle, Hydrostatic law, Centre of pressure, stability of floating bodies.

Fluid Kinematics: Flow visualization, Lines of flow, Types of flow, Velocity field and acceleration, Continuity equation (one and three dimensional differential forms), Equation of streamline, Stream function, Velocity potential function, Circulation, Flow net.

Unit -II

Fluid Dynamics: Definition,Equations of motion - Euler's equation along a streamline, Bernoulli's equation and its applications,Venturi-meter, Orifice meter, Pitot tube, Orifices, Mouthpieces, Notches and Weirs, Momentum theorem.

Unit -III

Dimensional Analysis: Dimensionless numbers- Reynolds, Froude, Mach, Weber and Euler, Applications of numbers, Undistorted model, Distorted model, scale effect.

Incompressible Fluid Flow: Viscous flow, Navier-Stoke's equation (Statement only), Shear stress, Pressure gradient relationship, Laminar flow between parallel plates, Laminar flow through circular tubes, Hagen Poiseulle's equation.

Unit -IV

Flow Through Pipes: Friction loss, Darcy-Weisbach Formula, Minor and major losses, Hydraulic and energy grade lines, Flow through pipes in series and in parallel, Power transmission, Water hammer and cavitation.

Turbulent Flow: Variation of friction factor with Reynold number, Moody's diagram, Shear stress in turbulent flow, Prandtl Mixing length theory, Velocity distribution in smooth pipes and rough pipes, Resistance of smooth and rough pipe.

Unit -V

The Boundary Layer: Description of the boundary layer, Boundary Layer thickness, Von-Karman momentum integral equation, Coefficient of drag, Boundary layer separation and control, Flow around a body, Drag and lift, Drag on sphere and cylinder, Development of lift on a circular cylinder, Development of lift on an airfoil.

Text and Reference Books:

1. Yunus A. Cengel and Cimbala, Fluid Mechanics, Tata McGrawHill
2. Frank M. White, Fluid Mechanics, Tata McGraw Hill.
3. Streeter V.L., K.W. Bedford and E.B.Wylie , Fluid Mechanics , Tata McGraw Hill
4. Robert W. Fox and Alan T. McDonald, Introduction to Fluid Mechanics, John Wiley &Sons.
5. Potter, Mechanics of Fluids, Cengage Learning.
6. John F. Douglas, Fluid Mechanics, Pearson Education.
7. Modi and Seth, Fluid Mechanics and Hydraulic Machinery, Standard Book House.
8. Som, S. K., &Biswas, G. Introduction to fluid mechanics and fluid machines, Tata McGraw-Hill.
9. Munson, B. R., Young, D. F., &Okiishi, T. H. Fundamentals of Fluid Mechanics, Wiley
10. Flud mechanics by R.K. B ansal

Mechanical Engineering (B. Tech.), IV Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
03	3	0	0	PCC-ME 212	Manufacturing Processes-II	PCC

Unit-I

Mechanism of Metal Cutting: Deformation of metal during machining, nomenclature of lathe, milling tools, mechanics of chip formation, built-up edges, mechanics of orthogonal and oblique cutting, Merchant cutting force circle and shear angle relationship in orthogonal cutting, factors affecting tool forces. Cutting speed, feed and depth of cut, surface finish.Temperature distribution at tool chip interface.Numericals on cutting forces and Merchant circle.

Unit-II

Tool Wear and Machinability: Types of tool wear, tool life, factors governing tool life, Machinability: Definition and evaluation. Economics of machining, Numerical on tool life.

Cutting Tool Materials & Cutting Fluids: Characteristics of tool materials, various types of cutting tool materials, coated tools, cutting tool selection, Purpose and types of cutting fluids, basic actions of cutting fluids, effect of cutting fluid on tool life, selections of cutting fluid

Unit-III

Gear Manufacturing: Introduction, methods of manufacture. Gear generation and forming: Gear cutting by milling, single point form tool, gear hobbing and shaping. Gear finishing operations: Gear shaving, gear burnishing, gear grinding, lapping.

Unit-IV

Jigs & Fixtures: Introduction, location and location devices, clamping and clamping devices, Drill Jigs, Milling Fixtures.

Unit-V

Unconventional Machining Processes: introduction, classification of unconventional machining processes, Abrasive jet machining: Principles, advantages, disadvantages and applications. Ultrasonic machining: Principles, advantages, disadvantages and applications. Electro-chemical machining and grinding: Principles of operation, advantages, disadvantages and applications. Electric discharge machining: Principles, advantages, disadvantages and applications. Electron beam machining: principle, advantages, disadvantages and applications. Laser beam machining: Principles and applications.

Text and Reference Books:

1. Manufacturing Technology – Metal cutting and machine Tools: P.N. Rao, T.M.H, New Delhi
2. Workshop Technology -Vol II (Machine Tools) B.S Raghuwanshi, dhanpatRai and Company.
3. Manufacturing Processes- H S Shan, Cambridge University Press 2nd Edition 2017
4. Manufacturing Engg. & Tech, Kalpakian, Serope Addison -Wisly Publishing Co. New York.
5. Modern Machining Processes: P.C. Pandey& H.S. Shan, T.M.H. Company, New Delhi
6. Text Book of Production Engineering: P.C. Sharma, S.Chand& Sons.

Mechanical Engineering (B. Tech.), IV Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
04	3	1	0	PCC-ME 213	I.C. ENGINES	PCC

Unit -I

Introduction to IC Engines: Definition of engine, classification, Application of IC engines, Air Standard Cycle and deviation from air standard actual cycle, Indicator diagram, MEP (mean effective pressure), Shaft power, Indicated power.

Unit – II

Actual working of IC engine: Introduction to fuel air cycles and their significance, Composition of cylinder gases, Variable specific heats, Comparison of air standards & fuel air cycles, Effect of operating variables- compression ratio, fuel air ratio, actual cycles and their analysis, Difference between actual and fuel-air cycle, actual and fuel-air cycles for S.I. and C.I. engines.

Working of 4-stroke petrol & diesel engines and their valve timing diagram, Working of 2-stroke petrol & diesel engines & their valve timing diagrams, Comparison of 2-stroke &4-stroke engines, Actual working of 2 & 4 stroke gas engines and their valve diagram,

Unit – III

Fuel and Combustion: Fuels for SI and CI engine, Important qualities of SI and CI engines fuels, rating of SI engines, CI engines fuels, Dopes, Combustion in CI engines, Ignition delay, Knocking phenomena and its control, Combustion chamber design for CI engines. Combustion in SI engine, Detonation, Additives, Gaseous fuels, LPG, CNG, Biogas, Producer gas and Alternatives fuels for IC engines.

Unit – IV

Fuel Supply System: Fuel supply system and fuel pumps, Properties of air fuel mixture, Carburettor and its working, Actual air fuel ratio of single jet carburettor, Supercharger, Petrol injection, Fuel injection systems for C.I., Cooling and lubricants of IC engines

Classification of injection systems, Injection pump, Fuel injection systems, Fuel Injector, Nozzle, Injection of S.I. Engines and Fuel filters.

Unit – V

Measurement and Testing: Measurement of shaft power, Indicated power, Measurement of speed, Air consumption, Fuel consumption, Heat carried by cooling water, Heat carried by the exhaust gases, Morse test, Heat balance sheet, Governing of I.C. Engines, Performance characteristics of I.C. Engines, Performance parameters, Performance of S.I. Engines, Performance of C.I. Engine

Text and Reference Books:

1. V. Ganeshan, Internal Combustion Engines, Tata McGraw Hill
2. Damundwar,A Course in Internal Combustion Engines,DhanpathRai& Sons

3. Obert E. F, "Internal Combustion Engines and Air Pollution", Harper and Row Publication Inc. NY, 1973.
4. Heywood J. B, "Internal Combustion Engine Fundamentals", McGraw Hill Book Co. NY,1989

Mechanical Engineering (B. Tech.) IV Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
04	**3**	**1**	**0**	**PCC-ME 214**	**INDUSTRIAL ENGINEERING**	**PCC**

Unit-I

Production system and Productivity: Introduction to production systems, Aim of production systems, generalized model of Production systems, Types and characteristics of production systems, Life cycle approach to production management, Product life cycle, Plant location, Plant layout, objectives, types, comparison and application of different types of layouts. Productivity definition, various methods of measurement, Factors effecting productivity, Strategies for improving productivity.

Unit-II

Manufacturing Cost Analysis: Fixed & variable costs, Direct, indirect & overhead costs, & Job costing, Recovery of overheads, Standard costing, Cost control, Cyber Laws And Security Cost variance Analysis - Labour, material, overhead in volume, rate & efficiency, Break even Analysis, Numerical Problems.

Unit-III

Work Study: Definition, Objectives, Method study, Principle of motion economy, Techniques of method study – Various charts, THERBLIGS, Work measurement - various methods, Time Study - PMTS, determining time, Work sampling. Numerical Problems.

Unit-IV

Materials Management : Strategic importance of materials in manufacturing industries, Relevant costs, Inventory control models - Economic order quantity (EOQ), Economic batch quantity (EBQ) with & without shortage, Inventory control systems - P,Q,Ss Systems, determination of order point & safety stock, Selective inventory control - ABC, FSN, SDE, VED,SCM , Numerical Problems.

Forecasting: Importance, Objectives, Forecasting and Prediction, Types, Classification of Forecasting Methods, Forecast Errors, Costs and Accuracy of Forecasts, Numerical Problems.

Unit-V

Production Planning & Control (PPC) : Objectives & variables of PPC, Aggregate planning - Basic Concept, its relations with other decision areas, Decision options - Basic & mixed

strategies, Master production schedule (MPS), Scheduling Operations Various methods for line & intermittent production systems, Gantt chart, Sequencing - Johnson algorithm for n-Jobs- 2 machines, n- Jobs-3 machines, 2 Jobs n-machines, n-Jobs m-machines Various means of measuring effectiveness of PPC, Numerical Problems.

Text and Reference Books:

1. Production & Operations Management – Chary, TMH, New Delhi.
2. Modern Production Management – S.S. Buffa, Pub.John Wiley.
3.Operations Management - Schroeder, McGraw Hill ISE.
4. Operation Management - Monks, McGraw Hill ISE.
5. Production & Operations Management - Martinich, John Wiely SE.
6. Industrial & Systems Engineering - Turner, Mize, Case, Prentice Hall Pub.
7. Industrial Engineering & Operations Management – SK Sharma, Pub-S. K.Kataria
8. Industrial Engineering – Ravi Shankar, Galgotia Pub.

Mechanical Engineering (B. Tech.), IV Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
04	3	1	0	PCC-ME 215	Design of Machine Elements	PCC

Unit -I

Design considerations - limits, fits and standardization, Review of failure theories for static and dynamic loading (including fatigue failure) and Design Against Static Load: Modes of failure, factor of safety, principle stresses, stresses due to bending and torsion, theory of failures.

Unit – II

Cyclic stresses, fatigue and endurance limit, stress concentration factor, stress concentration factor for various machine parts, Notch sensitivity, Design for finite and infinite life, Soderberg, Goodman & Gerber criteria.

Unit – III

Riveting methods, materials, types of rivet heads, types of riveted joints, failure of riveted joints, efficiency of riveted joints, design of boiler joints, eccentric loaded riveted joint, Welded joints and Screwed fasteners.

Unit – IV

Cause of failure in shaft, materials for shaft, stress in shaft, and design of shafts subjected to twisting moment, bending moment and combined twisting and bending moments, shaft subjected to fatigue loads, design for rigidity.

Design of springs: helical compression, tension, torsional and leaf springs

Unit – V

Design of transmission elements: spur, helical, bevel and worm gears; belt and chain drives.Analysis and applications of power screws and couplings.Analysis of clutches and brakes

Text and Reference Books

1. Design of Machine Elements by V. B. Bhandari, TMH Publishing Co. Ltd., New Delhi
2. Machine Design by Norton, Prentice Hall.
3. Machine Design by Shigley Tata McGraw hill
4. Sharma PC and Aggarwal DK, “Machine Design”, Kataria Publishers (2002)

Mechanical Engineering (B. Tech.), IV Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
01	**0**	**0**	**2**	**PCC-ME 216**	**KINEMATICS OF MACHINES LAB**	**PCC**

LIST OF EXPERIMENTS

1. To study inversions of four bar chain: Coupling Rod, Beam Engine
2. To study Steering Mechanisms; Davis and Ackerman.
3. Study of quick return mechanism and draw velocity and acceleration diagram.
4. Study of inversion of Double slider chain Oldham Coupling, Scotch Yoke and Elliptical Trammel.
5. Study of various cam-follower arrangements.
6. To plot displacement v/s angle of rotation curve for various cams
7. To determine co-efficient of friction using two roller oscillating arrangement.
8. Study of various types of dynamometers, Brakes and Clutches.
9. Study of a lathe gear box.
10. Study of a sliding mesh automobile gear box.
11. Study of various gear trains.

Mechanical Engineering (B. Tech.), IV Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
01	**0**	**0**	**2**	**PCC-ME 217**	**FLUID MECHANICS LAB**	**PCC**

LIST OF EXPERIMENTS

1. Determination of Metacentre height of a given body.
2. Determination of C_d, C_v & C_c for given orifice.
3. Calibration of contracted Rectangular Notch and / Triangular Notch and determination of flow rate.
4. Determination of velocity of water by Pitot tube.
5. Verification of Bernoulli's theorem.
6. Determination of Coefficient for minor losses in pipes.
7. Calibration and flow rate determination using Venturimeter & Orifice meter and Nozzle meter
8. Determination of head loss in given length of pipe.
9. Determination of the Reynold's number for laminar, turbulent and transient flow in pipe.
10. To study the velocity distribution in a pipe and also to compute the discharge by integrating the velocity profile.
11. To study the boundary layer velocity profile over a flat plate and to determine the boundary layer thickness.

Mechanical Engineering (B. Tech.), IV Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
01	**0**	**0**	**2**	**PCC-ME 218**	**Manufacturing processes –II Lab**	**PCC**

LIST OF EXPERIMENTS

1. Produce a rectangular block by face milling and prepare a slot on one face with a slotting cutter / side and face cutter.
2. Gear manufacturing by some indexing device on a milling machine
3. Job on grinding using - Surface grinding - Cylindrical grinding - Centreless grinding
4. Grinding and sharpening of lathe tool, drills.
5. Grinding of surface at 45°, 60°, 75° on tool and cutter grinder.
6. Milling cutter grinding on tool and cutter grinder.
7. Prepare a V-block to ± 0.2 mm accuracy on shaper machine.
8. Exercise on key way cutting and spline cutting.
9. Preparation of job through eccentric turning.
10. Practice of taper turning.
11. Exercise on EDM for preparation of electrodes (male and female).

Mechanical Engineering (B. Tech.), IV Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
01	**0**	**0**	**2**	**PCC-ME 219**	**I. C. ENGINES LAB**	**PCC**

LIST OF EXPERIMENTS

1. Study of IC Engine models
2. Study of working of two stroke petrol engine and four stroke petrol engine with the help of cut section models.
3. Study of working of two stroke diesel and four stroke diesel engine with the help of cut section models.
4. Study of fuel supply system of a petrol engine (fuel pump and simple carburettor)
5. Study of complete carburettor
6. Study of Diesel Injection System.
7. Study of fuel supply system of a Diesel engine (fuel pump and fuel injector)
8. Study of Ignition systems of an IC Engine (Battery and Magneto ignition system) and Electronic ignition system.
9. Study of Lubrication system of an IC Engine (mist, splash and pressure lubrication)
10. Study of cooling systems of an IC Engine (air cooling and water cooling)
11. To conduct a performance test on diesel engine to draw heat balance sheet for given load and speed
12. To determine friction power of diesel engine by Willan's line or fuel rate extrapolation method.
13. To conduct a performance test on the variable compression ratio engine and to draw the heat balance sheet for given compression ratio, speed and load and plot the performance curves.
14. To conduct a performance test on a four cylinder four stroke petrol engine and to draw the heat balance sheet and performance curves.

Mechanical Engineering (B. Tech.), V Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
04	3	1	0	PCC-ME 301	DYNAMICS OF MACHINES	PCC

Unit -I

Force Analysis and Flywheels: Static force analysis of mechanisms, D'Alemberts principle, inertia force and inertia torque, dynamic force analysis, dynamic analysis in reciprocating engines, gas forces, equivalent masses, bearing loads, crank shaft torque, engine shaking forces, turning moment diagrams, flywheels of engines and punch press

Unit -II

Analysis Gear Trains: Force analysis on Simple, compound, reverted and epicyclical gear trains, analytical, tabular, and graphical and vector methods for velocity ratio, gear boxes-sliding and constant mesh for automobile.

Unit -III

Governors: classification of centrifugal governor, Porter, Proell, Hartnell and spring controlled governors, governor effort, power, stability, sensitivity,.

Unit -IV

Gyroscope: Principle of gyroscopic couple, effect of gyroscopic couple and centrifugal force on vehicle taking a turn, stabilization of sea vessels. Inertia force analysis, Velocity and acceleration of slider crank and four bar mechanism, inertia force, piston thrust and forces on connecting rod, turning moment diagram, flywheel.

Unit -V

Dynamometers: absorption and transmission type dynamometers, prony, rope and hydraulic dynamometers braking system of automobiles.

Balancing: Balancing of rotating masses, balancing of reciprocating masses, locomotives, IC Engines, balancing machines.

Text and Reference Books:

1.Theory of Machines and Mechanisms, Uicker, Pennocle and Shigley, Oxford University Press.
2. Mechanism And Machine Theory, Ambekar A. G., Prentice-hall Of India
3. Theory of Mechanisms and Machines, Sharma and Purohit, Prentice-hall Of India
4. Theory of Mechanisms and Machines, Ghosh A., Affiliated East West Press.
5. Theory of Machines, Abdulla Shariff, DhanpatRai Publications.
6. Theory of Machines, S.S. RATAN TATA McGraw Hill

Mechanical Engineering (B. Tech.), V Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
04	3	1	0	PCC-ME 302	HYDRAULIC MACHINES	PCC

Unit -I

General Concepts : Euler's turbo machinery equation, Specific speed, impulse and reaction principle, Impulse momentum principle, jet impingement on stationary and moving flat plates and vanes, calculations for force exerted, work done and efficiency of jet. Basic components of a turbo machine and its classification.

Hydraulic Devices: Description, operation and application of hydraulic systems – hydraulic ram, hydraulic jack, hydraulic brake, hydraulic accumulator, hydraulic door closer, hydraulic press, selection of specification of above systems for different applications

Unit – II

Pelton Turbine :Components and operation; velocity triangles, work output; Effective head, available power and efficiency; design aspects such as mean diameter of wheel, jet ratio, number of jets, number of buckets with working proportions

Unit – III

Francis and Kaplan Turbines: Components and operation, velocity triangles and work output; working proportions and design parameters for the runner; Degree of reaction; Draft tubes, its function and types. Function and brief description of commonly used surge tanks

Unit – IV

Centrifugal Pumps : Main elements and their functions; Various types and classification; Pressure changes in a pump, suction, delivery and manometric heads; vane shape and its effect on head-capacity relationships; Departure from Euler's theory and losses; pump output and efficiency; Minimum starting speed and impeller diameters at the inner and outer periphery;

Unit – V

Reciprocating Pumps: Components, working principle; pressure variations due to piston acceleration; acceleration effects in suction and delivery pipes; work done against friction; maximum permissible vacuum during suction stroke; Air vessels

Text and Reference Books:

1. Hydraulic Machines by R. K. Rajput, S. Chand publication.

2. Fluid Mechanics and Fluid Power Engineering by Kumar D S, S K Kataria and Sons, Delhi

3. Hydraulic Machines by JagdishLal, Metropolitan Book Co Pvt. Ltd.

4. Sharma PC and Aggarwal DK, "Machine Design", Kataria Publishers (2002)

Mechanical Engineering (B. Tech.), V Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
03	3	0	0	HSMC301	Principles of Management	HSMC

Unit-I

Introduction To Management And Organizations:

Definition of Management – Science or Art – Manager Vs Entrepreneur – types of managers – managerial roles and skills – Evolution of Management – Scientific, human relations , system and contingency approaches – Types of Business organization – Sole proprietorship, partnership, company-public and private sector enterprises – Organization culture and Environment – Current trends and issues in Management.

Unit- II

Planning:

Nature and purpose of planning – planning process – types of planning – objectives – setting objectives – policies – Planning premises – Strategic Management – Planning Tools and Techniques – Decision making steps and process.

Unit-III

Organising:

Nature and purpose – Formal and informal organization – organization chart – organization structure – types – Line and staff authority – departmentalization – delegation of authority – centralization and decentralization – Job Design – Human Resource Management – HR Planning, Recruitment, selection, Training and Development, Performance Management , Career planning and management.

Unit-IV

Directing:

Foundations of individual and group behaviour – motivation – motivation theories – motivational techniques – job satisfaction – job enrichment – leadership – types and theories of leadership – communication – process of communication – barrier in communication – effective communication –communication and IT.

Unit-V

Controlling:

System and process of controlling – budgetary and non-budgetary control techniques – use of computers and IT in Management control – Productivity problems and management – control and performance – direct and preventive control – reporting.

Text and Reference Books:

1. P C Tripathi and P N Reddy , ‘Principles of management’
2. Davis and H. Olison, ‘Management Information System, Gordan’, McGraw Hill Pub.
3. William Werther and Keith Davis, ‘ Human Resources and Personal Management’
4. V S Ramaswamy and S Namakumari, ‘Marketing Management’
5. High Arnold and Daniel Feldman, ‘Organization Behavior’, McGraw Hill.
6. Stephen A. Robbins & David A. Decenzo& Mary Coulter, “Fundamentals of Management” 7th Edition, Pearson Education, 2011.
7. Robert Kreitner&MamataMohapatra, “ Management”, Biztantra, 2008.
8. Harold Koontz & Heinz Weihrich “Essentials of management” Tata McGraw Hill,1998.
9. Tripathy PC & Reddy PN, “Principles of Management”, Tata McGraw Hill, 1

Mechanical Engineering (B. Tech.), V Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
04	3	1	0	PCC-ME 303	HEAT TRANSFER	PCC

Unit -I

Introduction to Heat Transfer Processes: Introduction to three modes of heat transfer, Fourier's law of heat conduction, thermal conductivity, thermal conductivity of solids, liquids and gases, Effect of temperature on thermal conductivity, Newton's law of cooling, Definition of overall heat transfer coefficient, General parameters influence the value of heat transfer coefficient.

Conduction : General 3-Dimensoinal conduction equation in Cartesian, Cylindrical and spherical coordinates, Different kinds of boundary conditions, Nature of differential equations, One-dimensional heat conduction with and without heat generation, Electrical analogy, Heat conduction through composite walls, Critical thickness of insulation.

Unit -II

Heat Transfer from Finned Surfaces: Types of fin, Fin efficiency and effectiveness, Biot number, two dimensional steady state heat conduction using analytical and numerical methods, Periodic heat conduction.

Convection: Review of Navier–Stokes and energy equation, Hydrodynamic and thermal boundary layers, Laminar boundary layer equations, Forced convection appropriate non-dimensional members, Effect of prandtl number, Empirical relations for flow over a flat plate and flow through pipes.

Unit -III

Natural Convection: Dimensional analysis, Grashof number, Boundary layers in external flows (flow over a flat plate only), Boundary layer equations and their solutions, Heat transfer correlations.

Heat Transfer with Change of Phase: Nature of vaporization phenomena, Boiling and Condensation heat transfer, Pool boiling curve, Different regimes of boiling heat transfer, Correlations for saturated liquid vaporization, condensation on flat plates, Correlation of experimental results, Drop wise condensation.

Unit-IV

Heat Exchanger: Different types of heat exchangers, LMTD, Heat transfer coefficient for parallel, Counter and cross flow type heat exchanger, Effectiveness of heat exchanger, N.T.U. method, Fouling factor, Constructional and manufacturing aspects of heat exchangers.

Unit -V

Thermal Radiation: Plank distribution law, Kirchhoff's law, Radiation properties, Diffuse radiations, Lambert's law, Radiation intensity, Heat exchange between two black bodies heat exchanger between gray bodies, Reradiating surfaces heat transfer in presence of radiating surfaces, Shape factor, view factors and the radiosity method.

Text and References Books:

1. Heat Transfer, Holman J.P., Tata McGraw-Hill, New Delhi.
2. Heat and Mass Transfer, Cengel, Tata McGraw-Hill, New Delhi.
3. Heat Transfer, R. S. Khurmi, S. Chand Publication.
4. Heat and Mass Transfer, Kumar D.S., Kataria and Sons.
5. Heat Transfer, Sharma and Lal, Vardhan Publisher Jaipur.
6. Heat and Mass Transfer, Nag P.K., Tata McGraw-Hill, New Delhi.
7. Fundamental of Heat and Mass Transfer, Thirumaleshwar M., Pearson Education.
8. Heat Transfer, Rajput R.K., S. Chand Publication.

Mechanical Engineering (B. Tech.), V Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
04	3	1	0	PCC-ME 304	Design of Transmission Systems	PCC

Unit –I

Flexible transmission elements- design of flat belts & pulleys, selection of V-belts and pulleys, selection of hoisting wire ropes and pulleys, design of chains and sprockets

Unit – II

Gear transmission- speed ratios and number of teeth, force analysis, tooth stresses, dynamic effects, fatigue strength, factor safety, gear materials; Design of straight tooth spur gear and parallel axis helical gears based on strength and wear considerations, pressure angle in the normal and transverse plane; equivalent number of teeth and forces for helical gears.

Unit – III

Straight bevel gear- tooth terminology, tooth forces and stresses, equivalent number of teeth. Estimating the dimensions of a pair of straight bevel gears; Worm gear, merits & demerits, terminology, thermal capacity, materials, forces & stresses, efficiency, estimating the size of worm gear pair. Cross helical gears, terminology, helix angles, sizing of a pair of helical gears.

Unit – IV

Gear box- geometric progression, standard step ratio; Ray diagram, kinematics layout; Design of sliding mesh gear box- Design of multi-seed gear box for machine tool applications; constant mesh gear box, speed reducer unit; Variable speed gear box; Fluid couplings, Torque converters for automotive applications.

Unit – V

Cam design, types: pressure angle and undercutting base circle determination, forces and surface stresses; Design of plate clutches, axial clutches, cone clutches, internal expanding rim clutches; Electromagnetic clutches; Band and Block brakes, external shoe brakes, internal expanding shoe brake.

Text and References Books:

1. Shigley, J. E., Mechanical Engineering Design, 5th ed., McGraw-Hill, 1989.
2. Bhandari, V. B., “Design of Machine Element” Tata McGraw-Hill
3. Shigley J., Mischke C., Budynas R. and Nisbett K., Mechanical Engineering Design, 8th ed., Tata McGraw Hill, 2010.

Mechanical Engineering (B. Tech.), V Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
03	3	0	0	PCC-ME 305	MEASUREMENT& METROLOGY	PCC

Unit-I

STANDARD AND MEASUREMENTS; Need of standards, classification primary, secondary and tertiary standards traceability of standards, length standard, line and end standards, derivation of end standards from lline standards gauges and their calibration, wave length standards, angle standards, angle, slip gauges , precision polygons and div. circles.

Unit-II

LIMITS, FITS AND TOLERENCES: Concept of interchangeability, type of interchangeability, needs standards system of limits, fits and tolerances, BIS 919,1963standard system, selection of limits and exercise on limit, fits and tolerances, design principle for limit gauges. Taylor's principle, types of gauges , tolerances on limit gauges.

Unit-III

MEASURING AND GAUGING INSTRUMENTS; Design principle of measuring instruments, kinematics design, principle of alignment pivots and bearing , sources of error in measurement, calibration of measuring instruments, mechanical linear and angle measuring instrument, vernier callipers, micrometres, dial gauge, bevel protector, sine bar, spirit level , optical instruments, autocollimator tool room microscope, length measuring machines, comparator magnification principles, types of comparators, mechanical optical pneumatic electrical and electronic comparator.

GEOMETRICAL METROLOGY: Concept of form error, straightness, roundness, squareness and concentricity error and their measurement.

Unit-IV

SCREW THREAD AND GEAR METROLOGY; Element of screw metrology, measurement of major, minor and effective diameters of external and internal screw thread, measurement of pitch and screw thread angel, effect of pitch error , element of gear metrology, measurement of gear tool thickness, gear profile, gear concentricity, pitch and run out for involute gears , gear rolling test. MEASUREMENT OF SURFACE FINISH: Concept of macro and micro errors , scales, surface roughness measures, datum for surface roughness measurement, M and E system,

measurement of surface roughness stylus methods using, mechanical, optical and electrical(talysurf) magnification(Tomlinson testers) (foster)

Unit-V

MACHINE TOOL METROLOGY; alignment tests of machine tools, lathe, drilling machines and milling machine performance test lathe

Text and Reference Books;

1. Metrology by R.K.JAIN,
2. Khanna publication statistical quality control by M. MAHAJAN, Dhanpat Rai publication
3. Statistical quality control by R.S NAGARAJAN
4. Total quality management by dale H. Bester field publication Pearson education
5. Metrology ASTM hand book

Mechanical Engineering (B. Tech.), V Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
01	**0**	**0**	**2**	**PCC-ME 306**	**HYDRAULIC MACHINES LAB**	**PCC**

LIST OF EXPERIMENTS

1. To Study the Constructional details of Kaplan Turbine and draw Its Fluid Flow Chart.
2. To Study the Constructional details of Francis Turbine and draw Its Fluid Flow Chart
3. To Study the Constructional details of Pelton Turbine and draw Its Fluid Flow Chart
4. To Study the Constructional details of Hydraulic Ram and determine It's Various Efficiencies.
5. To Study the Constructional details of Centrifugal Pump and draw Its Characteristic Curve.
6. To Draw the Following Performance Characteristics of pelton turbine Constant Head, Constant Speed And Constant Efficiency Curve
7. To Draw the Following Performance Characteristics of Francis Turbine Constant Head, Constant Speed and Constant Efficiency Curve.
8. Performance Test on two stage centrifugal pump

Mechanical Engineering (B. Tech.), V Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
01	0	0	2	PCC-ME 307	DYNAMICS OF MACHINES LAB	PCC

LIST OF EXPERIMENTS

1. To find experimentally the Gyroscopic couple on Motorized Gyroscope and compare with applied couple
2. To plot force vs. radius and lift vs. speed curves for Governors of Proel.
3. To plot force vs. radius and lift vs. speed curves for Governors of Porter.
4. To plot force vs. radius and lift vs. speed curves for Governors of Hartnell.
5. To plot pressure distribution curves on a journal bearing.
6. To perform wheel balancing.
7. To perform static and dynamic balancing on balancing set up.
8. To determine mass moment of inertia of a flywheel.
9. To study the different types of brakes.
10. To study the various types of dynamometers.

Mechanical Engineering (B. Tech.), V Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
01	0	0	2	PCC-ME 308	HEAT TRANSFER LAB	PCC

LIST OF EXPERIMENTS

1. To determine thermal conductivity of Insulating Powders.
2. To determine thermal conductivity of a Good Conductor of Heat (Metal Rod).
3. To Measure the thermal conductivity of Liquid.
4. To determine the transfer Rate and Temperature Distribution for a Pin Fin.
5. To Determine Stefan Boltzmann Constant of Radiation Heat Transfer.
6. To Determine Heat Transfer Coefficient For Heated Vertical Cylinder in Natural Convection.
7. Determination of Heat Transfer Coefficient in Drop Wise and Film Wise condensation.
8. To Determine Critical Heat Flux in Saturated Pool Boiling.
9. To Study Performance of Simple Heat Pipes by force convection air flowing through it for different flow rate and heat flow rate.
10. To Study and Compare LMTD and Effectiveness in Parallel and Counter Flow Heat Exchangers.
11. To Find the Heat transfer Coefficient in Forced Convection in a tube. .
12. To find out the thermal conductivity of given slab.
13. To study the rates of heat transfer for different materials and geometries
14. To study the heat transfer through the insulating medium.

Mechanical Engineering (B. Tech.), V Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
01	**0**	**0**	**2**	**PCC-ME 309**	**MEASUREMENT& METROLOGY LAB**	**PCC**

LIST OF EXPERIMENTS

1. Calibration of Pressure Gauge
2. Calibration of Thermocouple
3. Calibration of LVDT
4. Calibration of Load cell
5. Determination of modulus of elasticity of a mild steel specimen using strain gauges.
6. Measurements using Optical Projector / Toolmaker Microscope.
7. Measurement of angle using Sine Center / Sine bar / bevel protractor
8. Measurement of alignment using Autocollimator / Roller set
9. Measurement of Screw threads Parameters using Two wire or Three wire method.
10. Measurements of Surface roughness, Using Tally Surf/Mechanical Comparator
11. Measurement of gear tooth profile using gear tooth vernier / flange micrometer
12. Calibration of Micrometer using slip gauges.
13. Measurement using Optical Flats.
14. Use of dial indicator for measuring taper.
15. Use of combination set, bevel protector and sine bar for measuring taper.
16. Measurement of thread characteristic using vernier and gauges.
17. Use of slip gauge in measurement of centre distance between two pins.
18. Study of tolerance-limit-fit.

Mechanical Engineering (B. Tech.), V Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
01	**0**	**0**	**2**	**PROJ-ME 301**	**INDUSTRIAL TRAINING-I**	**PROJ**

Objective of Industrial Training: The objective of industrial training is to provide work experience so that students engineering knowledge is enhanced and employment prospects are improved. The student should take this course as a window to the real World and should try to learn as much as possible from real life experiences by involving and interacting with industry staff. Industrial training also provides an opportunity to students to select an engineering problem and possibly an industry guide for their Major Project in final semester.

Scheme of Studies: Duration 4 weeks in summer break after IV semester, assessment to be done in V semester practical examination .During training students will prepare a first draft of training report in consultation with section in charge. After training they will prepare final draft with the help of Faculty of the concern Department of mechanical engineering. Then they will present a seminar on their training and present it in the institute in front of the committee headed by the HOD/Faculty Member.

Learning through Industrial Training: During industrial training students must observe following to enrich their learning:

- Industrial environment and work culture.
- Organizational structure and inter personal communication.
- Machines/equipment/instrument-their working and specifications.
- Product development procedure and phases.
- Project Planning, monitoring and control.
- Quality control and assurance.
- Maintenance system Costing system Stores and purchase systems.
- Layout of Computer/EDP/MIS centres.
- Problems related to various areas of work etc.
- Students are supposed to acquire the knowledge on above by Direct Observations without disturbing personnel at work.
- Interaction with officials at the workplace in free/ tea time Study of Literature at the workplace (e.g. User Manual, standards, processes, schedules, etc.)
- Hands on" experience Undertaking/assisting project work. Solving problems at the work place.
- Presenting a seminar participating in group meeting/discussion.
- Consulting current technical journals and periodicals in the library.

Mechanical Engineering (B. Tech.), VI Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
03	3	0	0	PCC-ME 310	AUTOMOBILE ENGINEERING	PCC

UNIT-I

Introduction to Automobiles : Classification, Components, Requirements of Automobile Body; Vehicle Frame, Separate Body & Frame, Unitised Body, Car Body Styles, Bus Body & Commercial Vehicle Body Types; Front Engine Rear Drive & Front Engine Front Drive Vehicles, Four Wheel Drive Vehicles, Safety considerations; Safety features of latest vehicle; Future trends in automobiles.

UNIT-II

Clutches : Requirement of Clutches – Principle of Friction Clutch – Wet Type & Dry Types; Cone Clutch, Single Plate Clutch, Diaphragm Spring Clutch, Multi plate Clutch, Centrifugal Clutches, Electromagnetic Clutch, Over Running Clutch; Clutch Linkages.

Power Transmission : Requirements of transmission system; General Arrangement of Power Transmission system; Object of the Gear Box; Different types of Gear Boxes; Sliding Mesh, Constant Mesh, Synchro- mesh Gear Boxes; Epi-cyclic Gear Box, Freewheel Unit. Overdrive unit-Principle of Overdrive, Advantage of Overdrive, Transaxle, Transfer cases.

UNIT-III

Drive Lines, Universal Joint, Differential and Drive Axles: Effect of driving thrust and torque reactions; Hotchkiss Drive, Torque Tube Drive and radius Rods; Propeller Shaft, Universal Joints, Slip Joint; Constant Velocity Universal Joints; Front Wheel Drive; Principle, Function, Construction & Operation of Differential; Rear Axles, Types of load coming on Rear Axles, Full Floating, Three quarter Floating and Semi Floating Rear Axles.

Suspension Systems: Need of Suspension System, Types of Suspension; factors influencing ride comfort, Suspension Spring; Constructional details and characteristics of leaf springs.

UNIT-IV

Steering System : Front Wheel geometry & Wheel alignment viz. Caster, Camber, King pin Inclination, Toe-in/Toe-out; Conditions for true rolling motions of Wheels during steering; Different types of Steering Gear Boxes; Steering linkages and layout; Power steering – Rack & Pinion Power Steering Gear, Electronics steering.

UNIT-V

Automotive Brakes, Tyres & Wheels : Classification of Brakes; Principle and constructional details of Drum Brakes, Disc Brakes; Brake actuating systems; Mechanical, Hydraulic, Pneumatic Brakes; Factors affecting Brake performance, Power & Power Assisted Brakes; Tyres of Wheels; Types of Tyre & their constructional details, Wheel Balancing, Tyre Rotation; Types of Tyre wear & their causes.

Text and Reference books:

1. Automobile Engineering by Anil Chhikara, SatyaPrakashan, New Delhi.

2. Automobile Engineering by Dr. Kirpal Singh, standard Publishers Distributors.

3. Automobile Engineering by D.S. Kumar, S.K. Kataria and Sons, New DelhiMechanical Engineering

(B. Tech.), VI Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
04	3	1	0	PCC-ME 311	MECHNAICAL VIBRATION	PCC

Unit-I

INTRODUCTION: Study of Vibrations, Mathematical Modelling, Degree of Freedom, Classification of Vibration, Simple Harmonic Motion,

SINGLE DEGREE OF FREEDOM (SDOF) SYSTEMS: Springs, Elastic Elements as Springs, Parallel, Series and General Combination of Springs, Other Sources of Potential Energy, Viscous Damping, Inertia Elements, Equivalent Mass, Inertia Effects of Springs, Free-Body Diagram Method, Small Angle or Displacement Assumption, Equivalent Systems Method

Unit-II

FREE VIBRATIONS OF SDOF SYSTEMS: Standard Form of Differential Equation, Free Vibrations of an Undammed System, Under damped, Critically Damped, over damped Free Vibrations, Coulomb Damping, Hysteretic Damping,

Unit-III

HARMONIC EXCITATION OF SDOF SYSTEMS: Forced Response of a Viscously Damped System Subject to a Single-Frequency Harmonic Excitation, Frequency-Squared Excitations, Rotating Unbalance, Response Due to Harmonic Excitation of Support, Vibration Isolation, Vibration Isolation from Frequency-Squared Excitations, Practical Aspects of Vibration Isolation, Seismic Vibration Measuring Instruments, Seismometers, Accelerometers

Unit-IV

TWO DEGREE-OF-FREEDOM SYSTEMS: Derivation of the Equations of Motion, Natural Frequencies and Mode Shapes, Free Response of Undamped Systems, Free Vibrations of a System with Viscous Damping, Harmonic Response of Two Degree-Of-Freedom Systems, Frequency Response , Dynamic Vibration Absorbers

Unit-V

NOISE: Effects, Ratings and Regulations, Non-auditory effects of noise on people, Auditory Effects of noise, Noise standards and limits in India, Major sources of the noise, Industrial noise sources, Industrial noise control-strategies, Noise control at the source, Noise control along the path, Acoustic barriers, Noise control at the receiver.

SOUND LEVEL AND SUBJECTIVE RESPONSE TO SOUND: Frequency dependent human response to sound, Sound pressure dependent human response, Decibel scale, Decibel addition, subtraction and averaging, Relationship among sound power, sound

intensity and sound pressure level, Sound spectra, Octave band analysis, Loudness.

Text and Reference Books:

1. S. Graham Kelly: Mechanical Vibrations: Theory and Applications
2. Den Hartog, J. P.: Mechanical Vibrations
3. Rao, S. S.: Mechanical Vibrations
4. J. S. Rao, Dr. K. Gupta: Introductory Course on Theory and Practice of Mechanical Vibrations
5. Mechanical Vibrations: G.K. Grover

Mechanical Engineering (B. Tech.), VI Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
04	3	1	0	PCC-ME 312	OPERATION RESEACH	PCC

Unit-I

Basics of operations research, linear programming, scope, problem formulation, graphical method, simplex methods, primal and dual problem sensitivity analysis.

Unit-II

Transportation and assignment problems, deterministic dynamic programming, multistage decision problems and solution, principle of optimality.

Unit-III

Decision theory, decision under various conditions, game theory, two person zero sum game, solution with/without saddle point, dominance rule, methods like algebraic, graphical, liner programming sequencing basic assumption, *n* jobs through two/three machines, jobs on *m* machines.

Unit-IV

Stochastic inventory models - single and multi-period models with continuous and discrete demands, service level and reorder policy simulations - use, advantages& limitations, Monte-Carlo simulation, application to queuing, inventory and other problems.

Unit-V

Queuing models, characteristics of queuing model, M/M/1 and M/M/S system, cost consideration, project management concepts, rules for drawing the network diagram, Applications of CPM and PERT in project planning and control; crashing of operations; resource allocation.

Text and References Books:

1. Operations Research, Wangner
2. Operations Research, Taha
3. Introduction to Management Science, Hiller & Hiller
4. Operations Research by, Wayne L. Winston

PROFESSIONAL ELECTIVE COURSE (PEC)

Professional Elective-I

Mechanical Engineering (B. Tech.), VI Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
04	3	1	0	PEC-ME-301	Applied Thermodynamics	PEC

Unit -I

Steam Boiler: Boilers and their classification, comparison between fire tube and water tube boilers, essentials of a good boiler. Constructional and operational details of Locomotive, Babcock-Wilcox, and Lamont boilers, Boiler mountings and accessories. Natural draft from chimney, height of chimney, maximum draft and chimney efficiency, forced draft and induced draft, Boiler Heat Balance Sheet.

Unit -II

Compressible flow: Basics of compressible flow. Stagnation properties, Isentropic flow of a perfect gas through a nozzle, choked flow, subsonic and supersonic flows- normal shocks- use of ideal gas table for isentropic flow and normal shock flow- Flow of steam and refrigerant through nozzle, super-saturation- compressible flow in diffusers, efficiency of nozzle and diffuser. Reciprocating compressors, staging of reciprocating compressors, optimal stage pressure ratio, effect of inter-cooling, minimum work for multistage reciprocating compressors.

Unit -III

Steam Turbines: Classification, flow through impulse blades, velocity diagram, calculation of power output and efficiency, maximum blade efficiency of single stage impulse turbine, blade friction, compounding of impulse turbine. Flow through impulse reaction blades, degree of reaction, velocity diagram, calculations for power output, efficiency and blade height, comparison of impulse and impulse reaction turbines.

Unit -IV

Efficiency and Governing in Steam Turbines: Losses in steam turbines, stage efficiency overall efficiency and reheat factor. Governing of steam turbines, throttle governing, nozzle control governing and by pass governing. Steam for heating and process work, back pressure turbines and pass out turbines.

Unit -V

Steam Condensers: Elements of a condensing plant, types of condensers, comparison of jet and surface condensers. Condenser vacuum, air leakage and loss of vacuum, vacuum efficiency and condenser efficiency, Dalton's law and air vapour mixture, air pumps.

Pschyrometric chart: Properties of dry and wet air, use of pschyrometric chart, processes involving heating/cooling and humidification/dehumidification, dew point.

Text and Reference books

1. Thermodynamics – An Engineering Approach, Cengel, Y.A., & Boles, M.A, McGraw – Hill Inc.
2. Thermal Engineering, Rajput, R.K., Laxmi Publications.
3. Engineering Thermodynamics by P.K.Nag, Tata McGraw Hill Pub
4. Thermodynamics and Heat Engines, Vol-II, R. Yadav, Central Publishing House.
5. A textbook of Thermal Engineering, R.S.Khurmi, S.Chand& Sons.
6. Thermal Engineering, Bellany, P.L., Khanna Publishers.
7. Applied Thermodynamics for Engineering Technologists, T.D. Eastop & A McConkey, Pearson Education.
8. Heat Engineering, V.P. Vasandani & D.S. Kumar, Metropolitan Book Co. Pvt. Ltd.

Professional Elective-I

Mechanical Engineering (B. Tech.), VI Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
04	3	1	0	PEC-ME-302	Tribology	PEC

Unit -I

Introduction to the concept of tribo design: Principles of tribo design, tribological problems in machine design, Plain sliding bearings, Rolling contract bearings, piston rings and cylinder liners.

Unit-II

Elements of Contact mechanics: Introduction, Concentrated and distributed forces on plane surfaces, Contact between two elastic bodies in the form of spheres, Contact between cylinders and between bodies of general shape, Failures of contacting surfaces. Thermal effects in surface contact.

Unit -III

Friction, lubrication and wear in lower kinematic pairs: Introduction, The concept of friction angle, Friction in screws with a square thread, Friction in screws with a triangular thread, , Boundary lubricated sliding bearings.

Unit -IV

Sliding-element bearings : Derivation of the Reynolds equation, Hydrostatic bearings Squeeze-film lubrication bearings, Thrust bearings, Journal bearings, Journal bearings for specialized applications, Gas bearings, Dynamically loaded journal bearings Modern developments in journal bearing design, Selection and design of thrust bearings self-lubricating bearings.

Unit -V

Rolling contact bearings: Introduction, Analysis of friction in rolling-contact bearings, Deformations in rolling contact bearings, Kinematics of rolling-contact bearings, Lubrication of rolling-contact bearings, Acoustic emission in rolling-contact bearings.

Text and Reference books

1. Dudley D.Fulier" Theory and practice of Lubrication for Engineers", New YorkCompany.1998
2. Moore "Principles and applications of Tribology" Pergamon press, 1975
3. Oscar Pinkus, Beno Sternlicht, “Theory of hydrodynamic lubrication”, McGraw-Hill, 1961
7. Tribology in Machine Design by T.A. Stolarski

Professional Elective-I

Mechanical Engineering (B. Tech.), VI Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
04	3	1	0	PEC-ME-303	Numerical Methods & Analysis	PEC

Unit-I

Basic concepts: round-off errors, floating point arithmetic, Convergence. Numerical solution of Nonlinear Equations a) Bisection method, fixed-point iteration, Newton's method, Error analysis for Iterative Methods, Computing roots of polynomials.

Unit-II

Interpolation and Polynomial Approximation: LaGrange Polynomial, Divided Differences, Hermite Interpolation

Unit-III

Numerical integration and differentiation: Trapezoidal rule, etc., Gaussian quadrature and Euler-Maclaurin formula. Applied Linear Algebra, Direct methods for solving linear systems, numerical factorizations, Eigenvalue problems.

Unit-IV

IVP problems for ODE: Euler's, Taylor, Runge-Kutta, and multistep methods, Stability, Numerical linear algebra, Directmethods, Iterative methods

Unit-V

Approximation theory : Least square approximation,ApproximatingEigenvalues,Power method, Householder's method , BVP for ODE ,Shooting method

Text and Reference books

[1] J. Stoer and R. Bulirsch, Introduction to Numerical Analysis, Springer-Verlag, ISBN 0-387-90420-4

[2] L.N. Trefethen and D. Bau, Numerical Linear Algebra, Society of Industrial and Applied Mathematics

[3] C.T. Kelley, Iterative methods for linear and nonlinear equations, Society of Industrial and Applied Mathematics

OPEN ELECTIVE COURSE (OEC)

Open Elective-I

Mechanical Engineering (B. Tech.), VI Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
03	3	0	0	OEC301	Instrumentation &Control	OEC

Unit-I

Definition — Basic principles of measurement — Measurement systems, generalized configuration and functional descriptions of measuring instruments — examples.Dynamic performance characteristics — sources of error, Classification and elimination of error.

Measurement of Displacement: Theory and construction of various transducers to measure displacement — Piezo electric, Inductive, capacitance, resistance, ionization and Photo electric transducers, Calibration procedures.

Measurement of Temperature: Classification — Ranges — Various Principles of measurement — Expansion, Electrical Resistance — Thermistor — Thermocouple — Pyrometers — Temperature Indicators

Unit-II

Measurement of Pressure: Units — classification — different principles used. Manometers, Piston, Bourdon pressure gauges, Bellows — Diaphragm gauges. Low pressure measurement — Thermal conductivity gauges — ionization pressure gauges, Mcleod pressure gauge.

Measurement of Level: Direct method — Indirect methods — capacitative, ultrasonic, magnetic, cryogenic fuel level indicators — Bubbler level indicators.

Unit-III

Flow Measurement: Rota meter, magnetic, Ultrasonic, Turbine flow meter, Hot — wire anemometer, Laser Doppler Anemometer (LDA).

Measurement of Speed: Mechanical Tachometers — Electrical tachometers — Stroboscope, Non- contact type of tachometer.

Measurement of Acceleration and Vibration: Different simple instruments — Principles of Seismic instruments — Vibro meter and accelerator meter using this principle.

Unit-IV

Stress Strain Measurements: Various types of stress and strain measurements — electrical strain gauge — gauge factor — method of usage of resistance strain gauge for bending compressive and tensile strains — usage for measuring torque, Strain gauge Rosettes.

Measurement of Humidity: Moisture content of gases, sling psychrometer, Absorption psychrometer, Dew point meter.

Measurement Of Force, Torque And Power: Elastic force meters, load cells, Torsion meters, Dynamometers.

Unit-V

Elements of Control Systems: Introduction, Importance — Classification — Open and closed systems Servomechanisms — Examples with block diagrams — Temperature, speed and position control systems.

Text and Reference Books

1. Measurement Systems: Applications & Design I D.S Kumar/Anuradha Agencies.
2. Instrumentation, measurement & analysis IB.C.Nakra&K.K.Choudhary/ TMH.
3. Beckwith Thomas G., "Mechanical Measurements", Narosa Publishing House, New Delhi.
4. Doeblein E. O., "Measurement Systems", Application Design, McGraw Hill, 1990
5. Kumar K. J., "Engineering metrology", MacDonald and Co, 1963
6. Gupta I. C., "Engineering Metrology", DhanpatRai& Sons, New Delhi, 1994.

Open Elective-I

Mechanical Engineering (B. Tech.), VI Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
03	3	0	0	OEC-302	Total Quality Management	OEC

UNIT-I

Introduction: Evolution of Quality Management, Philosophy, Concepts of Product and Service Quality, Dimensions of Quality, Quality Guru's, Quality Awards, Quality Cost.

UNIT-II

Quality Assurance: Inspection, Quality control, Quality assurance, Concept and Advantage of quality assurance, Quality rating, Quality survey/audit, Vendor rating, Quality function deployment.

Process Quality Improvement: Introduction to Process Quality, Graphical and statistical techniques for Process Quality Improvement, Graphical tools for data representation, 7QC tools, Process capability analysis, Measurement system analysis.

UNIT-III

Acceptance Sampling: Concept of acceptance sampling, advantage and limitations of sampling inspection, Sampling methods, Operating characteristics curve, producer and consumer risk, Average outgoing quality limits, sampling plans, sampling plans for variables, Problems.

UNIT-IV

Control Charts: Chance and assignable causes of process variation, statistical basis of the control chart, control charts for variables - $\bar{x}$ and R charts, attribute control charts - p, np, c and u-Construction and application, Problems.

UNIT-V

Contemporary Trends in Quality Engineering & Management: Introduction to Quality Management Standards – ISO : 9000, ISO:14000, Reliability, Quality circles, Concept of Six sigma, Basic steps involve in six sigma, National and International bodies for quality aspects, Introduction to Japanese's quality techniques such as 5S, Kaizen, SMED, TQM,TPM.

Text and References Books:

1. Lt. Gen. H.LaI, "Total Quality management", Wiley Eastern Limited, 1990. .
2. Greg Bounds. "Beyond Total Quality Management". McGraw Hill, 1994.

3. Menon, H.G, "TQM in New Product manufacturing", McGraw Hill 1992.

Open Elective-I

Mechanical Engineering (B. Tech.), VI Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
03	3	0	0	OEC-303	PRODUCT DESIGN AND DEVELOPMENT	OEC

Unit-I

Need for developing products – the importance of engineering design – types of design –the design process – relevance of product lifecycle issues in design –designing to codes and standards- societal considerations in engineering design –generic product development process – various phases of product development-planning for products –establishing markets- market segments- relevance of market research

Unit-II

Identifying customer needs –voice of customer –customer populations- hierarchy of human needs gathering methods – affinity diagrams – needs importance- establishing engineering characteristics-competitive benchmarking- quality function deployment- house of quality-product design specification-case studies

Unit-III

Creative thinking –creativity and problem solving- creative thinking methods- generating design concepts-systematic methods for designing –functional decomposition – physical decomposition – functional representation –morphological methods-TRIZ- axiomatic design

Unit-IV

Decision making –decision theory –utility theory –decision trees –concept evaluation methods – Pugh concept selection method- weighted decision matrix –analytic hierarchy process – introduction to embodiment design –product architecture – types of modular architecture –steps in developing product architecture

Unit-V

Industrial design – human factors design –user friendly design – design for serviceability – design for environment – prototyping and testing – cost evaluation –categories of cost –overhead costs – activity based costing –methods of developing cost estimates – manufacturing cost – value analysis in costing

References Books

1. George E.Dieter, Linda C.Schmidt, "Engineering Design", McGraw-Hill International Edition, 4th Edition, 2009, ISBN 978-007-127189-9

2. Anita Goyal, Karl T Ulrich, Steven D Eppinger, “Product Design and Development “, 4th Edition, 2009, Tata McGraw-Hill Education, ISBN-10-007-14679-9
3. Kevin Otto, Kristin Wood, “Product Design”, Indian Reprint 2004, Pearson Education, ISBN 9788177588217
4. Yousef Haik, T. M. M. Shahin, “Engineering Design Process”, 2nd Edition Reprint, Cengage Learning, 2010, ISBN 0495668141

Open Elective-II

Mechanical Engineering (B. Tech.), VI Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
03	3	0	0	OEC-304	Cyber Laws And Security	OEC

UNIT-I

History of Information Systems and its Importance, basics, Changing Nature of Information Systems, Need of Distributed Information Systems, Role of Internet and Web Services, Information System Threats and attacks, Classification of Threats and Assessing Damages Security in Mobile and Wireless Computing- Security Challenges in Mobile Devices, authentication Service Security, Security Implication for organizations, Laptops Security Basic Principles of Information Security, Confidentiality, Integrity Availability and other terms in Information Security, Information Classification and their Roles.

UNIT-II

Security Threats to E Commerce, Virtual Organization, Business Transactions on Web, E Governance and EDI, Concepts in Electronics payment systems, E Cash, Credit/Debit Cards. Physical Security- Needs, Disaster and Controls, Basic Tenets of Physical Security and Physical Entry Controls, Access Control- Biometrics, Factors in Biometrics Systems, Benefits, Criteria for selection of biometrics, Design Issues in Biometric Systems, Interoperability Issues, Economic and Social Aspects, Legal Challenges

UNIT-III

Model of Cryptographic Systems, Issues in Documents Security, System of Keys, Public Key Cryptography, Digital Signature, Requirement of Digital Signature System, Finger Prints, Firewalls

UNIT-IV

Design and Implementation Issues, Policies Network Security- Basic Concepts, Dimensions, Perimeter for Network Protection, Network Attacks, Need of Intrusion Monitoring and Detection, Intrusion Detection Virtual Private Networks- Need, Use of Tunneling with VPN, Authentication Mechanisms, Types of VPNs and their Usage, Security Concerns in VPN

UNIT-V

Security metrics- Classification and their benefits Information Security & Law, IPR, Patent Law, Copyright Law, Legal Issues in Data mining Security, Building Security into Software Life

Cycle Ethics- Ethical Issues, Issues in Data and Software Privacy Cyber Crime Types & overview of Cyber Crimes

Text and References Books:

1. Godbole,“ Information Systems Security”, Willey

2. Merkov, Breithaupt, “ Information Security”, Pearson Education

3. Yadav, “Foundations of Information Technology”, New Age, Delhi

4. Schou, Shoemaker, “ Information Assurance for the Enterprise”, Tata McGraw Hill

Open Elective-II

Mechanical Engineering (B. Tech.), VI Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
03	3	0	0	OEC-305	Soft Computing	OEC

Unit-I

Neural Networks: History, overview of biological Neuro-system, Mathematical Models of Neurons, ANN architecture, Learning rules, Learning Paradigms-Supervised, Unsupervised and reinforcement Learning, ANN training Algorithm perceptions, Training rules, Delta, Back Propagation Algorithm, Multilayer Perception Model, Hopfield Networks, Associative Memories, Applications of Artificial Neural Networks.

Unit-II

Fuzzy Logic: Introduction to Fuzzy Logic, Classical and Fuzzy Sets: Overview of Classical Sets, Membership Function, Fuzzy rule generation.

Unit-III

Operations on Fuzzy Sets: Compliment, Intersections, Unions, Combinations of Operations, Aggregation Operations.

Unit-IV

Fuzzy Arithmetic: Fuzzy Numbers, Linguistic Variables, Arithmetic Operations on Intervals & Numbers, Lattice of Fuzzy Numbers, Fuzzy Equations.

Unit-V

Fuzzy Logic: Classical Logic, Multi valued Logics, Fuzzy Propositions, Fuzzy Qualifiers, Linguistic Hedges. Uncertainty based Information: Information & Uncertainty, Nonspecificity of Fuzzy & Crisp Sets, Fuzziness of Fuzzy Sets. Genetic Algorithms, Scope & application areas, solution of 0-1Knapsack problem using GA

Text and Reference books:

1. “Fuzzy sets and Fuzzy Logic: Theory and applications”,G.J. Klir,B.Yuan, PHI
2. “Introduction to Fuzzy sets and Fuzzy Logic”, M.Ganesh , PHI
3. “An Introduction to Fuzzy Control”, D Driankov, H Hellendoorn, M Reinfrank, Narosa Publishing Company
4. “ Neural Networks: A classroom approach”, Satish Kumar , Tata McGraw Hill
5. Haykin S., “Neural Networks-A Comprehensive Foundations”, Prentice-Hall International, New Jersey, 1999.

Open Elective-II

Mechanical Engineering (B. Tech.), VI Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
03	3	0	0	OEC-306	Special Electrical Machines	OEC

UNIT 1

Different types of FHP motors and uses in domestic & industrial applications, Single phase Induction motor, Qualitative examination starting and running performance of I-Phase Induction Motors.

UNIT 2

Linear Induction Motors and Actuators and its principle of operation, Linear Levitated machine & applications, Permanent magnet motors, High performance energy efficient machines, Effect of E.M.F injected into secondary circuits, quantitative study, scharge motor.

UNIT 3

Special Induction generations, Special motors and generators associated with Wind, Solar, Tidal, Biogas and other unconventional energy forms and their applications.

UNIT 4

Synchronous motors, Series universal motors, Stepper motor, Servo motor, Typical applications in Computers, Electronics, Communications and Information Technologies.

UNIT 5

Permanent magnet D.C. motor, Permanent magnet AC motors, Switch reluctance motors. Shaded pole motor, brush less D.C motor, Typical applications in Computers, Electronics, Communications and Information Technologies.

Text and References books:

1**.** Generalized Electrical Machines by P. S. Bhimbra
2 Generations of Electrical Energy by A. E. Fitzgerald/Charles , Kingsley J. R.
3 The Performance &design of A.C Commutator Motor by O.E .Taylor
4 Performance & Design of A.C machines by M.G. Say

Mechanical Engineering (B. Tech.), VI Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
01	**0**	**0**	**2**	**PCC-ME-313**	**AUTOMOBILE ENGINEERING LAB**	**PCC**

LIST OF EXPERIMENTS

1. Study of cooling system of an automotive vehicle
2. Study of the ignition system, setting of contact breaker points and spark plug gap
3. Demonstration of steering system and measurement of steering geometry angles and their impact on vehicle performance.
4. Model Study of braking system with specific reference to master cylinder, brake shoes, overhauling of system and the adjusting of the system.
5. Model Study of transmission system elements as clutches, gear box assembly and differential.
6. Replacing of ring and studying the method of replacing piston after repair.
7. Model Study of fuel injection system, carburettor.

Mechanical Engineering (B. Tech.), VI Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
01	**0**	**0**	**2**	**PCC-ME-314**	**Mechanical Vibration Lab**	**PCC**

LIST OF EXPERIMENTS

1. To verify relation $T = 2\pi * (l/g)^{1/2}$ for a simple pendulum.
2. To determine radius of gyration of compound pendulum.
3. To determine the radius of gyration of given bar by using bifilar suspension.
4. To determine natural frequency of a spring mass system.
5. To study undammed free vibration of Equivalent spring mass system.
6. To determine natural frequency of free torsional vibrations of single rotor system.
   i. Horizontal rotor
   ii. Vertical rotor
7. To study the damped torsional oscillation and to determine the damping coefficient.
8. To verify the dunker ley's rule Viz.
9. Study the forced vibration of the beam for different damping.
10. Study of Vibration measuring instruments.
11. To study torsional vibration of single rotor system.
12. To study the free vibration of two rotor system and to determine the natural frequency of vibration theoretically and experimentally.

Mechanical Engineering (B. Tech.), VII Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
03	3	0	0	PCC-ME 401	COMPUTER AIDED DESIGN	PCC

Unit-I

Fundamentals of Computer Graphics- Product cycle, sequential and concurrent engineering, Computer Aided Design, CAD system architecture, computer graphics, Coordinate systems, 2D and 3D transformations, viewing transformation

Unit-II

Geometric Modeling- representation of curves, Hermite curves, Bezier curves, B-spline curves, rational curves, Techniques of surface modelling, surface patch, Coons and bicubic patches, Bezier and B-spline surfaces

Unit -III

Parametric representation of curves, Plane curves - line, circle, ellipse, parabola and hyperbola, , Solid modelling techniques, CSG and B-rep. Visual realism- hidden line-surface-solid removal algorithms, shading, colouring, computer animation

Unit -IV

Scan Conversion, Rendering, Rasterising polygons, Hidden surface removal, Antialiasing, Reflection, shading, generation of character

Computer Hardware: Introduction, Classification, fundamental of computer; Data communication, Design of workstation, Interactive display devices, Input devices, Output devices.

Unit -V

Assembly of parts- assembly modelling, interferences of positions and orientation, tolerance analysis, mass property calculations, mechanism simulation and interference checking CAD standards- Graphical Kernel System (GKS), standards for vexchange images, Open Graphics Library (OpenGL), Data exchange standards- IGES, STEP, CALS etc.,

Communication standards

Text and References Books:

1. Mathematical elements for Computer Graphics, Rogers and Adams, Tata McGraw Hill
2. CAD/CAM: Theory and Practice, Zeid and Sivasubramanian., Tata McGraw Hill
3. Elements of Computer Aided Design and Manufacturing, Pao Y.C., John Wiley and Sons.

Mechanical Engineering (B. Tech.), VII Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
04	3	1	0	PCC-ME 402	REFRIGERATION & AIR CONDITIONING	PCC

Unit-I

Introduction to refrigeration system, Methods of refrigeration, Carnot refrigeration cycle, Unit of refrigeration, Refrigeration effect and C.O.P., Open and closed air refrigeration cycles, Reversed Carnot cycle, Bell Coleman or Reversed Joule air refrigeration cycle, Boot strap refrigeration.

Unit-II

Vapour Compression System, Single stage system, Analysis of vapour compression cycle, Use of T-S and P-H charts, Effect of change in suction and discharge pressures on C.O.P., Effect of sub cooling of condensate & superheating of refrigerant vapour on C.O.P. of the cycle, Actual vapour compression refrigeration cycle, Multistage vapour compression system requirements, Inter cooling, Different configuration of multistage system, Cascade system.

Unit-III

Principle of vapour absorption refrigeration system, Comparison between absorption and compression systems, Elementary idea of refrigerant absorbent mixtures, Temperature - concentration diagram and Enthalpy – concentration diagram, Adiabatic mixing of two streams, Ammonia – Water vapour absorption system, Lithium- Bromide water vapour absorption system, Comparison. Refrigerants: Classification, nomenclature, properties, Types of refrigerants.

Unit-IV

Introduction to air conditioning, Psychometric properties and their definitions, Psychometric chart, Different Psychometric processes, Effective temperature and comfort chart, Cooling and heating load calculations, Selection of inside and outside design conditions, Heat transfer through walls & roofs, Infiltration and ventilation, Internal heat gain, Sensible heat factor, By pass factor, Grand Sensible heat factor, Apparatus dew point.

Unit-V

Refrigeration and air conditioning equipment's: Compressors, Condensers, Evaporators &Expansion devices, Air washers, Cooling towers and humidifying efficiency, Cold storage and food preservation, Freezers, Ice plant, Water coolers, Basic difference between comfort and industrial air conditioning.

Text and Reference Books:

1. R.S. Khurmi and J. K. Gupta, Refrigeration and Air conditioning, S Chand publication.
2. Arora, C.P., Refrigeration and Air conditioning, Tata McGraw Hill, 2nd Edition, 2000.

3. Gosney, W.B, Principles of Refrigeration, Cambridge University Press, 1982.
4. Refrigeration and Air conditioning, Arora and Domkundwar.

Mechanical Engineering (B. Tech.), VII Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
03	3	0	0	HSMC 401	Engineering Economics	HSMC

Unit -I

Basic Principles and Methodology of Economics. Demand/Supply – elasticity – Government Policies and Application. Theory of the Firm and Market Structure. Basic Macro-economic Concepts (including GDP/GNP/NI/Disposable Income) and Identities for both closed and open economies. Aggregate demand and Supply (IS/LM). Price Indices (WPI/CPI), Interest rates, Direct and Indirect Taxes

Unit –II

Public Sector Economics –Welfare, Externalities, Labour Market. Components of Monetary and Financial System, Central Bank –Monetary Aggregates; Commercial Banks & their functions; Capital and Debt Markets. Monetary and Fiscal Policy Tools & their impact on the economy – Inflation and Phillips Curve.

Unit -III

Elements of Business/Managerial Economics and forms of organizations. Cost &Cost Control – Techniques, Types of Costs, Lifecycle costs, Budgets, Break even Analysis, Capital Budgeting, Application of Linear Programming. Investment Analysis – NPV, ROI, IRR, Payback Period, Depreciation, Time value of money (present and future worth of cashflows). Business Forecasting – Elementary techniques. Statements – Cash flow, Financial. Case Study Method.

Unit -IV

Indian economy - Brief overview of post-independence period – plans. Post reform Growth, Structure of productive activity. Issues of Inclusion – Sectors, States/Regions, Groups of people (M/F), Urbanization. Employment–Informal, Organized, Unorganized, Public, Private. Challenges and Policy Debates in Monetary, Fiscal, Social, External sectors.

Unit -V

Estimation /Measurements for various items- Introduction to the process of Estimation; Use of relevant Indian Standard Specifications for the same, taking out quantities from the given requirements of the work, comparison of different alternatives, Bar bending schedules, Mass haul Diagrams, Estimating Earthwork and Foundations, Estimating Concrete and Masonry, Finishes, Interiors, MEP works; BIM and quantity take-offs; adding equipment costs; labour

costs; rate analysis; Material survey-Thumb rules for computation of materials requirement for different materials for buildings, percentage breakup of the cost, cost sensitive index, market survey of basic materials. Use of Computers in quantity surveying.

Text and Reference Books:

1. Mankiw Gregory N. (2002), Principles of Economics, Thompson Asia
2. V. Mote, S. Paul, G. Gupta(2004), Managerial Economics, Tata McGraw Hill
3. Misra, S.K. and Puri (2009), Indian Economy, Himalaya
4. PareekSaroj (2003), Textbook of Business Economics, Sunrise Publishers
5. M Chakravarty, Estimating, Costing Specifications & Valuation

Professional Elective-II

Mechanical Engineering (B. Tech.), VII Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
04	4	0	0	PEC-ME-401	Welding Technology	PEC

Unit-1

Electron beam welding, friction stir welding, plasma arc welding and ultrasonic welding, Laser beam welding, types of lasers, equipment, power calculation, applications, dual laser beam welding

Unit-II

Ultrasonic welding, propagation of ultrasonic waves in matter, mode of joint formation, joint types and design of product for ultrasonic welding, details of equipment

Unit-III

Investment casting, shell moulding, squeeze casting, vacuum casting, counter-gravity low - pressure casting, directional and mono-crystal solidification, semisolid metal casting and forging.

Unit-IV

Design of weldment, determination of distortion in weldments, modeling of temperature distribution. Design for casting, determination of hot spots, location of turbulence and other defects, modeling of flow in molds, modeling of heat transfer in castings.

Unit-V

NDT methods for welding, visual inspection, radio graphic, die penetrant, ultrasonic and magnetic particle inspection **techniques.**

Text and Reference Books:

1. **Ravi B, Metal Casting- Computer Aided Design and Analysis, Prentice Hall, 2005.**
2. **Richard L Little, Welding and Welding Technology, Tata McGraw Hill, 2004.**
3. **John Campbell, Casting Practice, Elsevier Science Publishing Co., 2004.**
4. **Larry Jeffus, Welding: Principles and Applications, Delmar Publishers, 2004.**
5. **John Campbell, Casting, Butterworth Heinemann, 2003.**

6. **KlasWeman, Welding Processes Handbook, 2003.**
7. **Howard B Cary, Modern Welding Technology, Prentice Hall, 2002.**

Professional Elective-II

Mechanical Engineering (B. Tech.), VII Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
04	**3**	**1**	**0**	**PEC-ME-402**	**Advanced strength of material**	**PEC**

Unit-I

Introduction to Cartesian tensors, Strains: Concept of strain, derivation of small strain tensor and compatibility, Stress: Derivation of Cauchy relations and equilibrium and symmetry equations, principal stresses and directions

Unit-II

Constitutive equations: Generalized Hooke's law, Linear elasticity, Material symmetry; Boundary Value Problems: concepts of uniqueness and superposition.

Unit-III

Plane stress and plane strain problems, introduction to governing equations in cylindrical and spherical coordinates, axisymmetric problems.

Unit-IV

Application to thick cylinders, rotating discs, torsion of non-circular cross-sections, stress concentration problems, thermo-elasticity, 2-d contact problems.

Unit-V

Solutions using potentials.Energy methods.Introduction to plasticity.

Text and Reference books

[1] G. T. Mase, R. E. Smelser and G. E. Mase, Continuum Mechanics for Engineers, Third Edition, CRC Press, 2004.
[2] Y. C. Fung, Foundations of Solid Mechanics, Prentice Hall International, 1965.
[3] Lawrence. E. Malvern, Introduction to Mechanics of a Continuous Medium, Prentice Hall international, 1969.

Professional Elective-II

Mechanical Engineering (B. Tech.), VII Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
04	4	0	0	PEC-ME-403	Production planning &control	PEC

Unit-I

Introduction to Production Systems: Production Systems: Classification & Characterization, Overview of Production Planning and Control issues, Review of EOQ & inventory control systems.

Unit-II

Just in Time Production Systems: Just-in-Time System: Evolution, Characteristics of JIT Systems, Continuous Improvement, The Kanban System, Strategic Implications of JIT System.

Unit-III

Material Requirement Planning: Dependent Demand & Material Requirement Planning, Structure of MRP system, MRP Calculations, Planning Issues, Implementation Issues.

Unit-IV

Factory Physics: Basic factory dynamics, Variability basics, Push and pull production systems, Lean manufacturing.

Aggregate Planning: Aggregate Planning: Purpose & Methods, Reactive and Aggressive Alternatives, Planning Strategies, Master Production Scheduling.

Unit-V

Issues in PPC: New developments in Planning & Control of Product-focused Systems and Process-focused Systems, Theory of Constraints.

Text and Reference Books:

1. Production & Operations Management – Chary, TMH, New Delhi.

2. Modern Production Management – S.S. Buffa, Pub.John Wiley.

3. Krajewski L.J. and Ritzmen L.P., Operations Management: Strategy and Analysis, 9th Edition, Pearson Education, 2010.

4. Chase, R.B., Jacobs, F.R. and Aquilano, N.J., Operations Management for Competitive Advantage, 11th Edition, Tata McGraw Hill Book Company, New Delhi, 2010.
5. Hopp, WJ and Spearman, ML, Factory Physics: Foundations of Manufacturing Management, McGraw Hill International Edition, Third Edition, 2008.

OPEN ELECTIVE-III

Mechanical Engineering (B. Tech.), VII Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
03	3	0	0	OEC-401	NON CONVENTIOANL ENERGY SOURCES	OEC

Unit-I

Global and National scenarios, Form and characteristics of renewable energy sources.

Solar Energy: Solar radiation, its measurements and prediction, Solar thermal collectors, flat plate collectors, concentrating collectors, Basic theory of flat plate collectors, solar heating of buildings, solar still, solar water heaters, solar driers, conversion of heat energy in to mechanical energy, solar thermal power generation systems.

Solar Photovoltaic: Principle of photovoltaic conversion of solar energy, types of solar cells and fabrication, **Photovoltaic applications:** battery charger, domestic lighting, street lighting, water pumping, power generation schemes.

Unit -II

Wind Energy: Atmospheric circulations, classification, factors influencing wind, wind shear, turbulence, wind speed monitoring, Betz limit, WECS- classification, characteristics and applications.

Unit -III

Ocean Energy: Ocean energy resources, ocean energy routes, Principles of ocean thermal energy conversion systems, ocean thermal power plants, Principles of ocean wave energy conversion and tidal energy conversion.

Unit-IV

Other Sources: Nuclear fission and fusion, Geothermal energy- Origin, types of geothermal energy sites, site selection, geothermal power plants, Magneto-hydro-dynamic (MHD) energy conversion, Formation of biomass, photosynthesis, Biomass resources and their classification, Chemical constituents and physicochemical characteristics of biomass, Biomass conversion processes.

Unit-V

Fuel Cells: Thermodynamics and electrochemical principles, Basic design, types, applications. **Hydrogen Energy:** Economics of hydrogen, Production methods.

Text and References Books:

1. Power Generation through Renewable Source of Energy, Rai and Ram Prasad, Tata McGraw-Hill,
2. Ashok V. Desai,"Nonconventional Energy", New Age Internantional Publishers Ltd.

3. BansalKeemann, Meliss," Renewable energy soucesa and conversion technology", Tata McGraw Hill
4. RaiG.D,"Non-Conventional energy Sources", Khanna Publishers.

OPEN ELECTIVE-III

Mechanical Engineering (B. Tech.), VII Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
03	3	0	0	OEC402	Management information system	OEC

Unit-I

Organisation & Types, Decision Making, Data & information, Characteristics & Classification of information, Cost & value of information, Various channels of information & MIS.

Unit-II

Foundation of Information System: Introduction to Information System in Business Fundamentals of Information System, Solving Business Problems with Information System, Concept of Balanced MIS, Effectiveness & Efficiency Criteria. Tool and Techniques of MIS-dataflow diagram, flow chart etc.

Unit-III

Business application of information technology, electronic commerce, Internet, Intranet, Extranet & Enterprise Solutions, Information System for Business Operations, Information system for managerial Decision Support, Information System for Strategic Advantage.

Unit-IV

Managing Information Technology, Enterprise & Global Management, Security & Ethical Challenges, Planning & Implementing Change. Reports: Various types of MIS reports, GUI & Other Presentation tools.

Unit-V

Advanced concepts in information system: Enterprise Resource Planning: introduction, various modules like Human Resources, Finance, Accounting, Production & Logistics. Supply Chain Management, CRM, Procurement Management System Object Oriented modeling case studies.

Text and References Books:

1. O.Brian, “Introduction to Information System”, Mc-Graw Hill.
2. O.Brian, “Management Information System”, TMH. Alter,
3. “Information Systems : A Management Perspective”, Addison Wesley.
4. Arora& Bhatia, “Information Systems for Managers”,
5. Excel Bansal, “Information System Analysis & Design”, TMH. Jawadegar,

OPEN ELECTIVE-III

Mechanical Engineering (B. Tech.), VII Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
03	3		0	OEC403	Soft Skills for Engineers	OEC

UNIT- I

SELF ANALYSIS: SWOT Analysis, Who am I, Attributes, Importance of Self Confidence, Self Esteem.

CREATIVITY: Out of box thinking, Lateral Thinking**.**

UNIT- II

ATTITUDE: Factors influencing Attitude, Challenges and lessons from Attitude, Etiquette.

UNIT- III

MOTIVATION: Factors of motivation, Self talk, Intrinsic & Extrinsic Motivators.

UNIT-IV

GOAL SETTING : Wish List, SMART Goals, Blue print for success, Short Term, Long Term, Life Time Goals.

TIME MANAGEMENT: Value of time, Diagnosing Time Management, Weekly Planner To do list, Prioritizing work

UNIT- V

LEADERSHIP: Skills for a good Leader, Assessment of Leadership Skills, Conflicts in Human Relations – Reasons Case Studies, Approaches to conflict resolution.

DECISION MAKING: Importance and necessity of Decision Making, Process and practical way of Decision Making, Weighing Positives & Negatives.

Text and Reference Books

1. Covey Sean, Seven Habit of Highly Effective Teens, New York, Fireside Publishers, 1998.

2. Carnegie Dale, How to win Friends and Influence People, New York: Simon & Schuster, 1998.

3. Thomas A Harris, I am ok, You are ok , New York-Harper and Row, 1972

4. Daniel Coleman, Emotional Intelligence, Bantam Book, 2006

Mechanical Engineering (B. Tech.), VII Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
01	**0**	**0**	**2**	**PCC-ME 403**	**REFRIGERATION AND AIR CONDITIONING LAB**	**PCC**

LIST OF EXPERIMENTS

1. Study & Performance test rig and to study vapour compression Refrigeration Cycle
2. To find COP of water cooler.
3. To study and perform experiment on vapour absorption apparatus.
4. To find the performance parameter of experimental water cooling tower.
5. To study various components in room air conditioner.
6. To study different control devices of a refrigeration system.
7. To study various compressors.
8. To find the performance parameters of Ice Plant.
9. To perform the experiment & calculate various Performance parameters on a blower apparatus.
10. To study vapour compression water cooler test rig.

Mechanical Engineering (B. Tech.), VII Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
02	0	0	2	PROJ-ME 401	Industrial Training-II/ Seminar	PROJ

Objective of Industrial Training: This two credit course is meant to give students practice the objective of undertaking industrial training is to provide work experience so that students engineering knowledge is enhanced and employment prospects are improved. The student should take this course as a window to the real World and should try to learn as much as possible from real life experiences by involving and interacting with industry staff. Industrial training also provides an opportunity to students to select an engineering problem and possibly an industry guide for their Major Project in final semester.

Scheme of Studies: This two credit course is meant to give students of Duration 4 weeks in summer break after VI semester; assessment to be done in VII semester During training students will prepare a first draft of training report in consultation with section in charge. After training they will prepare final draft with the help of Faculty of the concern Department Then they will present a seminar on their training and present it in the institute in front of the committee headed by the HOD/Faculty Member.

Learning through Industrial: Training: During industrial training students must observe following to enrich their learning:

- Industrial environment and work culture.
- Organizational structure and inter personal communication.
- Machines/equipment/instrument-their working and specifications.
- Product development procedure and phases. Project Planning, monitoring and control.
- Quality control and assurance.
- Maintenance system Costing system Stores and purchase systems.
- Layout of Computer/EDP/MIS centers.
- Problems related to various areas of work etc. Students are supposed to acquire the knowledge on above by Direct Observations without disturbing personnel at work.
- Interaction with officials at the workplace in free/ tea time Study of Literature at the workplace (e.g. User Manual, standards, processes, schedules, etc.)
- Hands on" experience Undertaking/assisting project work. Solving problems at the work place. Presenting a seminar participating in group meeting/discussion.
- Consulting current technical journals and periodicals in the library.

Mechanical Engineering (B. Tech.), VII Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
06	0	0	6	PROJ- ME 402	PROJECT-I	PROJ

The minor project work can be a design project, experimental fabrication project or software development project on any of the topics of mechanical engineering interest - it can be allotted as a group project with groups consisting of three or four students The assessment of all the minor projects should be done by a committee consisting of three or four faculty members specialized in the various fields of Mechanical Engineering - the students will present their project work and give a seminar on that topic for about thirty minutes - a committee consisting of at least three faculty members (preferably specialized in different fields of mechanical engineering) will assess the presentation of the seminars before the committee - the relative grading and group average marks for the various projects will be fixed by the committee - the guide will award the marks for the individual students in the project maintaining the group average - each group will prepare the project report and submit one copy of a write up of his minor project to the department through the guide - the Head of the Department will certify the copies and keep them in the departmental library

INSTRUCTIONS FOR PROJECT REPORT/ DISSERTATION WRITING

It is important that the procedures listed below be carefully followed by all the students of B.E. (Mechanical Engineering).

1. Prepare one spiral Bound Copies of your manuscript

2. Limit your Dissertation report to 50– 60 pages (preferably)

3. The footer must include the following: Institute Name, B.E. (Mechanical) Times New Roman 10 pt. and centrally aligned.

4. Page number as second line of footer, Times New Roman 10 Pt, centrally aligned.

5. Print the manuscript using

a. Letter quality computer printing.

b. The main part of manuscript should be Times New Roman 12 pt. with alignment - justified.

c. Use 1.5 line spacing.

d. Entire report shall be of 5- 7 chap

Mechanical Engineering (B. Tech.), VIII Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
03	3	0	0	PCC-ME 404	POWER PLANT ENGINEERING	PCC

Unit -I

Introduction To Power Plants & Boilers: Layout of Steam, Hydel, Diesel, MHD, Nuclear and Gas Turbine Power Plants, Combined Power Cycles, Comparison and Selection, Load Duration Curves. Steam Boilers and Cycles, High Pressure and Super Critical Boilers, Fluidised Bed Boilers

Unit – II

Steam Power Plant: Fuel and Ash Handling, Combustion Equipment for burning coal, Mechanical Stokers, Pulveriser, Electrostatic Precipitator, Draught, different types, Surface Condenser Types, Cooling Towers

Unit –III

Nuclear And Hydel Power Plants: Basics of nuclear energy conversion, Layout and subsystems of nuclear power plants, Nuclear Energy, Fission, Fusion Reaction, Types of Reactors, pressurized water reactor, Boiling Water Reactor, Waste Disposal and safety measures for nuclear power plants. Hydel Power Plant, Essential Elements, Selection of Turbines, Governing of Turbines, Micro Hydel developments.

Unit –IV

Diesel And Gas Turbine Power Plant: Types of Diesel Plants, Components, Selection of Engine Type, Applications Gas Turbine Power Plant, Fuels, Gas Turbine Material, Open and Closed Cycles, Reheating, Regeneration and Inter-cooling, Combined Cycle.

Unit –V

Other Power Plants: Hydroelectric power plants, classification, typical layout and components, principles of wind, tidal, solar PV and solar thermal, geothermal, biogas and fuel cell power systems. capital and operating cost of different power plants, pollution control technologies including waste disposal options for coal and nuclear plants, Energy Rates, Types of Tariffs, power tariffs and Economics of load sharing, comparison of economics of various power plants.

Text and Reference Books:

1. G. R. Nagpal, “Power Plant Engineering”, Hanna Publishers, 1998.
2. Nag P.K., Power Plant Engineering, 3rd ed., Tata McGraw Hill, 2008.
3. El Wakil M.M., Power Plant Technology, Tata McGraw Hill, 2010

Mechanical Engineering (B. Tech.), VIII Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
03	3	0	0	HMSC-402	Entrepreneurship development & Management	HMSC

Unit I: Entrepreneurship

- Theories of Entrepreneurship
- Role and Importance of Entrepreneur in Economic Growth.

Unit II: Entrepreneurial Behaviours

- Entrepreneurial Motivation, Need for Achievement Theory
- Risk Taking Behavior
- Innovation and Entrepreneur

Unit III: Entrepreneurial Traints

- Definitions, Characteristics of Entrepreneurial Types
- Functions of Entrepreneur.

Unit IV: Entrepreneurial Development in India

- History, Objectives, Stages of Growth
- Target Group, Programmes
- Govt. Policy towards SSI's

Unit V: Project Feasibility Analysis

- Business Ideas – Sources, processing; Input requirements, Sources of Financing, Technical Assistance, Marketing Assistance
- Preparation of Feasibility Reports, Legal Formalities and Documentation.

Text and Reference books:

1. McClelland, D.C. & Winter, W.G. : Motivating Economic Achievement, Free Press.
2. Pareek, U &VenkateswaraRao, T : Developing Entrepreneurship – A Handbook on Learning Systems, Learning Systems, New Delhi.
3. Desai, A.N. : Entrepreneur and Environment, Ashish, New Delhi.

4. Druckar, Peter : Innovation and Entrepreneurship, Heinemann.
5. Chakraborty, Tridib : Introducing Entrepreneurship Development, Modern Book Agency

Mechanical Engineering (B. Tech.), VIII Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
04	3	1	0	PCC-ME 405	CNC Machines & Automation	PCC

Unit-I

Automation Introduction to CAM, Automated Manufacturing system, Need of automation, Basic elements of automation, Levels of automation, Automation Strategies, Advantages & disadvantages of automation, Historical development and future trends. Features of NC Machines Fundamental of Numerical Control, elements of NC machine tools, classification of NC machine tools, Advantages, suitability and limitations of NC machine tools, Application of NC system, Methods for improving Accuracy considering the factors such as tool deflection and chatter and Productivity.

Unit-II

NC Part Programming & Common Problems in CNC Machines Part programming and basic concepts of part programming, NC words, part programming formats, simple programming for rotational components, part programming using canned cycles, subroutines and do loops, tool off sets, cutter radius compensation and wear compensation Manual (word address format) programming, Examples: Drilling, Turning and Milling, Canned cycles, Subroutine and Macro. APT programming, Geometry, Motion and Additional statements, Macro- statement. Common problems in mechanical, electrical, pneumatic, electronic and PC components of CNC machines, diagnostic study of common problems and Remedies , use of on-time fault finding diagnosis tools in CNC machines.

Unit-III

System Devices Introduction to DC motors, stepping motors, feedback devices such as encoder, counting devices, digital to analog converter and vice versa.

Interpolators Digital differential Integrator-Principle of operation, exponential declaration, DDA Hardware Interpolator- Linear, Circular, DDA Software Interpolator

Control of NC Systems Open and closed loops, Control of point to point systems, Incremental open loop control, Incremental close loop, Absolute close loop, Control loop in contouring systems, Adaptive control.

Unit-IV

Computer Integrated Manufacturing system Group Technology, Flexible Manufacturing System, CIM, CAD/CAM, Computer aided process planning Retrieval and Generative, Concept of Mechatronics, Computer aided Inspection.

Unit-V

Robotics and Intelligent Manufacturing Types and generations of Robots, Structure and operation of Robot, Robot applications, Economics, Robot programming methods. Introduction to Artificial Intelligence for Intelligent manufacturing.

Text and Reference Books:

1. Numerical Control and Computer aided Manufacturing, By Kundra, Rao and Tewari.

2. Automation, Production Systems and Computer Integrated Manufacturing by MikellP.Groover.

3. Computer Aided Manufacturing by Kundra and Rao.

4. Computer control of Manufacturing systems by Koren.

5. NC Machine Tools by S.J. Martin.

6. Computer Aided Design and Manufacture by Groover and Zimmer, PHI.

7. Technology of Computer aided Design and Manufacturing by Kumar and Jha, DhanpatRai and Sons

8. CNC Machines –Programming and Applications by M Adithan and BS Pabla, New Age International (P) Ltd., Delhi.

9. Computer Aided Manufacturing by Rao, Kundra and Tiwari; Tata McGraw Hill,New Delhi.

10. Numerical Control of Machines Tools by YoremKorem and IB Uri, KhannaPublishers, New Delhi.

PROFESSIONAL ELECTIVE-III

Mechanical Engineering (B. Tech.), VIII Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
03	3	0	0	PEC-ME 404	MECHATRONICS,	PEC

Unit-I

Introduction about Mechatronics: scope of Mechatronics, application, process control automation and N/c Machines.

Unit-II

Sensors and Transducers: Introduction, classification, specification, characteristics of transducers, type of transducers displacement, strain, vibration pressure, flow, temperature, force and torque, tactile.

Unit-III

Hydraulic Pneumatic and Electrical actuators: Pumps and Compressors, control valves and accessories, actuators, fluid power symbols, fluid power systems, switching devices, solenoids, motors.

Unit-IV

Data Acquisition and Control System: Introduction, Quantitating theory, Analog to Digital Conversion, Digital to Analog (D/A) conversation, transfer function, transient response and frequency response and frequency response, stability criteria

Unit-V

Design of Mechatronic systems: Introduction, Automatic front and book and cutting in steel rolling mill, lift control system, CNC lathe, temperature control of a heat treatment furnace, EOT crane control panel, Grey grain separators, electrode arm control in electric arc furnace.

Text and References Books

1. Mechatronics: Electronic Control Systems in Mechanical and Electrical Engineering, Bolton, W., Pearson Education
2. Mechatronics: Principles, Concepts and applications, Mahalik N.P., Tata McGraw Hill.
3. Mechatronics, HMT Hand Book, Tata McGraw Hill.
4. Mechatronics, Singh and Joshi, Prentice Hall of India.

PROFESSIONAL ELECTIVE-III

Mechanical Engineering (B. Tech.), VIII Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
03	0	0	0	PEC-ME 405	RAPID PROTOTYPING	PEC

Unit-I

Introduction: Introduction to Prototyping, Traditional Prototyping Vs. Rapid Prototyping (RP), Need for time compression in product development, Usage of RP parts, Generic RP process, Distinction between RP and CNC, other related technologies, Classification of RP

Unit-II

CAD Modelling and Data Processing for RP: CAD model preparation, Data Requirements, Data formats (STL, SLC, CLI, RPI, LEAF, IGES, HP/GL, CT, STEP), Data interfacing, Part orientation and support generation, Support structure design, Model Slicing and contour data organization, direct and adaptive slicing, Tool path generation

Unit-III

RP Systems: Photo polymerization Stereo lithography (SL), SL resin curing process, SL scan patterns, Micro stereo lithography, Applications of Photo polymerization Processes. Powder Bed Fusion: Selective laser Sintering (SLS), Powder fusion mechanism and powder handling, SLS Metal and ceramic part creation, Electron Beam melting (EBM), Applications of Powder Bed

Unit-IV

Fusion Processes. Extrusion-Based RP Systems: Fused Deposition Modelling (FDM), Principles, Plotting and path control, Applications of Extrusion-Based Processes. 3D Printing : 3D printing (3DP), Research achievements in printing deposition, Technical challenges in printing, Printing process modelling, Applications of Printing Processes. Sheet Lamination: Laminated Object Manufacturing (LOM), Ultrasonic Consolidation (UC), Gluing, Thermal bonding, LOM and UC applications. Beam Deposition: Laser Engineered Net Shaping (LENS), Direct Metal Deposition (DMD), Processing-structure-properties, relationships, Benefits and drawbacks.

Unit-IV

Errors in RP Processes: Pre-processing, processing, post-processing errors, Part building errors in SLA, SLS.

RP Applications: Design, Engineering Analysis and planning applications, Rapid Tooling, Reverse Engineering, Medical Applications of RP.

Text and Reference Books:

1. Chua C K, Leong K F, Chu S L, Rapid Prototyping: Principles and Applications in Manufacturing, World Scientific.

2. Gibson D W Rosen, Brent Stucker., Additive Manufacturing Technologies: Rapid Prototyping to Direct Digital Manufacturing, Springer.
3. Chua C K, Leong K F, Chu S L, Rapid Prototyping: Principles and Applications in Manufacturing, World Scientific.
4. Noorani R, Rapid Prototyping: Principles and Applications in Manufacturing, John Wiley & Sons.
5. Liou W L, Liou F W, Rapid Prototyping and Engineering applications: A tool box for prototype development, CRC Press

PROFESSIONAL ELECTIVE-III

Mechanical Engineering (B. Tech.), VIII Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
04	4	0	0	PEC-ME 406	Foundry Technology	PEC

UNIT-I

Introduction and types of foundries: Basic steps in the process of metal casting; comparison of casting with metal joining. Pattern and Pattern Making: Patterns: Materials, types and design of Patterns, Pattern, Pattern allowances, Pattern colors

UNIT-II

Mould and Mould Making: Introduction, Moulding Sand – Types and Properties, Moulding Tools and Equipment- Moulding Machines and Hand Moulding tools, Function of Core, Types of Cores, Core Prints, Core Venting and Baking, Core Shifting and Chaplets, Moulding Processes- Bench Moulding, Floor Moulding, Pit Moulding, Stack Moulding, Green Sand Moulding, Dry Sand Moulding, Loam Moulding, Core Moulding, Machine Moulding.

UNIT-III

Foundry Furnaces: Types of Foundry Furnaces- Cupola Furnace, Electric Arc Furnace, Induction Furnace.

Gating Systems: Gating System- types of Gates and Risers, Gating Ratios and chills, Riser location & design in actual casting, Directional Solidification in Casting, Physical Behavior of Metals during Solidification.

Finishing & Heat Treatment Processes: Various Fettling, Finishing and Heat Treatment of Casting

UNIT-IV

Advance Casting Processes: Investment Casting, Centrifugal Casting, Shell Moulding, Gravity die/ permanent mold, casting, Continuous Casting, pressure die casting, Slush Casting, Non - metal Molding /Ceramic Molding.

UNIT-V

Inspection and Testing of Casting: Defects in Casting, its causes and remedies, Inspection and Non destructive Testing of Casting

Modernization and Mechanization of Foundry: Material Handling, Pollution Control in Foundry, Application of Computers in Casting Processes

Text and Reference Books:

1. A Text Book of Foundry Technology by O.P. Khanna& M. Lal, DhanpatRai.

2. Manufacturing Technology Foundry Forming & Welding by P.N. Rao – TMH.

3. Foundry Technology by P.L. Jain.

4. Production Technology by P.C.Sharma – S Chand.

5. Process and Materials of Manufacture By Lindberg – PHI.

6. Casting Technology by Chakravarty – New Age.

7. Metal Casting by Ravi, PHI.

8. Metal Casting by RamaRao- New Age Publication.

9. Principles of Foundry Technology by R.K.Jain.

10. Principle of Metal Casting by Hein

Professional Elective-IV

Mechanical Engineering (B. Tech.), VIII Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
03	3	0	0	PEC-ME 407	Gas Turbine and Gas Power Plant	PEC

Unit-I

Review of Basic Principles and Fundamentals of Rotating Machines: Cycle arrangements-Open cycle and closed cycle arrangements, Basic requirement of the working medium, Properties of various working media, Applications of gas turbine, Comparison of gas turbines with reciprocating engines, Ideal cycles, Simple gas turbine cycle, Heat exchange cycle, Reheat cycle with heat exchange, Intercooled cycle, Intercooled cycle with heat exchanger and reheat, Comparison of various cycles.

Unit -II

Practical Cycles and their Analysis: Effect of variable specific heat, Mechanical losses, Loss due to incomplete combustion, polytrophic efficiency, Performance of actual cycles, Comparison of ideal versus actual cycles and Jet propulsion cycles.

Unit -III

Thermodynamic Cycles: Advantages, disadvantages and performance characteristics of Ram jet engine, pulse jet engine, turbo prop engine, turbo jet engine, turbo fan engine, Calculation of specific thrust and efficiency.

Unit -IV

Combustion Systems: Combustion theory applied to gas turbine combustor, Factors affecting combustion chamber design and performance, Combustion chamber geometry, Fuel injection and ignition, Use of cheap fuels, Impulse and reaction type gas turbines, Velocity triangles and calculation of work done, Efficiency etc.

Unit -V

Advantages of a gas turbine power plant, Comparison with steam, Diesel and hydro power plant, Performance of GT power plant-part load efficiency, Airflow rate, Thermal efficiency, Gas turbine blading and fuels, Gas turbine materials, Free piston engine plant.

Text and Reference Books:

1. Power Generation Handbook, Philip Kiameh, McGraw Hill**.**
2. Gas Turbine Engineering Handbook, Meherwan P. Boyce, Gulf Professional Publication.

Professional Elective-IV

Mechanical Engineering (B. Tech.), VIII Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
03	3	0	0	PEC-ME 408	AERODYNAMICS & THEIR ANALYSIUS	PEC

Unit -I

Introduction: Lift, drag, moment and related coefficients; Vector operations (review); conservation equations (mass, momentum and energy); Streamlines, streaklines and pathlines; Velocity potential and stream function

Unit -II

Inviscid, Incompressible flow: Bernoulli's equation, low-speed wind tunnel flows; Governing equations and boundary conditions; Elementary flows (uniform, sources, sinks and vortex); ideal lifting flow past a circular cylinder, Kutta-Joukowski theorem and lift generation; source panel method for non-lifting flows; d' Alembert's paradox.

Unit -III

Incompressible flow over airfoils: Introduction; Kutta Condition; Thin airfoil theory (symmetric, cambered); Aerodynamic center; vortex panel method for lifting flows; qualitative picture of viscous flow.

Unit -IV

Finite Wing Theory: Introduction; Downwash and induced drag; Biot-Savart Law and Helmholtz's Theorems; Prandtl's lifting line theory; Numerical lifting-line method; Someractical aspects. Introduction to Compressible flows (Inviscid): Thermodynamics review; Governing equations; Compressibility.

Unit -V

Normal Shock, Oblique Shock and Expansion Waves: Basic relations; flow over wedges and cones; shock interactions; blunt body flow; Prandtl-Meyer expansion waves; qualitative pitcute of shock wave-boundary layer interaction; quasi-one-dimensional flow through nozzles and diffusers.Linearized Theory for Subsonic and Supersonic Flows: Introduction; Velocity potential equation and linearized form; Prandtl-Glauert correction; Improved corrections; Critical Mach number; Drag divergence; Supercritical airfoils and area rule.

Text and Reference Books:

1.Houghton and Carruthers,"Aerodynamics for engineering students",Edward Arnold (1982).
2. McCormick B.W,"Aerodynamics, aeronautics and flight mechanics", John Wiley (1995).
3. Anderson, Jr. J.D "Aircraft performance and design" McGraw Hill International edition (1999).
4. Eshelby ,M.E."Aircraftperformancetheory and practice" , Butterworth-Heinemann, Oxford,U.K.,(2001).
5. Pamadi,B.,"Performance, stability, dynamics and control of an airplane",AIAA (2004).
6. Phillips, W.F."Mechanics of flight" 2nd Edition, John Wiley (2010).

Mechanical Engineering (B. Tech.), VIII Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
03	**3**	**3**	**0**	**PEC-ME 409**	**Advance Manufacturing Processes**	**PEC**

Unit-I

ADVANCE MECHANICAL MACHINING PROCESSES: Classification of AMPs-process selection; Ultrasonic machining; machining setup; mechanics of cutting; parameter analysis; process capability; application. Abrasive water jet machining.

Unit-II

ADVANCE CHEMICAL AND THERMAL MACHINING PROCESSES: Electrochemical machining; electrochemical grinding; electrochemical honing; chemical machining; electric discharge machining; wire cut EDM; electron beam machining; laser beam machining.

Unit-III

ADVANCE CASTING PROCESSES: Metal mold casting: low and high pressure; continuous casting; squeeze casting; vacuum mold casting; evaporative pattern casting; chemical shell casting.

Unit-IV

ADVANCE WELDING PROCESSES: Electron beam welding; laser beam welding; ultrasonic welding

Unit-V

ADVANCE METAL FORMING PROCESSES: High rate energy forming (HERF) processes; electromagnetic forming; explosive forming; electro-hydraulic forming; stretch forming; contour roll forming.

Text and References books:

1. Manufacturing Engineering & Technology, 7th Edition SeropeKalpakjian, Illinois Institute of Technology Steven Schmid, The University of Notre Dame ©2014 |Pearson
2. Non traditional Manufacturing Processes Gary F. Benedict CRC Pres
3. Manufacturing Science by ghosh and mallik ; Prentice hall of India, 8th Edition
4. Shan & Pandey; Non traditional manufacturing

OPEN ELECTIVE-IV

Mechanical Engineering (B. Tech.), VIII Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
03	3	0	0	OEC404	Utilization of electrical power &traction	OEC

Unit-1

Electric Heating: Different methods of electric heating. Principle of high frequency induction and di-electric heating. Construction, operation, performance and applications of arc furnace and induction furnace.

Electric Welding: Welding process, welding transformer, Classification of Electric Welding: arc welding, resistance welding, welding of various metals.

Unit-2

Illuminations: Definitions, laws of illuminations, polar curves, luminous efficiency, photometer, incandescent lamps: filament materials, halogen lamp. electric discharge lamps: sodium vapour lamp mercury vapour lamp and fluorescent lamp.

Light Calculations: commercial, industrial, street and flood lighting.

Unit-3

Electrolytic Process: Principles and applications of electrolysis, electro-deposition, manufactures of chemicals, anodizing, electro polishing electro-cleaning, electroextraction, electrorefinig, electro-stripping (parting) power supplies for electrolytic process.

Unit-4

Electric Traction & Means of Supplying Power: Systems of Electric Traction: DC & AC Systems, Power Supply for Electric Traction System: Comparison and application of different systems. Sub-station equipment and layout, conductor rail & pantograph.

Unit-5

Traction Methods: Types of services, speed time and speed distance curves, estimation of power and energy requirements, Mechanics of train movement. Co-efficient of adhesion, Adhesive weight, effective weight.

Traction Motor Controls: DC and AC traction motors, Series parallel starting. Methods of electric braking of traction motors.

Text and Reference Books

1. H. Partab,"Art and Science of Electrical Energy" DhanpatRai& Sons
2. H. Partab, "Modern Electric Traction" DhanpatRai& Sons.
3. C.L. Wadhwa – Utilization of Electric Traction Electric Power.

4. G.K.Dubey,“Fundamentals of Electric Drives” Narosa Publishing House
5. Vedam and Subrahmanyam – Concept & Application of Electric Drives (TMH)

OPEN ELECTIVE-IV

Mechanical Engineering (B. Tech.), VIII Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
03	3	0	0	OEC405	Optimization techniques in Engineering	OEC

Unit-I

Unconstrained Optimization: Optimizing Single-Variable Functions, conditions for Local Minimum and Maximum, Optimizing Multi-Variable Functions.

Unit-II

Optimizing Multivariable Functions with Equality Constraint: Direct Search Method, Lagrange Multipliers Method, Constrained Multivariable Optimization with inequality constrained: Kuhn-Tucker Necessary conditions, Kuhn –Tucker Sufficient Conditions.

Unit-III

Quasi-Newton Methods and line search, least squares optimization, Gauss-Newton, Levenberg-Marquartd, Extensions of LP to Mixed Integer Linear Programming (MILP), Non-Linar Programming, The Newton Algorithm, Non-Linear Least Squares, Sequential Quadratics Programming (SQP), Constrained Optimization, SQP Implementation,

Unit-IV

Multi-Objective Optimization, Branch and Bound Approaches, Genetic Agorthms and Genetic Programming, Singular Based Optimization, On-Line Real Time Optimization, Optimization in Econometrics Approaches – Blue.

Unit-V

The Finite Difference Method for Poisson's Equation in two Dimensions and for the Transient Heat Equation, Eulers Method, The Modified Euler Method and the Runge-Kutta Method for Ordinary Differential Equations, Jacobi's Iteration Method.

Text and Reference Books:

1. Winston W L: Operations Research: Applications and Algorithms
2. Rao S.S., Optimization: Theory and Applications.
3. Walsh G R: M methods of Optimization.
4. Williams H.P.: Model Building in Mathematics Programming.
5. Williams H.P.: Model Solving in Mathematics Programming

3. H.A. Taha,"Operations Research:An Introduction", 5th Edition, Macmillan, New York, 1992.
4. K. Deb,"Optimization for Engineering DesignAlgorithms and Examples",Prentice-Hall of India Pvt. Ltd., New Delhi, 1995.
5. K.SrinivasaRaju and D. Nagesh Kumar, "Multicriterion Analysis in Engineering and Management",PHI Learning Pvt. Ltd., New Delhi, India, ISBN 978-81-203-3976-7, pp.288

OPEN ELECTIVE-IV

Mechanical Engineering (B. Tech.), VIII Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
03	3	0	0	OEC406	Microprocessor& microcontroller	OEC

Unit-I

Architecture of Microprocessors (6) General definitions of mini computers, microprocessors, micro controllers and digital signal processors.Overview of 8085 microprocessor.Overview of 8086 microprocessor. Signals and pins of 8086 microprocessor

Unit-II

Assembly language of 8086 (6) Description of Instructions.Assembly directives. Assembly software programs with algorithms

Unit-III

Interfacing with 8086 (8) Interfacing with RAMs, ROMs along with the explanation of timing diagrams. Interfacing with peripheral ICs like 8255, 8254, 8279, 8259, 8259 etc.Interfacing with key boards, LEDs, LCDs, ADCs, and DACs etc.

Unit-IV

Coprocessor 8087 (4) Architecture of 8087, interfacing with 8086. Data types, instructions and programming,Architecture of Micro controllers (4) Overview of the architecture of 8051 microcontroller. Overview of the architecture of 8096 16 bit microcontroller.

Unit-V

Assembly language of 8051 (4) Description of Instructions.Assembly directives. Assembly software programs with Algorithms.Interfacing with 8051 (5) Interfacing with keyboards, LEDs, 7 segment LEDs, LCDs, Interfacing with ADCs. Interfacing with DACs, etc. Module 8: High end processors (2) Introduction to 80386 and 80486

Text and Reference Books:

1. N.Senthilkumar, M.Saravanan, S,Jeevanathan, “Microprocessors and Microcontrollers”, Oxford University Press, 2011.
2. Kenneth J Ayala, “The 8086 Microprocessor: Programming and Interfacing the PC”, Cengage Learning, Reprint 2014.
3. 5. Kenneth J Ayala, “The 8051 Microcontroller”, 3rd edition, Cengage Learning, Reprint 2014.

4. 6. Muhammed Ali Mazidi, Janice GillispleMaidi, Rolin.D. McKinlay, “ The 8051 Microcontroller and Embedded Systems, Using Assembly and C”, Second edition, Pearson Prentice Hall, 2015.

OPEN ELECTIVE-IV

Mechanical Engineering (B. Tech.), VIII Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
03	3	0	0	OEC-407	RELIABILITY AND MAINTINENCE ENGINEERING	OEC

Unit-I

Introduction: Maintenance Objectives and Functions, Maintenance Organisation and Administration of Maintenance Systems, Need of planned maintenance, Maintenance policies, Breakdown, time based maintenance, Block replacement, age replacement and periodic replacement policy, Corrective and preventive maintenance, Maintenance planning, Scheduled maintenance, Cost of maintenance versus Cost of equipment and production delays.

Inspection: Inspection intervals, Inspection reports, card history system.

Unit-II

Predictive Maintenance: Equipment wear records, standards, Equipment used inpredictive maintenance. Computerized maintenance, Total Productive Maintenance, Methods of condition monitoring, Non-destructive testing, Liquid Penetrate, Magnetic particles, Ultrasonic testing, and Vibration analysis, Oil analysis, Radiographic testing.

Unit-III

Reliability: Definition, failure data analysis, Mean failure rate, mean time to failure(MTTF), mean time between failures (MTBF), hazard rate, Bathtub curve, Use of Weibull probability chart foe assessing characteristics life, guarantee period etc.

Unit-IV

System Reliability: Series, parallel and mixed configuration, Simple problems.

Reliability Improvement: Techniques, use of Pareto analysis-Design for reliability, redundancy unit and stand by redundancy, Optimization of reliability.

Unit-V

Spare Parts Management: Spare parts, features and categorization of spares, cost considerations, Techniques of cost reduction, Selective controls used in spare parts control, ABC analysis, FSN, XYZ, VED and other approaches, Inventory control of spares.

Text and Reference Books

1. Reliability Engineering, Srinath L.S., Affiliated East West Press.
2. Maintainability Principles and Practices, Blanchand, B.S., McGraw Hill
3. C.E. Ebeling, An Introduction to Reliability and Maintainability Engineering, McGrawHill, 1997.
4. . V. A. Profillidis, Railway management and engineering, 3rd Edition, Burlington, Ashgate Pub. Co., 2006.
5. Bury St Edmunds, Railway rolling stock, organized by the Railway Division of the Institution of Mechanical Engineers (IMechE) and the Institution of Civil Engineers (ICE) for IMechE, 2001

Mechanical Engineering (B. Tech.), VIII Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
01	0	0	2	PCC-ME 407	CNC Machines & Automation Lab	PCC

PART - A

CNC part programming using CAM packages. Simulation of Turning, Drilling, Milling operations. 3 typical simulations to be carried out using simulation packages like Master- CAM, or any equivalent software.

PART - B

(Only for Demo/Viva voce)

1. FMS (Flexible Manufacturing System): Programming of Automatic storage and Retrieval system (ASRS) and linear shuttle conveyor Interfacing CNC lathe, milling with loading unloading arm and ASRS to be carried out on simple components.

2. Robot programming: Using Teach Pendent & Offline programming to perform pick and place, stacking of objects, 2 programs.

PART - C

(Only for Demo/Viva voce)

Pneumatics and Hydraulics, Electro-Pneumatics: 3 typical experiments on Basics of these topics to be conducted.

Mechanical Engineering (B. Tech.), VIII Semester

Credits	L	T	P	Course Code	Course Title	Category of Course
06	0	0	6	PROJ- ME 403	Major Project	PROJ

The major project work can be a Modelling and Simulation, Case study, Design or Experiments in the field of Mechanical Engineering. It can be allotted as a group project with groups consisting of 3 to 4 students. The major project work started in the seventh semester (minor project) may be continued in this semester - the students should complete the project work in this semester and present it before the assessment committee The assessment committee will assess the various projects, fix the relative grading and group average marks - the guides will award the marks for the individual students in a project maintaining the group average - each group should submit three copies of a write up of his major project of the completed project report signed by the department (in the format prescribed by the department) through the guide - the Head of the Department-Dean of School of engineering and Technology will certify the copies and one copy return them to the students - other copy will be kept in the departmental and university library

INSTRUCTIONS FOR PROJECT REPORT/ DISSERTATION WRITING

It is important that the procedures listed below be carefully followed by all the students of B.E. (Mechanical Engineering).

1. Prepare Three Hard Bound Copies of your manuscript and if possible publish at least one international journal paper by each group for value addition of your project.

2. Limit your Dissertation report to 80 – 120 pages (preferably)

3. The footer must include the following: Institute Name, B.E. (Mechanical) Times New Roman 10 pt. and centrally aligned.

4. Page number as second line of footer, Times New Roman 10 Pt, centrally aligned.

5. Print the manuscript using

a. Letter quality computer printing.

b. The main part of manuscript should be Times New Roman 12 pt. with alignment - justified.

c. Use 1.5 line spacing.

d. Entire report shall be of 5- 7 chapters.

6. Use the paper size 8.5‘‘× 11‘‘or A4 (210 × 197 mm).

Margin Location	Paper 8.5‘‘× 11‘‘	Paper A4 (210 × 197 mm)
Top	1‘‘	25.4 mm
Left	1.5‘‘	37 mm
Bottom	1.25‘‘	32 mm
Right	1‘‘	25.4 mm

7. All paragraphs will be 1.5 line spaced with a one blank line between each paragraph. Each paragraph will begin with without any indentation.
8. Section titles should be bold with 14 pt typed in all capital letters and should be left aligned.
9. Sub-Section headings should be aligning at the left with 12 pt, bold and Title Case (the first letter of each word is to be capitalized).

10. Illustrations (charts, drawings, photographs, figures) are to be in the text. Use only illustrations really pertinent to the text. Illustrations must be sharp, clear, black and white. Illustrations downloaded from internet are not acceptable.

a. Illustrations should not be more than two per page. One could be ideal
b. Figure No. and Title at bottom with 12 pt
c. Legends below the title in 10 pt
d. Leave proper margin in all sides
e. Illustrations as far as possible should not be photo copied.

11. Photographs if any should of glossy prints

12. Please use SI system of units only.

13. Please number the pages on the front side, centrally below the footer

14. References should be either in order as they appear in the thesis or in alphabetical order by last name of first author

15. Symbols and notations if any should be included in nomenclature section only

16. Following will be the order of report

i. Cover page and Front page as per the specimen on separate sheet
ii. Certificate from the Institute as per the specimen on separate sheet
iii. Acknowledgements
iv. List of Figures
v. List of Tables
vi. Nomenclature vii. Contents
vii. Abstract

(A brief abstract of the report not more than 150 words. The heading of abstract i.e. word ―Abstract‖ should be bold, Times New Roman, 12 pt and should be typed at the centre. The

contents of abstract should be typed on new line without space between heading and contents. Try to include one or two sentences each on motive, method, key-results and conclusions in Abstract

1) Introduction (2-3 pages) (TNR – 14 Bold)
Problem statement (TNR – 12)
1.1 Objectives
1.2 Scope
1.3 Methodology
1.4 Organization of Dissertation
2) Literature Review (20-30 pages) Discuss the work done so far by researchers in the domain area and their significant conclusions. No derivations, figures, tables, graphs are expected.

3)This chapter shall be based on your own simulation work (Analytical/ Numerical/FEM/CFD) (15- 20 pages)
4) Experimental Validation - This chapter shall be based on your own experimental work (15-20 pages)
5) Concluding Remarks and Scope for the Future Work (2-3 pages) References ANNEXURE (if any) (Put all mathematical derivations, Simulation program as Annexure)
17.All section headings and subheadings should be numbered. For sections use numbers 1, 2, 3, ….and for subheadings 1.1, 1.2, …. etc and section subheadings 2.1.1, 2.1.2, …. etc.
18. References should be given in the body of the text and well spread. No verbatim copy or excessive text from only one or two references. If figures and tables are taken from any reference then indicate source of it.

Please follow the following procedure for references / Reference Books/ Patent/ Internet

- Collier, G. J. and Thome, J. R., Convective boiling and condensation, 3rd ed., Oxford University Press, UK, 1996, pp. 110 – 112.
- 2. Papers from Journal or Transactions Jung, D. S. and Radermacher, R., Transport properties and surface tension of pure and mixed refrigerants, ASHRAE Trans, 1991, 97 (1), pp. 90 – 98.
- Bansal, P. K., Rupasinghe, A. S. and Jain, A. S., An empirical correction for sizing capillary tubes, Int. Journal of Refrigeration, 1996, 19 (8), pp.497 – 505.
- Papers from Conference Proceedings Colbourne, D. and Ritter, T. J., Quantitative assessment of flammable refrigerants in room air conditioners, Proc. of the Sixteenth International Compressor Engineering Conference and Ninth International Refrigeration and Air Conditioning Conference, Purdue University, West Lafayette, Indiana, USA, 2002, pp. 34 – 40.

Reports, Handbooks etc.

- United Nations Environmental Programme, Report of the Refrigeration, Air Conditioning and Heat Pumps, Technical Option Committee, 2002, Assessment - 2002ASHRAE Handbook: Refrigeration, 1994 (Chapter 44)

Patent

- Patent no., Country (in parenthesis), date of application, title, year.

Internet

- www.(Site) [Give full length URL

SCHOOL OF ENGINEERING & TECHNOLOGY (SOET)

RAFFELS UNIVERSITY, NEEMRAN

BTECH (4 Years Degree Program)

2022-23

PROGRAM B. TECH(CSE)

PROGRAM OUTCOMES (POs)

Engineering Graduates will be able to:

1) Engineering Knowledge: Apply knowledge of mathematics, science, engineering fundamentals, and computer science & engineering to the solution of engineering problems.

2) Problem Analysis: Identify, formulate, research literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.

3) Design /Development of Solutions: Design solutions for complex engineering problems and design system components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal and environmental considerations.

4) Conduct Investigations of Complex Problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of information to provide valid conclusions.

5) Modern Tool Usage: Create, select and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

6) The Engineer and Society: Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice.

7) Environment and Sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge and need for sustainable development.

8) Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9) Individual and Team Work: Function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings.

10) Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear instructions.

11) Project Management and Finance: Demonstrate knowledge and understanding of engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12) Life - Long Learning: Recognize the need for and have the preparation and ability to Engage in independent and life- long learning in the broadest context of technological Change.

CBCS Scheme for B.Tech (3rd Sem) (2022-26)

S.No.	Category	Code	Course Title	Hours Per Week			IA		EA	Total	Credit
				L	T	P	TA	MTA			
1	PCC	PCC-CSE 201	Data structure & algorithm using C	3	1	0	20	20	60	100	4
2	PCC	PCC-CSE 202	Object ori-ented pro-gramming through C++	3	1	0	20	20	60	100	4
3	PCC	PCC-CSE 203	Database Management System	3	1	0	20	20	60	100	4
4	PCC	PCC-CSE 204	Unix & Shell Programming	3	1	0	20	20	60	100	4

5	BSC	BSC 201	Mathematics –III	3	1	0	20	20	60	100	4
6	HSMC	HSMC 201	Human Values	3	1	0	20	20	60	100	4
7	PCC	PCC-CSE 205	Data structure & algorithm Using C Lab	0	0	2	30	30	40	100	1
8	PCC	PCC-CSE 206	Object oriented programming through C++ Lab	0	0	2	30	30	40	100	1
9	PCC	PCC-CSE 207	Database Management System Lab	0	0	2	30	30	40	100	1
10	PCC	PCC-CSE 208	Unix & Shell Programming Lab	0	0	2	30	30	40	100	1
			Total	**18**	**6**	**8**				**1000**	**28**

SUBJECT NAME: -DATA STRUCTURE & ALGORITHM USING C

SUBJECT CODE: -PCC-CSE 201

Course outcomes:

CO1. Describe how arrays, linked lists, stacks, queues, trees, and graphs are represented and used them and their common applications.

CO2. Discuss the efficiency of the sorting and searching algorithms

CO3. Implementation of Trees and Graphs and perform various operations on these data structures.

CO4. Understanding the concept of recursion, application of recursion and its implementation.

CO5. Identify the alternative implementations of data structures with respect to its performance to solve a real-world problem.

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	3	2	1		2					2	3	2
CO2	3	3	3	2	1		2					2	3	2
CO3	3	3	3	2	2		2					2	3	2
CO4	3	3	3	2	2							2	3	2
CO5	3	3	3	2	2							2	3	

SUBJECT NAME: -OBJECT ORIENTED PROGRAMMING USING C++

SUBJECT CODE: -PCC-CSE-202

Course outcomes:

CO1. Able to develop programs with reusability.

CO2. Develop programs for file handling.

CO3. Handle exceptions in programming.

CO4. Develop applications for a range of problems using OOP techniques

CO5. Demonstrate the use of various OOPs concepts with the help of programs.

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	2									3		2
CO2	3	2	2									3		2
CO3	3	3	2									2		3
CO4	3	3	3	2	2	1			2		2	3	2	2
CO5	3											2		2

SUBJECT NAME: -DATABASE MANAGEMENT SYSTEM

SUBJECT CODE: -PCC-CSE-203

Course Outcomes:

CO 1. Describe the fundamental elements of relational database management systems.

CO 2. Explain the basic concepts of relational data model, entity-relationship model, relational database design, relational algebra and SQL.

CO 3. Design ER-models to represent simple database application scenarios

CO 4. Convert the ER-model to relational tables, populate relational database and formulate SQL queries on data.

CO 5. Improve the database design by normalization.

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3										1	2		
CO2	3	2	3								2	2	3	3
CO3	3	3	3	2	2	1	1		2	1	2	2	2	2
CO4	3	2		1								1		
CO5	3		2									2	1	

SUBJECT NAME: -UNIX & SHELL PROGRAMMING

SUBJECT CODE: - PCC-CSE-204

Course Outcomes:

CO1: Understand the basic concepts of UNIX Architecture and basic Command.

CO2: Understand the commands related to Shell basics, vi editor and regular expression commands.

CO3: Understand the concepts of advance file concepts, commands related to Shell script and filter commands.

CO4: Understand the concepts in Korn Shell and Interactive C Shell.

CO5: Understand different types of Files, File system and basic file system commands.

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	1									1		2
CO2	3	2	1									1		2
CO3	3	1	1									1		2

CO4	3	1			1							1		2
CO5	3		1									1		2

SUBJECT NAME: -Mathematics III

SUBJECT CODE: - BSC - 201

Course Outcomes:

CO1: To explore the fundamental knowledge of transforms and their types.

CO2: Laplace Transform and their applications.

CO3: Develop knowledge of double integration.

CO4: Explore the distribution in different situations.

CO5: Use Analytic functions

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	PO11	PO12	PSO1	PSO2
CO1	3	3	2	3	1	2	1		2	2	1	2	3	3
CO2	3	3	3	3	2	2	1		1	1	1	1	3	3
CO3	3	3	3	3	3	2	2		2	2	2	2	3	3
CO4	3	3	3	3	3	2	2		2	1	1	1	3	2
CO5	3	2	1	1	3	3	2		1	1	1	2	3	2

SUBJECT NAME: -HUMAN VALUES

SUBJECT CODE: - HSMC 201

Course outcomes:

CO1.

CO2.

CO3.

CO4.

CO5.

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1														
CO2														
CO3														
CO4														
CO5														

CBCS Scheme for B.Tech (4th Sem) (2022-26)

S.No.	Category	Code	Course Title	Hours Per Week			IA		EA	Total	Credit
				L	T	P	TA	MTA			
1	PCC	PCC-CSE 209	Digital Electronics	4	1	0	20	20	60	100	5
2	PCC	PCC-CSE 210	Discrete Mathematics	3	1	0	20	20	60	100	4
3	PCC	PCC-CSE 211	Computer Or-ganization & Architecture	3	0	0	20	20	60	100	3
4	PCC	PCC-CSE 212	Design & Analysis of Algorithm	4	0	0	20	20	60	100	4
5	PCC	PCC-CSE 213	Operating Systems	4	0	0	20	20	60	100	4
6	HSMC	HSMC 401	Organizational Behaviour	3	0	0	20	20	60	100	3
7	PCC	PCC-CSE 214	Computer Or-ganization & Architecture Lab	0	0	2	30	30	40	100	1
8	PCC	PCC-CSE 215	Operating Systems Lab	0	0	2	30	30	40	100	1
9	PCC	PCC-CSE 216	Design & Analysis of Algorithm Lab	0	0	2	30	30	40	100	1
10	MC	MC-III	Constitutional	0	0	0	0	0	100	100	0

			Law								
			Total	**21**	**2**	**6**				**1000**	**26**

SUBJECT NAME: - Digital Electronics

SUBJECT CODE: - PCC-CSE-209

Course outcomes:

CO1: Identify and enumerate different electronic components.

CO2: Illustrate reduction of logical expressions using boolean algebra and implement the functions using logic gates. Design and analyse synchronous and asynchronous sequential circuits using flip-flops.

CO3: Design different types of with and without memory element digital electronic circuits for particular operation, within the realm of economic, performance, efficiency, user friendly and environmental constraints.

CO4: Assess the nomenclature and technology in the area of memory devices and apply the memory devices in different types of digital circuits for real world application.

CO5: Apply the fundamental knowledge of analog and digital electronics to get different types analog to digitalized signal and vice-versa converters in real world with different changing circumstances.

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2											2		
CO2	2	3		2	2		3		1	1	1	1		
CO3	1	2	2	2	2	2		3		2		2		
CO4		2		2		2		2			1			
CO5	2		1	1	1		2	1	1	1	1	1		2

SUBJECT NAME: -Discrete Mathematics

SUBJECT CODE: - PCC-CSE-210

Course outcomes:

CO1: Explore the knowledge of set theory in relation, function and partially ordered relation.

CO2: define the concepts of truth table and modulus form to explore the universal quantification.

CO3: Develop the knowledge of generating function for recurrence relation.

CO4: Explore the knowledge of prime group, cyclic group and concept of ring.

CO5: Use graph theory to find the shortest path between any to vertices.

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	2	3	1	2	1		2	2	1	2	3	2
CO2	3	3	3	3	2	2	1		1	1	1	1	3	2
CO3	3	3	3	3	3	2	2		2	2	2	2	3	3
CO4	3	3	3	3	3	2	2		2	1	1	1	2	3
CO5	3	2	1	1	3	3	2		1	1	1	2	2	3

SUBJECT NAME: -Computer Organization and Architecture

SUBJECT CODE: - PCC-CSE-211

Course outcomes:

CO1: Understand the theory and architecture of central processing unit.

CO2: Analyze some of the design issues in terms of speed, technology, cost, performance.

CO3: Design a simple CPU with applying the theory concepts.

CO4: Use appropriate tools to design verify and test the CPU architecture.

CO5: Learn the concepts of parallel processing, pipelining and interprocessor communication.

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2											2		
CO2	2	1	1	1								2	2	2
CO3	2	2	2		2							2		
CO4	3	2	2	1	3							3		
CO5	3	1							1	1		2		

SUBJECT NAME: - DESIGN AND ANALYSIS OF ALGORITHM

SUBJECT CODE: - PCC-CSE-212

Course Outcomes:

CO1.Students will be introduced with algorithm.

CO2.Students will learn to design algorithms.

CO3.Students will learn to implement algorithm for coding.

CO4. Argue the correctness of algorithms using inductive proofs and invariants.

CO5. Analyze worst-case running times of algorithms using asymptotic analysis.

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	2	2	1	1							1	3	1
CO2	2	1	1	1	1							1	1	1
CO3	2	2	2	1	1							1	3	1
CO4	2	2	2	1	1							1	3	1
CO5	2	1	1	1	1							1	1	2

SUBJECT NAME: - OPERATING SYSTEM

SUBJECT CODE: - PCC-CSE-213

Course Outcomes:

CO 1. Identify the role of Operating System. To understand the design of control unit.

CO2. Understanding CPU Scheduling, Synchronization, Deadlock Handling and Comparing CPU Scheduling Algorithms. Solve Deadlock Detection Problems.

CO3. Describe the role of paging, segmentation and virtual memory in operating systems.

CO4. Description of protection and security and also the Comparison of UNIX and Windows based OS.

CO5. Defining I/O systems, Device Management Policies and Secondary Storage Structure.

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2											2		
CO2	3	2			2							3	2	2
CO3	3	2										2		
CO4	2				2							2		
CO5	2											1		

CBCS Scheme for B.Tech (5th Sem) (2022-26)

S.No.	Category	Code	Course Title	Hours Per Week			IA		EA	Total	Credit
				L	T	P	TA	MTA			
1	PCC	PCC-CSE 301	Data Communication	4	0	0	20	20	60	100	4
2	PCC	PCC-CSE 302	Software Engineering	4	0	0	20	20	60	100	4
3	PCC	PCC-CSE 303	Formal Language & Automata Theory	3	1	0	20	20	60	100	4
4	PCC	PCC-CSE 304	Java Programming	3	0	0	20	20	60	100	3
5	HSMC	HSMC-CSE-301	Human Resource Management	3	0	0	20	20	60	100	3
6	PEC	PEC-CSE 301-303	Elective – I	4	0	0	20	20	60	100	4
7	PCC	PCC-CSE 305	Software Engineering Lab	0	0	2	30	30	40	100	1
8	PCC	PCC-CSE 306	Java Programming Lab	0	0	2	30	30	40	100	1
9	PCC	PCC-CSE 307	Data Communication Lab	0	0	2	30	30	40	100	1
10	PROJ	PROJ-CSE 301	Industrial Training/ Project Seminar	0	0	4	0	0	100	100	2
			Total	**21**	**1**	**10**				**1000**	**27**

SUBJECT NAME: - SOFTWARE ENGINEERING

SUBJECT CODE: - PCC-CSE-302

Course Outcomes:

CO 1. How to apply the software engineering lifecycle by demonstrating competence in communication, planning, analysis, design, construction, and deployment.

CO 2. An ability to work in one or more significant application domains.

CO 3. Work as an individual and as part of a multidisciplinary team to develop and deliver quality software.

CO 4. Demonstrate an understanding of and apply current theories, models, and techniques that provide a basis for the software lifecycle.

CO 5. Demonstrate an ability to use the techniques and tools necessary for engineering practice.

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	2	2	2								3	2	2
CO2	3		1	1								2		
CO3	2	2	3	2	2	1	1		3	2	2	3	3	3
CO4	3				2							2		
CO5	3				3	2	1					2		

SUBJECT NAME: -FORMAL LANGUAGE AND AUTOMATA THEORY

SUBJECT CODE: - PCC-CSE 303

Course Outcomes:

CO 1 Knowledge Acquire a full understanding and mentality of Automata Theory as the basis of all computer science languages design - Have a clear understanding of the Automata theory concepts such as RE's, DFA's, NFA's, Turing machines, Grammar, halting problem, computability and complexity.

CO 2. Cognitive skills (thinking and analysis). - Be able to design FAs, NFAs, Grammars, languages modelling, small compilers basics .

CO 3 Be able to design sample automata - Be able to minimize FA's and Grammars of Context Free Languages.

CO 4. Professional Skill - Perceive the power and limitation of a computer - Solve the problems using formal language

CO 5. Attitude- Develop a view on the importance of computational theory.

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3											2		
CO2	3	2	3	2								3	2	2
CO3	3	2	3	2								2	2	2
CO4	2	3	3	3								2	2	1
CO5	2											1		

SUBJECT NAME: - Java Programming

SUBJECT CODE: - PCC-CSE 304

Course Outcomes:

CO 1. Learn to apply object-oriented programming features and concepts for solving given problem.

CO2. Learn to use java standard API library to write complex programs

CO 3. Learn implementation of object-oriented programming concepts using java

CO 4. Able to develop interactive programs using applets and swings.

CO 5. Develop advanced skills for programming in Java.

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3											3		
CO2	2	2	2	2	3				2			2	2	2
CO3	3											2		
CO4	2											2		
CO5	3	2	2	2	2	2			2	2	2	3	2	3

Scheme for B.Tech (6th Seme) (2022-26)

S.No.	Category	Code	Course Title	Hours Per Week			IA		EA	Total	Credit
				L	T	P	TA	MTA			
1	PCC	PCC-CSE 308	Compiler Design	3	1	0	20	20	60	100	4
2	PCC	PCC-CSE 309	Data Mining & Ware-housing	3	0	0	20	20	60	100	3

3	PCC	PCC-CSE 310	Computer Network	3	0	0	20	20	60	100	3
4	PEC	PEC-CSE 304-306	Elective-II	4	0	0	20	20	60	100	4
5	PEC	PEC-CSE 307-309	Elective-III	4	0	0	20	20	60	100	4
6	OEC	OEC-CSE 301-303	Open Elec-tive-I	3	0	0	20	20	60	100	3
7	PCC	PCC-CSE 311	Compiler Design Lab	0	0	2	30	30	40	100	1
8	PCC	PCC-CSE 312	Computer Network Lab	0	0	2	30	30	40	100	1
9	PROJ	PROJ-CSE 302	Minor Pro-ject- I	0	0	4	50	50	100	200	2
			Total	**20**	**1**	**8**				**1000**	**25**

SUBJECT NAME: - Compiler Design

SUBJECT CODE: - PCC-CSE 308

Course Outcomes:

CO1. To realize basics of compiler design and apply for real time applications.

CO 2. To introduce different translation languages

CO 3. To understand the importance of code optimization

CO 4. To know about compiler generation tools and techniques

CO 5. To learn working of compiler and non-compiler applications and design of compiler for simple programming language.

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	1	1									2		
CO2	2											1		
CO3	3	3	2	2	3							2		
CO4	2				3							2		
CO5	3	2	3	2	2							3	3	3

SUBJECT NAME: - Data Mining & Ware-housing

SUBJECT CODE: - PCC-CSE 309

Course Outcomes:

CO 1. Understand the functionality of the various data mining and data warehousing component.

CO 2. Appreciate the strengths and limitations of various data mining and data warehousing models.

CO 3. Explain the analyzing techniques of various data.

CO 4. Describe different methodologies used in data mining and data ware housing.

CO 5. Compare different approaches of data ware housing and data mining with various technologies.

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3											2		
CO2	3				2							2		
CO3	2	2										2	2	
CO4	3				3							3		
CO5	2	2		1	2							2	2	

SUBJECT NAME: - Computer Network

SUBJECT CODE: - PCC-CSE 310

Course Outcomes:

CO 1. Students will be aware about computer networking.

CO 2. Students will know about various layers of OSI Model.

CO 3. Students will learn about wired & wireless technologies.

CO 4. Students will learn about the services of different layers.

CO 5. Explain the different Transport Layer function i.e. Port addressing, Connection Management, Error control and Flow control mechanism.

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3											2		
CO2	3											2		
CO3	3				1					1		2		
CO4	3	2		2	2							3		
CO5	3	3		2	2							2	1	

SUBJECT NAME: - Elective-II (Theory of Computation-305)

SUBJECT CODE: - PEC-CSE 304-306

Course Outcomes:

CO1. Knowledge Acquire a full understanding and mentality of Automata Theory as the basis of all computer science languages design - Have a clear understanding of the Automata theory concepts such as RE's, DFA's, NFA's, Turing machines, Grammar, halting problem, computability and complexity.

CO2. Cognitive skills (thinking and analysis). - Be able to design FAs, NFAs, Grammars, languages modelling, small compilers basics - Be able to design sample automata - Be able to minimize FA's and Grammars of Context Free Languages.

CO3 Professional Skill - Perceive the power and limitation of a computer - Solve the problems using formal language

CO4 Attitude- Develop a view on the importance of computational theory.

CO5. Describing the limitations of a computing machine.

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3											2		
CO2	3	2	3	2								3	2	2
CO3	3	2	3	2								2	2	2
CO4	2	3	3	3								2	2	1
CO5	2											1		

SUBJECT NAME: - Elective III (Web and Internet Technology-309)

SUBJECT CODE: -PEC-CSE 307-309

Course Outcomes:

CO 1. Students will be familiar with Internet.

CO 2. Students will be familiar with different protocols of internet.

CO 3. Students will learn different services of internet.

CO 4. Analyze a web page and identify its elements and attributes.

CO 5. Students will learn HTML, CSS, JAVA Scripts for web designing.

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3				3	2	2	3	2	3		3	3	
CO2	3											2		
CO3	3											2		
CO4	3				3	2	2	3		3	2	3	3	2
CO5	3				3	3	2	3	2	2		3	3	2

SUBJECT NAME: - Open Elective-I Cyber Laws and Ethics-302)

SUBJECT CODE: - OEC-CSE 301-303

Course Outcomes:

CO 1. Make learner conversant with the social and intellectual property issues emerging from cyberspace.

CO 2. Explore the legal and policy developments in various countries to regulate cyberspace.

CO 3. Develop the understanding of relationship between commerce and cyberspace.

CO 4. Give learners in depth knowledge of information technology act and legal framework of right to privacy, data security and data protection.

CO 5. Make study on various case studies on real time crimes.

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3					2		3				3		
CO2	3					2		3				3		
CO3	3					3		3				3		
CO4	3					2		3				3		
CO5	3					3		3				3		

CBCS Scheme for B.Tech (7th Sem) (2022-26)

S.No.	Category	Code	Course Title	Hours Per Week			IA		EA	Total	Credit
				L	T	P	TA	MTA			
1	PCC	PCC-CSE 401	Network Security & Cryptography	3	1	0	20	20	60	100	4
2	PEC	PEC-CSE 401-403	Elective- IV	4	0	0	20	20	60	100	4
3	PEC	PEC-CSE 404-406	Elective- V	3	1	0	20	20	60	100	4
4	OEC	OEC-CSE	Open Elec-	3	0	0	20	20	60	100	3

		401-403	tive- II								
5	PCC	PCC-CSE 401	Network Security & Cryptography Lab	0	0	2	30	30	40	100	1
6	PROJ	PROJ-CSE-401	Minor Project-II	0	0	16	50	50	400	500	8
			Total	**13**	**1**	**18**				**1000**	**24**

SUBJECT NAME: - Network Security & Cryptography

SUBJECT CODE: - PCC-CSE-401

Course Outcomes:

CO 1. Understand basic cryptographic algorithms, message and web authentication and security.

CO 2. Identify information system requirements for both of them such as client and server.

CO 3. Understand the current legal issues towards information

CO 4. Distinguish and explain different protocol like SSL, TLS Visà-vis their applications.

CO 5. Comprehend and explain security services and mechanisms.

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3					3						3		
CO2	2	2				2		2				2	2	
CO3	3					2		3				2		
CO4	3					3						3		
CO5	3				2	3		3				3	3	2

SUBJECT NAME: - Parallel and Distributed Algorithm

SUBJECT CODE: - PEC-CSE-402

Course Outcomes:

CO 1. Understand the requirements for programming parallel systems and how they can be used to facilitate the programming of concurrent systems.

CO 2. To learn and apply knowledge of parallel and distributed computing techniques and methodologies.

CO 3. To learn the architecture and parallel programming in graphics processing units (GPUs).

CO 4. Understand the memory hierarchy and cost-performance tradeoffs.

CO 5. To gain experience in the design, development, and performance analysis of parallel and distributed applications.

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3											2		
CO2	3		2	2	2			2	2		1	2	3	2
CO3	3											2		
CO4	2											2		
CO5	3	2	3	2	3	2	2		2	2	2	3	3	3

SUBJECT NAME: -Cloud Computing

SUBJECT CODE: - PEC-CSE-406

Course Outcomes:

CO1. Able to understand basic concepts, principles and paradigm of Cloud Computing

CO2. Able to interpret various Cloud computing models and services.

CO3. Able to identify the significance of implementing virtualization techniques.

CO4. Able to understand the need of security in Cloud computing.

CO5. Understand the concept SOA and cloud based storage in Cloud computing.

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	1			1	1		1			1	2		
CO2	1	2	1	3	1		1					2		
CO3		1	3	1	2	1		1				3		
CO4	2	1	2	1		2	1					2		
CO5		1	1	2	1	2		1				3		

CBCS Scheme for B.Tech (8th Sem) (2022-26)

S.No.	Category	Code	Course Title	Hours Per Week			IA		EA	Total	Credit
				L	T	P	TA	MTA			

1	PCC	PCC-CSE 403	Advanced Computer Architecture	3	1	0	20	20	60	100	4
2	PCC	PCC-CSE 404	Artificial Intelligence & Expert Systems	3	0	0	20	20	60	100	3
3	PEC	PEC-CSE 407- 409	Elective- VI Optimization Techniques	3	1	0	20	20	60	100	4
4	OEC	OEC-CSE 404-406	Open Elec-tive- III Human Resource Management	3	0	0	20	20	60	100	3
5	PCC	PCC-CSE 405	Artificial Intelligence & Expert Systems Lab	0	0	4	30	30	40	100	2
6	PROJ	PROJ-CSE-402	Major Pro-ject	0	0	16	50	150	400	600	8
			Total	**12**	**2**	**20**				**1100**	**24**

SUBJECT NAME: -Advanced Computer Architecture

SUBJECT CODE: - PEC-CSE-403

Course Outcomes:

CO1.Demonstrate concepts of parallelism in hardware/software.

CO2.Discuss memory organization and mapping techniques.

CO3.Describe architectural features of advanced processors.

CO4.Interpret performance of different pipelined processors.

CO5.Explain data flow in arithmetic algorithms.

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3											2		
CO2	3											3		
CO3	3											3		
CO4	3	3			2							3	2	
CO5	3											3		

SUBJECT NAME: -Artificial Intelligence & Expert System

SUBJECT CODE: - PEC-CSE-404

CO1 Study the concepts of AI and related searching algorithms.

CO2 Develop the knowledge skills and it's representational structure in AI.

CO3 Study the concepts of natural language processing in AI.

CO4 Study the concepts of supervised/unsupervised machine learning and game technique.

CO5 Study how design the programming skill in PROLOG, and concepts of pattern recognition approaches.

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	3	3	2	2	1	1					3		
CO2	1	2	3	1	2		1					2		
CO3	1	1		1	1		3					2		
CO4	2	1	2	3	1		1					2		
CO5	1	2	3	3	2		1					3	2	2

SUBJECT NAME: -Optimization Technique

SUBJECT CODE: - PEC-CSE 407

CO1: Formulate the engineering problems as an optimization problem.

CO2: Apply necessary and sufficient conditions for a given optimization problem for optimality

CO3: Select appropriate solution methods and strategies for solving an optimization problem and interpret and analyze the solution obtained by optimization algorithms

CO4: Justify and apply the use of modern heuristic algorithms for solving optimization problems

CO5: Solve Engineering Design and Manufacturing related optimization problem using software tools.

CO-PO Mapping:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2	3	1	1	1				1	1		1	1	
CO2	1	3	2	1						1			1	
CO3	1	3	2	1	1				2	1				
CO4	2	2	2	2	2				2	1				
CO5	1	3	3	2	3				2	2		1		

SUBJECT NAME: - Human Resource Management

SUBJECT CODE: - OEC-CSE 404

CO1:

CO2:

CO3:

CO4:

CO-5:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1														
CO2														
CO3														
CO4														
CO5														

Semester III (Second year) curriculum

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PCC	PCC-CSE 201	Data structure & algorithm using C	3	1	0	4

Total Hrs:45

Unit I: Arrays, Records and Pointers (7Hr**)**

Introduction to Linear Arrays, Arrays ADT, Representation Linear in Memory, Traversing Array

Inserting and deleting, Sorting; Bubble Sort, Searching; Linear Search, Binary Search, Multidimensional Arrays, Representation of Polynomials Using Arrays, Pointers; Pointer Arrays, Dynamic Memory Management, Records; Record Structures, Representation of Records in Memory; Parallel Arrays, Matrices, Sparse Matrices.

Unit II: Linked List (9Hrs)

Introduction Linked Lists, Representation of Linked Lists in Memory Traversing a Linked List Searching a Linked List, Memory Allocation; Garbage Collection, Insertion into a Linked List, Deletion from a Linked List, Header Linked List, Circularly Linked Lists, Two-Way Lists (or Doubly Linked Lists), Josephus Problem and its Solution, Buddy Systems.

Unit III: Stacks, Queue and Recursion (9Hrs)

Introduction Stacks, Array Representation of Stacks, Linked Representation of Stacks, Stack as ADT, Arithmetic Expression; Polish Notation, Application of Stacks, Recursion, Towers of Hanoi, Implementation of Recursive Procedures by Stacks, Queue, Linked Representation of Queues, Queues as ADT, Circular of Queues, Deques, Priority Queues, Applications of Queues.

Unit IV: Trees (10Hrs)

Introduction Binary Trees ,Representing Binary Tree in Memory ,Traversing Binary Trees, Traversal Algorithms Using Stacks, Header Nodes; Threads, Threaded Binary Trees ,Binary Search Trees ,Searching and Inserting in Binary Search Trees ,Deleting in a Binary Search Tree, Balanced Binary Trees, AVL Search Trees ,Insertion in an AVL Search Tree ,Deletion in an AVL Search Tree, m-way Search Trees ,Searching, Insertion and Deletion in an m-way Search tree, B-Trees ,Searching, Insertion and Deletion in a B-tree, B+-Trees.

Unit V: Graphs and their Applications (6Hrs)

Introduction, Graph Theory Terminology, Sequential Representation of Graphs; Adjacency Matrix; Path Matrix, Warshall ‟s Algorithm; Shortest Paths, Linked Representation of a Graph, Operations on Graphs, traversing a Graph, Topological Sorting, Spanning Trees

Unit VI: Sorting and Searching (4Hrs)

Introduction, Sorting, Insertion Sort, Selection Sort, Merging, Merge-Sort, Shell Sort, Radix Sort, Searching and Data Modification, Hashing.

Text Books: 1. Seymour Lipschutz, Schaums Outlines, „Data Structures with C‟‟,Tata Mc Graw Hill

Reference Books: 1. S. Sahani, „Data Structures in C‟‟

2. D.Samantha, „Classic Data Structure‟‟, PHI Publications

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PCC	PCC-CSE 202	Object oriented programming through C++	3	1	0	4

Total Hrs:45

Unit-I: Principles of Object Oriented Programming (8 Hrs)

Differences between C and C++.A look at procedure Oriented programming, object oriented programming paradigm, basic concepts of OOP, Benefits of OOP, OO languages, A sample program, structure of C++ program. Introduction to OOPS: The origins of C++, What is Object Oriented Programming? Some C++ fundamentals, Headers & Name Spaces, Introducing C++ Classes & Object.

Unit-II: Overloading (10Hrs)

Introduction of overloading, Function overloading, Operator overloading, Inheritance, Constructors & Destructors,Function & Operator Overloading constructor functions, Localizing variables, Function overloading & Ambiguity, Finding the address of an overloaded function, this Pointer, References, Using reference to overload a unary operator, overriding.

Unit-III: Inheritance, Virtual Functions and polymorphism (7 Hrs)

Inheritance and the access specifies, Constructors and Destructors in derived classes, Multiple Inheritance, Passing parameters to a basic class, Pointers and references to derived types, Virtual Functions, Why virtual functions?, Pure virtual functions and abstract types, Early Vs Latebinding.

Unit-IV: Static & Dynamic memory allocation (10 Hrs)

Static & Dynamic allocation using new and delete, static class members, Virtual base classes, const member functions and mutable, volatile member functions, Using the as keyword, linkage specification, The .* and ->* operators, Creating conversion functions, Copy constructors, Granting access, namespaces, Explicit constructors, type name and export.

Unit-V: Exceptions Handling (10 Hrs)

Exception Handling, fundamentals, options the uncaught exception ( ), Applying exception Handling, and RTTI, casting operators, Recent trends in Object Oriented Programming in C++ , Advanced topics & its Application.

Templates : Class templates, class templates with multiple parameters, function templates, function templates with multiple parameters.

Text Books:

1. Object Oriented Programming in C++ -Robert Lafore, edition, Galgotia publications
2. The Complete Reference C++, Herbert Schildt, 4th Edition, TMH

Reference Books:

1. Y. Kanetkar, „Let‟s C++‟, BPB publications
2. E Balagurusamy, „Object oriented programming with C++‟, 4th edition, TMH
3. Sourav Sahay , „Object-Oriented Programming with C++‟ , Oxford University Press, 2006.

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PCC	PCC-CSE 203	Database Management System	3	1	0	4

Total hrs: 45

UNIT – I: Database System Applications: (8 Hrs)

Database System Applications: A Historical Perspective, File Systems versus a DBMS, the Data Model, Levels of Abstraction in a DBMS, Data Independence, Structure of a DBMS

Introduction to Database Design: Database Design and ER Diagrams, Entities, Attributes, and Entity Sets, Relationships and Relationship Sets, Additional Features of the ER Model, Conceptual Design With the ER Model

Unit-II: Database Design Theory (9 Hrs)

Introduction to the Relational Model: Integrity constraint over relations, enforcing integrity constraints, querying relational data, logical data base design, introduction to views, destroying/altering tables and views. Relational Algebra, Tuple relational Calculus, Domain relational calculus.

Unit-III: Physical Database Design and Memory Management in database (9 Hrs)
SQL: Queries, Constraints, Triggers: form of basic SQL query, UNION, INTERSECT, and EXCEPT, Nested Queries, aggregation operators, NULL values, complex integrity constraints in SQL, triggers and active data bases. Schema Refinement: Problems caused by redundancy, decompositions, problems related to decomposition, reasoning about functional dependencies, FIRST, SECOND, THIRD normal forms, BCNF, lossless join decomposition, multi-valued dependencies, FOURTH normal form, FIFTH normal form.

Unit -IV: Query Optimization and Performance Tuning (9 Hrs)
Transaction Concept, Transaction State, Implementation of Atomicity and Durability, Concurrent Executions, Serializability, Recoverability, Implementation of Isolation, Testing for serializability, Lock Based Protocols, Timestamp Based Protocols, Validation- Based Protocols, Multiple Granularity, Recovery and Atomicity, Log–Based Recovery, Recovery with Concurrent Transactions.

Unit-V: Transaction Management (10Hrs)

Data on External Storage, File Organization and Indexing, Cluster Indexes, Primary and Secondary Indexes, Index data Structures, Hash Based Indexing, Tree base Indexing, Comparison of File Organizations, Indexes and Performance Tuning, Intuitions for tree Indexes, Indexed Sequential Access Methods (ISAM), B+ Trees: A Dynamic Index Structure.

Text Books:

1. Fundamentals of Database Systems – Emissary ,Navathe & Gupta, Pearson Education
2. Database System Concepts by Henry Korth

Reference Books:

1. Database Systems by S. K. Singh, Pearson Education.
2. Principles of Database Systems – Ullman, Golgotia Publications 1998.
3. Database Systems by Connolly, 3rd edition, Pearson Education.

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PCC	PCC-CSE 204	Unix & Shell Programming	3	1	0	4

Total Hrs:45

UNIT-I INTRODUCTION (8Hrs)

Introduction to Unix-Brief History-What is Unix-Unix Components-Using Unix-Commands in Unix-Some Basic Commands-Command Substitution-Giving Multiple Commands.

UNIT-II INTRODUCTION TO FILE (7Hrs)

The File system –The Basics of Files-What's in a File-Directories and File Names-Permissions-I,Nodes-The Directory Hierarchy, File Attributes and Permissions-The File Command knowing the File Type-The Chmod Command Changing File Permissions-The Chown Command Changing the Owner of a File-The Chgrp Command Changing the Group of a File.

UNIT-III REGULAR EXPRESSIONS: (8Hrs)

Using the Shell-Command Line Structure-Met characters-Creating New Commands-Command Arguments and Parameters-Program Output as Arguments-Shell Variables- -More on I/O Redirection-Looping in Shell Programs.

UNIT-IV KORN SHELL: (7Hrs)

Filters-The Grep Family-Other Filters-The Stream Editor Sed-The AWK Pattern Scanning and processing Language-Good Files and Good Filters.

UNIT-V INTERACTIVE C SHELL (7Hrs)

Shell Programming-Shell Variables-The Export Command-The Profile File a Script Run During Starting-The First Shell Script-The Read Command-Positional parameters-The $? Variable knowing the exit Status-More about the Set Command-The Exit Command-Branching Control Structures-Loop Control Structures-The Continue and Break Statement-The Expr Command: Performing Integer Arithmetic-Real Arithmetic in Shell Programs-The here Document(<<)-The Sleep Command-Debugging Scripts-The Script Command-The Eval Command-The Exec Command.

UNIT-VI FILE MANAGEMENT (8Hrs)

The Process-The Meaning-Parent and Child Processes-Types of Processes-More about Foreground and Background processes-Internal and External Commands-Process Creation-The Trap Command-The Stty Command-The Kill Command-Job Control.

Text Book: 1.UNIX and Shell Programming Richard F. Gilberg

Reference Books: 1. Mastering UNIX Shell Scripting: Bash, Bourne, and Korn Shell.

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
BSC	BSC 201	Mathematics - III	3	1	0	4

Unit –I (9Hours)

Fourier transform: Discrete and Fast Fourier transform Complex form of Fourier transform and its inverse, Fourier sine and cosine transform and their inversion. Properties of F-transform, Convolution theorem for F-transform, Parse Val‟s identity of for F-transforms Applications of Fourier transform for the solution of partial differential equations having constant coefficients with special reference to heat equation and wave equation.

Unit –II (9Hours)

Laplace transform, Inverse transform, properties, Transforms of derivatives and integrals, Unit step function, Dirac‟s delta function, Differentiation and integration of transforms, Applications to differential equations.

Unit –III (9Hours)

Statistical Techniques: Discrete and Continuous random variables–Moments–Moment generating functions – Binomial, Poisson, Geometric, Uniform, Exponential, Gamma and Normal distributions, Moments, Moment generating functions, Curve fitting, Method of least squares, Fitting of straight lines, Polynomials, Exponential curves etc., Correlation, Linear, non –linear

Unit –IV (9Hours)

Functions of Complex Variable: Definition, Exponential function, Trigonometric and Hyperbolic functions, Logarithmic functions. Limit and Continuity of a function, Differentiability and Analyticity.

Unit –V (9Hours)

Cauchy-Riemann equations: Necessary and sufficient conditions for a function to be analytic, polar form of the Cauchy-Riemann equations. Harmonic functions, application to flow problems. Integration of complex functions.

Text and Reference books:

1. Chandrika Prasad, Mathematics for Engineers, Prasad Mudralaya
2. Jeffrey, Advanced Engineering Mathematics , ELSEVIER
3. Chandrika Prasad , Advanced Mathematics for Engineers, Prasad Mudralaya
4. Grewal B. S., Higher engineering Mathematics, Khanna Publication, New Delhi
5. Keyszig E., Advanced Engineering Mathematics, Wiley Eastern Publication
6. Peter V. O. Neil, Advanced Engineering mathematics, Thomson Publication
7. Gerald, C.F., and Wheatley, P.O., Applied Numerical Analysis, Addison Wesley.

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
HSMC	HSMC 201	Human Values	3	1	0	4

Total Hrs:45

UNIT-I: Course Introduction (9Hrs)

Need, basic Guidelines, Content and Process for Value Education: Understanding the need, basic guidelines, content and process for Value Education. Self-Exploration - what is it? - its content and process; 'Natural Acceptance' and Experiential Validation - as the mechanism for self -exploration. Continuous Happiness and Prosperity - A look at basic Human Aspirations. Right understanding, Relationship and Physical Facilities - the basic requirements for fulfillment of aspirations of every human being with their correct priority. Understanding Happiness and Prosperity correctly - A critical appraisal of the current scenario. Method to fulfill the above human aspirations: understanding and living in harmony at various levels.

UNIT-II: Harmony in the Human Being (9Hrs)

Understanding Harmony in the Human Being - Harmony in Myself! : Understanding human being as a co-existence of the sentient 'I' and the material 'Body'. Understanding the needs of Self ('I') and 'Body' - Sukh and Suvidha. Understanding the Body as an instrument of 'I' (I being the doer, seer and enjoyer). Understanding the harmony of I with the Body: Sanyam and Swasthya; correct appraisal of Physical needs, meaning of Prosperity in detail. Programs to ensure Sanyam and Swasthya.

UNIT-III: Relationship and Goals (9Hrs)

Understanding Harmony in the Family and Society - Harmony in Human - Human Relationship: Understanding harmony in the Family the basic unit of human interaction. Understanding values in human - human relationship; meaning of Nyaya and program for its fulfillment to ensure Ubhay-tripti; Trust (Vishwas) and Respect (Samman) as the foundational values of relationship. Understanding the meaning of Vishwas; Difference between intention and competence. Understanding the meaning of Samman, Difference between respect and differentiation; the other salient values in relationship. Understanding the harmony in thesociety (society being an extension of family): Samadhan, Samridhi, Abhay, Sah-astiva as comprehensive Human Goals. Visualizing a universal harmonious order in society - Undivided Society (Akhand Samaj), Universal Order (Sarvabhaum Vyawastha) - from family to world family!

UNIT-IV: Nature and Values (9Hrs)

Understanding Harmony in the nature and Existence - Whole existence as Co-existence: Understanding the harmony in the Nature. Interconnectedness and mutual fulfillment among the four orders of nature - recyclability and self-regulation in nature. Understanding Existence as Co-existence (Sah-astiva) of mutually interacting units in all-pervasive space. Holistic perception of harmony at all levels of existence.

UNIT-V: Ethics and Ability (9Hrs)

Implications of the above Holistic Understanding of Harmony on Professional Ethics: Natural acceptance of human values, Definitiveness of Ethical Human Conduct, Basic for Humanistic Education, Humanistic Constitution and Humanistic Universal Order. Competence in professional ethics: Ability to utilize the professional competence for augmenting universal human order, Ability to identify the scope and characteristics of people-friendly and eco-friendly production systems, Ability to identify and develop appropriate technologies and management patterns for above production systems.

Text books:

1. R. R. Gaur, R Sangal, G P Bagaria, 2009, A Foundation Course in Human Values and Professional Ethics.
2. Prof. K. V. Subba Raju, 2013, Success Secrets for Engineering Students, Smart Student Publications, 3rd Edition.

Reference books:

1. Ivan IIIich, 1974, Energy & Equity, The Trinity Press, Worcester, and HarperCollins, USA
2. E. F. Schumancher, 1973, Small is Beautiful: a study of economics as if people mattered. Blond & Briggs, Britain.
3. A Nagraj, 1998 Jeevan Vidya ek Parichay, Divya Path Sansthan, Amarkantak.

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PCC	PCC-CSE 205	Data structure & algorithm using C lab	0	0	2	1

Total Hrs: 20

List of Practical's-

1. Write and execute a program in C to implement stack using arrays
2. Write and execute a program in C to implement queue using arrays
3. Write and execute a program in C to implement simple linked list
4. Write and execute a program in C to implement stack using linked list
5. Write and execute a program in C to implement queue using linked list
6. Write and execute a program in C to implement doubly linked list
7. Write and execute a program in C to implement circular linked list.
8. Write and execute a program in C to reverse a singly and doubly linked list
9. Write and execute a program in C to insert a node in a linked list in a sorted fashion 154
10. Write and execute a program in C to implement binary tree, finding the depth of a tree
11. Write and execute a program in C to implement in order, preorder and post order traversals
12. Write and execute a program in C to find if two trees are identical

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PCC	PCC-CSE 206	Object oriented programming through C++ lab	0	0	2	1

Total Hrs:20

List of Practical's-

1. Write a C++ program to find the sum of individual digits of a positive integer.
2. Write a C++ program to generate the first n terms of the sequence
3. Write a C++ program to generate all the prime numbers between 1 and n, where n is a value supplied by the user.
4. Write a C++ program to find both the largest and smallest number in a list of integers.
5. Write a C++ program to sort a list of numbers in ascending order.
6. Write a Program to illustrate New and Delete Keywords for dynamic memory allocation
7. Write a program Illustrating Class Declarations, Definition, and Accessing Class Members.
8. Program to illustrate default constructor, parameterized constructor and copy constructors
9. Write a Program to Demonstrate the i)Operator Overloading.ii) Function Overloading.
10. Write a Program to Demonstrate Friend Function and Friend Class.
11. Write a Program to Access Members of a STUDENT Class Using Pointer to Object Members.
12. Write a Program to Generate Fibonacci Series use Constructor to Initialize the Data Members.
13. Write C++ programs that illustrate how the following forms of inheritance are supported:
    a. Single inheritance b)Multiple inheritance c)Multi level inheritance d)Hierarchical inheritance
14. Write a C++ program that illustrates the order of execution of constructors and destructors when new class is derived from more than one base class.
15. Write a Program to Invoking Derived Class Member Through Base Class Pointer
16. Write a Program Containing a Possible Exception. Use a Try Block to Throw it and a Catch Block to Handle it Properly.
17. Write a Program to Demonstrate the Catching of All Exceptions.

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PCC	PCC-CSE 207	Database Management System Lab	0	0	2	1

Total Hrs: 20

List of Practicals:

1. Creation of a database and writing SQL queries to retrieve information from the database.
2. Performing Insertion, Deletion, Modifying, Altering, Updating and Viewing records based on conditions.
3. Creation of Views, Synonyms, Sequence, Indexes, save point.
4. Creating an Employee database to set various constraints.
5. Creating relationship between the databases.
6. Study of PL/SQL block.
7. Write a PL/SQL block to satisfy some conditions by accepting input from the user.
8. Write a PL/SQL block that handles all types of exceptions.
9. Creation of Procedures.
10. Creation of database triggers and functions.

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PCC	PCC-CSE 208	Unix & Shell Programming Lab	0	0	2	1

Total Hrs:20

List of Practical's-

1. Write a shell script to write your user name as a banner to the front of the file being sent to the printer
2. Write a shell script to print the first five arguments in reverse order
3. Write a shell script to append a line to the file. Both the file name and line have to be specified to the script at the command line. Ensure that it runs the sh shell script. Print the number of lines in the file after you done.
4. Write a shell script that tests and print outs the name of all the files in a directory that are executable. Do not print any other file or directory names. If there are subdirectories, go down recursively. How would you change this script to not go down recursively?
5. Write a shell script that given a person‟s UID, tells you how many times that person is logged on
6. Write a shell script called lsdirs which lists just the directories in the current directory
7. Write a shell script called see taking a filename name as argument which uses ls if the file is a directory and more if file is otherwise
8. Write a shell script that asks a user to type w word in, then tells the user how long that wordis.
9. In many versions of UNIX there us a –i argument for cp so that you will be prompted for confirmation if you are about to overwrite a file. Write a script called cpi which will prompt if necessary without using the –i argument.
10. Write a shell script that takes a uid as an argument and prints out that person‟s name, home directory, shell and group number, and other groups that person may belong to.
11. Sort /etc/passwd using the uid as the key.
12.
    a. Write a program to generate Machine OpCode Table, Symbol Table and Pseudo OpCode table during First Pass Assembler.
    b. Write a program to generate Machine Opcode table using two pass Assembler.

Semester IV (Second year) curriculum

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PCC	PCC- CSE 209	Digital Electronics	4	1	0	5

Total Hrs:45

Unit –I

Overview of electronics: Electronic Components-Resistor, capacitor and Inductors, Semiconductor devices: Diodes, transistors (BJT and FET). Integrated circuits, Popular IC packages, Analog vs digital electronics, Transistor as a switch.
Boolean algebra: Representation of values and complements, De'Morgans theorem-simplifying expressions.

Unit –II

Logic gates: AND, OR, NOT, XOR, XNOR, NAND, NOR gates and their truth tables, combining logic circuits for expressions using NAND and NOR gates, Logic circuit families and characteristics, SSI, MSI,LSI and VLSI circuits. Combinational and sequential circuits: (Simple block diagrams, truth tables and IC packages only required).
Adders, decoders, multiplexers, encoder circuits , Flip-flops: RS, clocked RS, JK, D and T flip flops, Master-slave flip flops, edge and level triggering, Multivibrators - A stable, Bistable, Monostable,counters-ripple and decade. Registers, latches and Tristate buffers.

Unit –III

Building blocks of a computer system: Basic building blocks-I/O, memory, ALU, Control and their interconnections, Control unit and its functions- Instruction-word, Instruction execution cycle, organizational sequence of operation of control registers; controlling of arithmetic operations; branch, skip, jump and shift instructions, ALU-its components.

Unit –IV

Addressing techniques and registers: Addressing Techniques-Direct, immediate addressing; paging, relative, Indirect and indexed addressing. Memory buffer register; accumulators; Registers-Indexed,General purpose, Special purpose; overflow, carry, shift, scratch registers; stack pointers; floating point; status information and buffer registers

Unit –V

Memory: Main, RAM, static and Dynamic, ROM, EPROM, EAROM, EEPROM, Cache and Virtual memory. Interconnecting System components: Buses, Interfacing buses, Bus formats-address, data and control,Interfacing keyboard, display, auxiliary storage devices, and printers. I/O cards in personal computers. Development of Indian Super Computer 'PARAM': History, Characteristics, Strengths, Weakness and basic Architecture.

Text / Reference Books

1. A.S.Tannenbaum : Structured Computer Organization, Pearson
2. Thomas C. Bartee : Digital Computer Fundamentals, McGraw-Hill
3. Duglus V Hall : Microprocessors and Interfacing: programming and Hardware, McGraw-Hill, 1986.
4. Introduction to Computer Architecture, Stone S.Galgotia Publicatons 1996.
5. Microprocessor Architecture Programming & Applications, R. Gaonkar, Wiley Eastern-1987.
6. Computer Architecture and Organization by N.P. Carter, 4th Edition, McGraw-Hill, 2014.

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PCC	PCC- CSE 210	Discrete Mathematics	3	1	0	4

UNIT-I: Set Theory, Relation: Definition, Function: (10Hrs)

Definition of Sets, Venn Diagrams, complements, Cartesian products, power sets, counting principle, cardinality and count ability (Countable and Uncountable sets), proofs of some general identities on sets, pigeonhole principle. Types of relation, composition of relations, domain and range of a relation, pictorial representation of relation, properties of relation, partial ordering relation. Definition and types of function, composition of functions, recursively defined functions.

UNIT-II: Propositional logic: (8Hrs)

Proposition logic, basic logic, logical connectives, truth tables, tautologies, contradiction, normal forms (conjunctive and disjunctive), modus ponens and modus tollens, validity, predicatelogic, universal and existential quantification. Notion of proof: proof by implication, converse, inverse, contrapositive, negation, and contradiction, direct proof, proof by using truth table, proof by counter example.

UNIT-III: Combinatories: (8Hrs)

Mathematical induction, recursive mathematical definitions, basics of counting, permutations, combinations, inclusion-exclusion, recurrence relations (nth order recurrence relation with constant coefficients, Homogeneous recurrence relations, Inhomogeneous recurrence relation), generating function (closed form expression, properties of G.F., solution of recurrence relation using G.F, solution of combinatorial problem using G.F.)

Unit-IV: Algebraic Structure: (9Hrs)

Binary composition and its properties definition of algebraic structure; Groyas Semi group, Monoid Groups, Abelian Group, properties of groups, Permutation Groups, Sub Group, Cyclic Group, Rings and Fields (definition and standard results).

UNIT-V: Graphs: (10Hrs)

Graph terminology, types of graph connected graphs, components of graph, Euler graph, Hamiltonian path and circuits, Graph coloring, Chromatic number. Tree: Definition, types of tree(rooted, binary), properties of trees, binary search tree, tree traversing (preorder, inorder,

postorder). Finite Automata: Basic concepts of Automation theory, Deterministic finite Automation(DFA), transition function, transition table, Non Deterministic Finite Automata (NDFA), Mealy and Moore Machine, Minimization of finite Automation.

Text/Reference Books:

1. Kenneth H. Rosen, "Discrete Mathematics and its Applications", Mc.Graw Hill, 2002.
2. J.P.Tremblay & R. Manohar, "Discrete Mathematical Structure with Applications to Computer Science" Mc.Graw Hill, 1975.

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PCC	PCC- CSE 211	Computer Organization & Architecture	3	0	0	3

Unit I: Basic Structure of Computers (7 Hrs)

Functional Units, Basic operational concepts, Bus structures Addressing modes, subroutines: parameter passing, Instruction formats, expanding op codes method.

Unit II: Basic Processing Unit (8 Hrs)

Bus architecture, Execution of a Complete Instruction, sequencing of control signals, Hardwired control, Micro programmed Control, microinstruction format, Bit slice concept.

Unit III: Arithmetic Unit (7 Hrs)

Number representations and their operations, Design of Fast Adders, Signed multiplication, Booth‟s Algorithm, bit pair recoding, Integer Division, Floating point numbers and operations, guard bits and rounding.

Unit IV: The Memory System (8 Hrs)

Various technologies used in memory design, higher order memory design, multimodal memories and interleaving, Associative Memory, Cache memory, Virtual Memory.

Unit V: Input /Output Organization (7Hrs)

I/O mapped I/O and memory mapped I/O, interrupts and interrupts handling mechanisms, vectored interrupts, synchronous vs. asynchronous data transfer, Direct Memory Access COMPUTER PERIPHERALS: I/O devices such as magnetic disk, magnetic tape, CDROM systems.

Unit VI: RISC (8 Hrs)

Pipelining, basic concepts in pipelining, delayed branch, branch prediction, data dependency, influence of pipelining on instruction set design, multiple execution Units, performance considerations, Basic concepts in parallel processing & classification of parallel architectures. Vector Processing0, Array Processors. Recent trends in Computer Architecture & Organization.

Text Books:

1. V.C.Hamacher,Z.G.Vranesic and S.G.Zaky, „Computer Organization‟, McGraw Hill,5th edition ,2002.

References Books:

1.A.S.Tanenbaum, “Structured Computer Organization” 4th Edition, Pearson Education.
2.M Mano, “Computer System and Architecture”, Pearson Education
3.W. Stallings, “Computer Organization & Architecture”, Pearson Education.

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PCC	PCC- CSE 212	Design & Analysis of Algorithm	4	0	0	4

Unit – I: Introduction **(8 Hrs)**

INTRODUCTION: Algorithm, pseudo code for expressing algorithms, performance analysis-space complexity, time complexity, asymptotic notation- big (O) notation, omega notation, theta notation and little (o) notation, recurrences, probabilistic analysis, disjoint set operations, union and find algorithms.

Unit – II: Asymptotic notations (8 Hrs)

DIVIDE AND CONQUER: General method, applications-analysis of binary search, quick sort, merge sort, AND OR Graphs. GREEDY METHOD: General method, Applications-job sequencing with deadlines, Fractional knapsack problem, minimum cost spanning trees, Single source shortest path problem.

Unit – III: Advanced data structures (9 Hrs)

GRAPHS (Algorithm and Analysis): Breadth first search and traversal, Depth first search and traversal, Spanning trees, connected components and bi-connected components, Articulation points. DYNAMIC PROGRAMMING: General method, applications - optimal binary search trees, 0/1 knapsack problem, All pairs shortest path problem, Travelling sales person problem, Reliability design

Unit – IV: Greedy Method & Dynamic Programming (10Hrs)

BACKTRACKING: General method, Applications- n-queen problem, Sum of subsets problem, Graph coloring and Hamiltonian cycles. BRANCH AND BOUND: General method, applications - travelling sales person problem, 0/1 knapsack problem- LC branch and bound solution, FIFO branch and bound solution.

Unit-V: Traversal and Search Techniques (9 Hrs)

NP-HARD AND NP-COMPLETE PROBLEMS: Basic concepts, non-deterministic algorithms, NP-hard and NP-complete classes, Cook‘s theorem

Text Books:

1. Thomas H. Cormen et. al. “Introduction to Algorithms”, Prentice Hall of India.
2. Design & Analysis of Computer Algorithms by Aho,. Horowitz, Sahani, Rajsekharam, Pearsoneducation

Reference Books:

1. “Computer Algorithms”, Galgotia Publications Pvt. Ltd. Brassard, Bratley, “Fundamentals ofAlgorithms”, Prentice Hall
2. 2. Computer Algorithms: Introduction to Design and analysis, 3rd Edition, By Sara Baase & A. V. Gelder Pearson Education.

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PCC	PCC- CSE 213	Operating Systems	4	0	0	4

Total Hrs:45

Unit-I: Introduction (6 Hrs)

Evolution of OS, Types of OS, Basic h/w support necessary for modern operating systems, services provided by OS, system programs and system calls, system design and implementation.

Unit-II: File Systems (8Hrs)

File systems: File concept, Access methods, Disk space management and space allocation strategies, directory structures, Recovery, Log-structured File System, disk arm scheduling strategies.

Unit-III: Process and Its Scheduling (7Hrs)

Process concept, process control block, Types of scheduler, context switch, threads, multithreading model, goals of scheduling and different scheduling algorithms.

Unit-IV: Memory Management (8Hrs)

Contiguous allocation, Relocation, Paging, Segmentation, Segmentation with paging, demand paging , Virtual Memory Concepts, page faults and instruction restart , page replacement algorithms , working sets ,Locality of reference, Thrashing, Garbage Collection.

Unit-V: Process management and synchronization (8Hrs)

Concurrency conditions, Critical section problem, software and hardware solution, semaphores, conditional critical regions and monitors, classical inter process communication problems

Unit-VI: Deadlocks detection & avoidance (8Hrs)

Deadlock definitions, Prevention, Avoidance, detection and Recovery, Goals of Protection, access matrix, Deadlock implementation.

Text Books:

1. Operating System concepts – Silberchatz & Galvin, Addison Wesley, 6th Edn.
2. Modern Operating Systems – Tanenbaum, Pearson Edn. 2ndedn.

Reference Books:

1. Operating Systems – S R Sathe, Macmillan Publishers, India, 2008
2. Operating System –Milan Milenkovik, McGraw-Hill, 1987

Category	Code	Course Title	Hours PerWeek			Credit
			L	T	P	
HSMC	HSMC 401	Organizational Behavior	3	0	0	3

Total Hrs: 45

Unit-l: OrganizationalBehavior (9 Hrs)

Definition - Importance - Historical Background - Fundamental concepts of OB - 21st Century corporate - Different models of OB i.e. autocratic, custodial, supportive, collegial and SOBC.

Unit II: Perception Process & Personality & Attitudes (9 Hrs)

Nature & Importance - Perceptual Selectivity - Perceptual Organization - Social Perception – Impression Management Meaning of personality - Development of personality - Nature and dimensions of attitude - Job Satisfaction - Organizational Commitment.

Unit III: Learning & Motivation (9 Hrs)

Process of Learning - Principles of Learning - Organizational Reward Systems - Behavioral Management Motives - Characteristics - Classification of motives - Primary Motives - Secondary motives - Morale - Definition and relationship with productivity - Morale Indicators Theories of Work Motivation - Maslow's theory of need hierarchy - Herzberg's theory of job loading.

Unit IV: Leadership & Organizational Design (9Hrs)

Definition - Importance - Leadership Styles - Models and Theories of Leadership Styles Various organizational structures and their effects on human behaviour - Organizational Climate - Organizational Culture - Organizational Effectiveness.

Unit V: Conflict Management (9 Hrs)

Modern view of conflict - Constructive and Destructive conflict - Conflict Process - Strategies for encouraging constructive conflict - Strategies for resolving destructive conflict. Stress Management - Concept of stress - Sources of stress - Effects of stress on humans - Managementof Stress.

Text Books:

1. Organizational Behaviour, 9th Ed. - Stephen Robbins

2. Human Behaviour at work - Davis and Newstorm

3. Organizational Behaviour - Uma Sekaran

Reference Books:

4. Organizational Behaviour - Fred Luthans
5. Organizational Behaviour - K.Aswathappa
6. Human Behaviour at Work - Keith Davis

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PCC	PCC-CSE 214	Computer Organization & Architecture Lab	0	0	2	1

Total Hrs: 20

List of practicals -

1. Machine and assembly languages (generic)
2. The process of assembly and linking
3. Special assembly language programming issues
4. Parameter passing: assembly language and "external"a.Return addresses and co-routines

b.Traps and interrupts: mechanism and handling

c. Worms and viruses: malicious code and defending against it

5. Special miscellaneous topics
6. Operating system interface: traps and interrupts

a.Access to IO devices: display, keyboard, real-time clocks, DMA

b.Communications (serial and parallel), simple error detection and correction codes (parity, Hamming),

7. Low level programming in C. This includes all sorts of "tricks" that emphasize the power of low-level computing, as an aid to understanding computing systems in depth: Pointers tofunctions and their applications for self modifying code and applications.
8. Write the working of 8085 simulators GNUsim8085 and basic architecture of 8085 along with small introduction.
9. Study the complete instruction set of CPU and write the instructions in the instruction set of8085 along with examples.
10. Write an assembly language code in GNUsim8085 to implement data transferinstruction.

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PCC	PCC-CSE 215	Operating Systems Lab	0	0	2	1

Total Hrs:20

List of practical's -

1. Basics of UNIX commands.
2. Shell programming
3. Implementation of CPU scheduling. a) Round Robin b) SJF c) FCFS d) Priority
4. Implement all file allocation strategies
5. Implement Semaphores
6. Implement File Organization Techniques
7. Implement Bankers algorithm for Dead Lock Avoidance
8. Implement an Algorithm for Dead Lock Detection
9. Implement the all page replacement algorithms a) FIFO b) LRU c) LFU
10. Implement Shared memory and IPC
11. Implement Paging Technique f memory management.
12. Implement Threading & Synchronization Applications

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PCC	PCC-CSE 216	Design & Analysis of Algorithm Lab	0	0	2	1

Total Hrs: 20

List of practicals -

1. To find HCF and LCM of two numbers
2. Code and analyses to find median element in an array of integers.
3. Code and analyse to find majority element in an array of integers.
4. Code and analyse to sort an array of integers using merge sort
5. Code and analyse to sort an array of integers using quick sort
6. To implement maximum and minimum problem using divide and conquer strategy
7. To implement binary search using divide and conquer strategy
8. To implement program of Heap Sort.
9. WAP of minimum spanning tree using Kruskal algorithm.
10. WAP of minimum spanning tree using Prim‟s algorithm.
11. WAP to implement matrix chain multiplication
12. Code to find the shortest path in graph using Dijkstra‟s algorithm.
13. Code to find the shortest path using Bellman-Ford algorithm.
14. To implement LCS problem using Dynamic Programming.
15. To implement matrix chain multiplication problem using dynamic programming.
16. Code and analyze to find the minimum spanning tree in a weighted, undirected graph.

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PCC	MC-III	Constitutional Law	3	0	0	0

Unit – I (9 Hrs)

Salient features of the Indian constitution. Preamble Definition of State (Art. 12) Doctrines of Ultra-virus, severability, eclipse, waiver (Art, 13)

Unit – II (9 Hrs)

Right to equality (Art. 14) Prohibition of discrimination, Rights to equality of opportUNITy (Art. 15-16) Right to freedom under Article 19: Freedom of association; Freedom of movement; Freedom of residence; Freedom of assembly; Freedom of association; Freedom of movement; Freedom of residence; Freedom of occupation, trade and business; Right to take out processions; Right of the State to impose reasonable restrictions

Unit – III (9 Hrs)

Protection in respect of Conviction under Article 20, Ex-post-facto law; Double jeopardy; Self-incrimination; Right of Life and Personal Liberty (Act. 21), Protection in respect of arrest and detention Right to freedom of Religion (Articles 25-28)

Unit – IV (9 Hrs)

Cultural and Education Rights (Articles 29-30) Enforcement of Fundamental Right, Writ Jurisdiction of the Supreme Court and High Court (Article 32, 226) Right to property before and after the Constitution 42nd Amendment Act, 1976 Abolition of Untouchability, Titles (Articles 17-18) Right against exploitation (Articles 23, 24)

Reference Books:

1. Austin Granville: Constitution of India: Cornerstone of a Nation and Working A Democraticconstitution
2. Narender Kumar : Constitutional Law of India.
3. Basu D. D : Shorter Constitution of India
4. Jain, M.P.: Constitutional Law of India,
5. Seervai, H.M. : Constitutional Law of India, Vols. I-III
6. Shukla, V.N. : Constitutional of India (ed. M.P.Singh)
7. B.R. Sharma : Constitutional Law and judicial Activism

Semester V (Third Year) curriculum

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PCC	PCC-CSE 301	Data Communication	4	0	0	4

Total Hrs: 45

Unit-l: Signals (8Hrs)

ANALOG AND DIGITAL: Analog and digital data, Analog and digital signals; PERIODIC AND APERIODIC SIGNALS, ANALOG SIGNALS: Simple analog signals; TIME AND FREQUENCY
DOMAINS; COMPOSITE SIGNALS: Frequency spectrum and Bandwidth; DIGITAL SIGNALS: Decomposition of digital signal; TRANSMISSION MODES: Serial and Parallel transmission, Asynchronous and Synchronous Transmission, Simplex, Half-Duplex and Full-Duplex communication.

Unit II: Encoding And Modulation (8Hrs)

DIGITAL-TO-DIGITAL CONVERSION: Unipolar, Polar, Bipolar; ANALOG-TO-DIGITAL CONVERSION: Pulse Amplitude Modulation (PAM), Pulse Code Modulation (PCM), Sampling Rate, How many Bits per Sample? Bit rate; DIGITAL-TO-ANALOG CONVERSION: Aspects of Digital-to-Analog conversion, Amplitude Shift Keying (ASK), Frequency Shift Keying (FSK), Phase shift Keying (PSK), Quadrature Amplitude modulation (QAM), Bit / Baud comparison; ANALOG-TO-ANALOG CONVERSION: amplitude modulation (AM), Frequency Modulation (FM), Phase Modulation(PM).

Unit III: Interfaces and Modems (8Hrs)

DIGITAL DATA TRANSMISSION: Parallel transmission, Serial Transmission; DTE-DCE INTERFACE: Data Terminal Equipment (DTE), Data Circuit-Terminating Equipment (DEC), Standards, EIA-232 Interface; OTHER INTERFACE STANDARDS: EIA-449, EIA-530.

Unit IV: Communication Media (7Hrs)

GUIDED MEDIA: Twisted pair cable, Coaxial cable, Optical Fiber cable; UNGUIDED MEDIA: Radio frequency allocation, Propagation of Radio waves, Terrestrial microwave, Satellite communication, Cellular Telephony; TRANSMISSION IMPAIRMENTS: Attenuation, Distortion, Noise; PERFORMANCE: Throughput, Propagation Speed, Propagation time.

Unit V: MULTIPLEXING (7Hrs)

FREQUENCY DIVISION MULTIPLEXING (FDM), TIME DIVISION MULTIPLEXING (TDM): Inverse Multiplexing, WAVE-DIVISION MULTIPLEXING, MULTIPLEXING APPLICATIONS: THE TELEPHONE SYSTEM: Common carrier services and hierarchies, Analog services, Digital Services.

Unit VI: Data Compression (7Hrs)

Huffman code, Run-Length Encoding, Relative Encoding, Lempel-Ziv Encoding, Image Compression, PEG, MPEG.

Text Book:

1. Behrouz A. Forouzan , „Data Communications and 161 Networking‟, 4th edition, Tata McGraw Hill.

Reference Book:

1. William A.Shay,„Understanding Data Communications and Networks‟, 2nd Edition,Vikas publication

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PCC	PCC-CSE 302	Software Engineering	4	0	0	4

Total Hrs: 45

Unit-I: Introduction (5 Hrs)

An Introduction to Software Engineering, Software Myths, Software Engineering- A Layered Technology, Software Process Framework, Software Process Models, The Waterfall Model, Incremental Process Models, Evolutionary Process Models, Specialized Process Models, The Unified Process Model, Agile Process Models.

Unit-II: Software Planning (5 Hrs)

Software Engineering Practice An overview, Communication Practices, Planning Practices, Modeling Practices, Construction Practice & Deployment, System Engineering Hierarchy, Business Process Engineering, Product Engineering, System Modeling, Requirements Engineering.

Unit-III : Software Analysis And Design (9 Hrs)

Software Engineering Analysis & Design An overview, Requirements Analysis, Analysis Modeling Approaches, Data Modeling, Object-Oriented Analysis, Scenario Based Modeling, Flow-Oriented Modeling, Class-based Modeling, Behavioral Model. Design Engineering Concepts, DesignModel, Pattern-Based Software Design.

Unit-IV: Software Testing (9 Hrs)

Testing Strategies and Tactics An overview, level of testing: Unit Testing, Integration Testing, Validation Testing, System Testing, Debugging techniques. Software Testing Fundamentals, Black-Box Testing, White-Box Testing.

Unit-V: Software Metrics And Software Quality Management (8 Hrs)

Product Metrics An overview, Software Quality, A Framework for Product Metrics, Metrics for Analysis & Design Models, Metrics for Source Code, Metrics for Testing & Maintenance, Software Project Management An overview, Software Measurements, Metrics for Software Quality, Software Project Estimation Techniques, Project Scheduling, Risk Management, Quality Management, Change Management, Software Reengineering.

Unit-VI: Trends in Software Engineering And Project Management (9 Hrs)

Software project management (PERT/CPM): Developing a network plan, overview of PERT /CPM, basic rules for developing network, basic rules for developing project network. Recent trends in Software Engineering and Project.

Text Book:

1. Software Engineering- A Practitioner‟s Approach (Sixth Edition) - Roger Pressman (TMH)

Reference Books:

1. Software Engineering (Seventh Edition)- Ian Summerville, Pearson Education.
2. Software Engineering Theory and Practice by Pfleeger, Pearson Education.

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PCC	PCC-CSE 303	Formal Language & Automata Theory	3	1	0	4

Total Hrs: 45

Unit-I: Fundamentals (9Hrs)

Strings, Alphabet, Language, Operations, Finite state machine, definitions, finite automaton model, acceptance of strings, and languages, deterministic finite automaton and nondeterministic finite automaton, transition diagrams and Language recognizers.

Unit-II: Finite Automata & Regular Languages (8Hrs)

NFA with Î transitions – Significance, acceptance of languages. Conversions and Equivalence: Equivalence between NFA with and without Î transitions, NFA to DFA conversion, minimization of FSM, equivalence between two FSM‟s, Finite Automata with output- Moore and Melay machines. Regular sets, regular expressions, identity rules, Constructing finite Automata for a given regular expressions, Conversion of Finite Automata to Regular expressions. Pumping lemma of regular sets, closure properties of regular sets (proofs not required).

Unit-III: Context Free Grammars & Grammar Formalism (9Hrs)

Ambiguity in context free grammars. Minimization of Context Free Grammars. Chomsky normal form, Greibach normal form, Pumping Lemma for Context Free Languages. Enumeration of properties of CFL (proofs omitted).Regular grammars-right linear and left linear grammars, equivalence between regular linear grammar and FA, inter conversion, Context free grammar, derivation trees, sentential forms. Right most and leftmost derivation of strings.

UNIT-IV: Push Down Automata & Turing Machine (9Hrs)

Push Down Automata: Push down automata, definition, model, acceptance of CFL, Acceptance by final state and acceptance by empty state and its equivalence. Equivalence of CFL and PDA, interconversion. (Proofs not required). Introduction to DCFL and DPDA. Turing Machine: Turing Machine, definition, model, design of TM, Computable functions, recursively enumerable languages. Church‟s hypothesis, counter machine, types of Turing machines (proofs not required).

UNIT-V: Computability Theory (10Hrs)

Chomsky hierarchy of languages, linear bounded automata and context sensitive language,LR(0) grammar, decidability of, problems, Universal Turing Machine, undecidability of posts. Correspondence problem, Turing reducibility, Definition of P and NP problems, NP complete and NP hard problems.

Text Book:

1. Introduction to Computer Theory, Daniel I.A. Cohen, John Wiley.

Reference Book:

1. Introduction to languages and the Theory of Computation ,John C Martin, TMH

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PCC	PCC-CSE 304	Java Programming	3	0	0	3

Total Hrs: 45

UNIT-I: (9Hrs)

Introduction to OOP, procedural programming language and object-oriented language, principles of OOP, applications of OOP, history of java, java features, JVM, program structure. Variables, primitive data types, identifiers, literals, operators, expressions, precedence rules and associativity, primitive type conversion and casting, flow of control.

UNIT-II: (8Hrs)

Classes and objects, class declaration, creating objects, methods, constructors and constructor overloading, garbage collector, the importance of static keyword and examples, this keyword, arrays, command line arguments, nested classes.

UNIT-III: (8Hrs)

Inheritance, types of inheritance, super keyword, final keyword, overriding an abstract class. Interfaces, creating the packages, using packages, the importance of CLASSPATH and java.lang package. Exception handling, the importance of try, catch, throw throws and finally block, user-defined exceptions, Assertions.

UNIT-IV: (8Hrs)

Multithreading: introduction, thread life cycle, creation of threads, thread priorities, thread synchronization, communication between threads. Reading data from files and writing data to files, random access file,

UNIT-V: (6Hrs)

Applet class, Applet structure, Applet life cycle, sample Applet programs. Event handling: event delegation model, sources of event, Event Listeners, adapter classes, inner classes.

UNIT-VI: (6Hrs)

AWT: introduction, components and containers, Button, Label, Checkbox, Radio Buttons, List Boxes, Choice Boxes, Container class, Layouts, Menu and Scrollbar.

TEXT BOOK:

1. Cay S. Horstmann and Gary Cornell, “Core Java: Volume I – Fundamentals”, Eighth Edition, Sun Microsystems Press, 2008.

REFERENCES Books:

1. K. Arnold and J. Gosling, “The JAVA programming language”, Third edition, Pearson Education, 2000.
2. Timothy Budd, “Understanding Object-oriented programming with Java”, Updated Edition, Pearson Education,

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
HSMC	HSMC-CSE-301	Human Resource Management	3	0	0	3

Total Hrs: 45

Unit-I:INTRODUCTION (9Hrs)

Overview of Human Resources, Historical evolution, Integrated HR function, Corporate and HR environment, Strategic environment, Strategic Management

UNIT-II: PLANNING (9Hrs)

HR planning at Enterprise level, Need for systematic planning, Planning process, Operating Environment- Internal & External, Job description, Models & techniques of Manpower demand and Supplyforecasting. Retention-Redeployment and Exit strategies

UNIT-III:SKILLES DEVELOPMENT (9Hrs)

Career management-Recruitment and Selection, Employee Induction Programme, Employee training, Training needs & objective setting, Methods of training, Development & Development needs, Human Resource Development, Development process

UNIT-IV: PERFORMANCE PLANNING (9Hrs)

Performance planning – Performance appraisal, Measures of appraisal, System components appraisal methods, Ethics of appraisal, Problems & issues

UNIT-V: HUMAN RESOURCE (9Hrs)

Human Resource Information System- Concept, Objectives of HRIS, Types of information, Sources of Information, Method of Data collection, Procedure of maintaining HRIS at Micro & Macro level

Text Book:

1. Praveen Durai (2010), Human Resource Management, Pearson Education, South Asia

Reference Books

1. John Storey, Graeme Salaman, Christopher Mabey(1998): Strategic Human Resource Management: A
   Reader, SAGE Publications, 1998
2. Christopher Mabey, Rosemary Thomson (2011): Developing Human Resources,Routledge, Taylor and francis group, New York, USA.

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PEC	PEC-CSE 301	Soft Computing	4	0	0	4

Total Hrs: 45

UNIT-I: NEURAL NETWORKS (9 hours)

Fundamentals of Neural Networks – History- Architectures- Learning methods XOR problem-Delta rule-derivation-Back propagation- applications- parameters in BPN- Associative memory – Hetero associative- BAM-energy function problems-applications of associative memories- ART1-ART2- applications of adaptive networks.

UNIT-II: FUZZY LOGIC (9 hours)

Fuzzy set theory – crisp sets – fuzzy sets – crisp relations – Fuzzy relations – Fuzzy systems- Crisp logic – predicate logic – fuzzy logic- fuzzy based systems Defuzzification methods – applications.

UNIT-III: GENETIC ALGORITHMS (9 hours)

Fundamentals of GA – creation of offspring‟s – encoding – fitness function reproduction – crossover- insertioo & deletion- mutation- bitwise operators – applications.

UNIT-IV: HYBRID SYSTEMS (9 hours)

Hybrid systems – Neuro Fuzzy – Neuro Genetic – fuzzy Genetic hybrids- GA based weight determination and applications- fuzzy BPN – simplified fuzzy ARTMAP.

UNIT-V: PROGRAMMING USING MATLAB (9 hours)

Using Neural Network toolbox – Using Fuzzy Logic toolbox- Using Genetic Algorithm & directedsearch toolbox.

TEXT BOOKS:

1. Rajasekaran S. and VijayalakshmiPai G.A, “Neural Networks, Fuzzy Logic and GeneticAlgorithms”, PHI, 2011.
2. Timothy J.Ross, “Fuzzy Logic with Engineering applications”, John Wiley and Sons, 2010.

REFERENCES

1. Jang J.S.R, Sun C.T, Mizutani E, “Neuro fuzzy and Soft Computing”, PHI Learning Pvt. Ltd., 2012.
2. Davis E. Goldberg, “Genetic Algorithms: Search, Optimization and Machine Learning”, Addison Wesley, N.Y.,

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PEC	PEC-CSE 302	Image Processing	4	0	0	4

Total Hrs: 45

Unit-I: Introduction (8Hrs)

Origins of digital image processing, Various Imaging techniques, components of an image processing system, Image sensing and acquisition, Image sampling and quantization, neighbors of a pixel, Adjacency, Connectivity, Regions and boundaries.

Unit-II: Filtering (8Hrs)

Basic intensity transformation and spatial filtering, Image negatives, log transforms power-law transformations, median filtering, Histogram equalization, Histogram matching spatial correlation and convolutions

Unit-III: Transformation (8Hrs)

Two-dimensional orthogonal and Unitary Transforms, properties of unitary transforms 2D-DFT, Cosine transforms, Sine transforms, Hadamard transform, Haar transforms, Slant transforms.

Unit-IV: Image Degradation /Restoration Process (7Hrs)

Model of image Degradation/Restorations process, Noise models, Restoration in the presenceof noise only, periodic noise reduction by Frequency domain filtering, Image reconstructionfrom Projections, Image compression models, Huffman coding, LZW coding, Run length coding,Bit-plane coding.

Unit-V: Image Morphology (7Hrs)

Some basic algorithms, Boundary extraction, convex hull, thinning, morphological Reconstruction. Colorimage color models. skeletons, morphological processing, color models, RGB color models, CMY and CMYK color models the HIS.

Unit-VI: Image Segmentation (7Hrs)

Image segmentation, Fundamentals, Point, Line and edge detection, of segmentation, Thresholding, Regionbased segmentation, watershed segmentation algorithm Applications of segmentation.

Text Book:

1. Digital image processing by Rafael C. Gonzalez, Richard E. Woods, 3rd Edition, Pearson PHIPublication.

Reference Books:

1. Fundamental of Digital Image Processing by A. K. Jain, P. H. I. Publication.
2. Digital image processing by S. Jayaraman, S. Esakkirajan, T. Virakumar, McGraw Hill.

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PEC	PEC-CSE 303	Embedded System	4	0	0	4

Total Hrs: 45

Unit- I: Microcontrollers (10Hrs)

Microprocessors and Micro-controllers, Types of Microcontrollers, External memory, Processor Architecture – Harvard v/s Van Neumann; CISC v/s RISC, Microcontroller, Memory types, Software development tools like assembler, cross- compiler, emulator, and 173 simulator, 8051 controller, Block Diagram &Architecture.

Unit-II: Device and Communication Bus for Devices Network (10Hrs)

IO Types and examples, Serial communication devices, Parallel Device ports, Sophisticated Interfacing Feature in Devices Ports, Wireless Devices, Timer and Counting Devices, Watch dog timer, Real time clock, Network Embedded Systems, Serial Bus Communication Protocols, parallel Bus Devices protocol Parallel communication Network using ISA, PCI, PCI-X and advanced buses, Internet Enabled Systems- Network protocols, Wireless and mobile system protocol.

Unit-III: Device Drivers and Interrupt Services Mechanism (10Hrs)

Programmed-I/O Busy-wait Approach without Interrupt Services Mechanism, ISR Concept, Interrupt Sources, Interrupt Servicing (Handling) Mechanism, Multiple Interrupts, Context and the Periods for Context Switching, Interrupt Latency and Deadline, Classification of Processor Interrupt Service Mechanism from Context-Saving Angle, Direct Memory Access, Device Driver Programming.

Unit-IV: Inter process Communication and Synchronization (8Hrs)

Multiple process in an application, Multiple Threads in an application, Task and Task state, Task and Data, Clear-cut Distinction between Functions, ISRS and Tasks by their Characteristics, Concept of Semaphores, Shared Data, Inter process Communication, Signal Function, Semaphore Functions, Message Queue Functions, Mailbox Functions, Pipe Functions, Socket Functions, RPC Functions.

Unit-V: Interfacing Buses (7Hrs)

Industrial Interfacing Buses (10 Hrs) PCI, ESA, EISA, I2C, USB, RS232. Advance topics on embedded system.

Text Book

1. Myke Predko, “Programming and Customizing The 8051 Micro-controller”, Tata McGrawHill edition.

2. John B. Peatman, “Design with PIC Microcontrollers”, Low Price Edition, Pearson Education Asia.

Reference Books:

1. Embedded System :Architecture, programming and design by Rajkamal,TMH

2. ARM Assembly Language: Fundamentals and Techniques, William Hohl, CRC Press

3. ARM Architecture Reference Manual / Edition 2, by David Seal.

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PCC	PCC-CSE 305	Software Engineering lab	0	0	2	1

List of Practical's-

1. Develop requirements specification for a given problem (The requirements specification should include both functional and non-functional requirements. For a set of about 20 sample problems
2. Develop DFD Model (Level 0, Level 1 DFD and data dictionary) of the sample problem(Use of a CASE tool required). (1 class)
3. Develop structured design for the DFD model developed. (1 class)
4. Develop UML Use case model for a problem (Use of a CASE tool any of Rational rose,Argo UML, or Visual Paradigm etc. is required)
5. Develop Sequence Diagrams
6. Develop Class diagrams.
7. Develop code for the developed class model using Java
8. Use testing tool such as Joint.
9. Use configuration management tool
10. Use any one project management tool such as Microsoft Project or Gantt Project, etc.

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PCC	PCC-CSE 306	Java Programming Lab	0	0	2	1

Total Hrs:20

List of Practical's:

1. Create a java program to implement stack and queue concept.
2. Write a java package to show dynamic polymorphism and interfaces.
3. Write a java program to show multithreaded producer and consumer application.
4. Create a customized exception and also make use of all the exception keywords.
5. Convert the content of a given file into the uppercase content of the same file.
6. Develop an analog clock using applet.
7. Develop a scientific calculator using swings.
8. Create an editor like MS-word using swings.
9. Create a servlet that uses Cookies to store the number of times a user has visited your servlet.
10. Create a simple java bean having bound and constrained properties.

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PCC	PCC-CSE 307	Data Communication Lab	0	0	2	1

Total Hrs: 20

List of Practical's:

1. Study of basic data communication system.
2. Demonstrate Analog and digital signals.
3. To Convert Analog signal into digital signal.
4. To Convert digital signal into Analog signal.
5. Study of Amplitude modulation.
6. Study of Frequency modulation.
7. Study of Phase modulation.
8. Study of Amplitude shift keying.
9. Study of Frequency shift keying.
10. Study of Binary Phase shift keying.
11. Study of Quadrature amplitude shift keying.
12. Study of Frequency division Multiplexing (FDM)
13. Study of Time division Multiplexing (TDM)
14. Study of various interface standards.
15. Study of Twisted pair cable, Coaxial cable and Optical Fiber cable

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PROJ	PROJ- CSE 301	Industrial Training/ Project Seminar	0	0	2	2

Objective of Industrial Training: The objective of industrial training is to provide work experience so that students engineering knowledge is enhanced and employment prospects are improved. The student should take this course as a window to the real World and should try to learn as much as possible from real life experiences by involving and interacting with industry staff. Industrial training also provides an opportunity to students to select an engineeringproblem and possibly an industry guide for their Major Project in final semester.

Scheme of Studies: Duration 4 weeks in summer break after IV semester, assessment to be done in V semester practical examination. During training students will prepare a first draft of training report in consultation with section in charge. After training they will prepare final draft with the help of Faculty of the concern Department of mechanical engineering. Then they will present a seminar on their training and present it in the institute in front of the committee headed by the HOD/Faculty Member.

Learning through Industrial Training: During industrial training students must observe followingto enrich their learning:

- Industrial environment and work culture.
- Organizational structure and inter personal communication. Hardware
- / Software configuration knowledge and specifications.Project
- Planning, development and maintenance.
- Problems related to various areas of work etc.
- Students are supposed to acquire the knowledge on above by Direct Observations without disturbing personnel at work.
- Interaction with officials at the workplace in free/ tea time Study of Literature at the workplace (e.g. User Manual, standards, processes, schedules, etc.)
- Hands on" experience Undertaking/assisting project work. Solving problems at the work place.
- Presenting a seminar participating in group meeting/discussion.
- Consulting current technical journals and periodicals in the library.

Semester VI (Third Year) curriculum

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PCC	PCC-CSE 308	Compiler Design	3	1	0	4

Total Hrs: 45

Unit-I: INTRODUCTION TO COMPILERS (8Hrs)

Translators-Compilation and Interpretation-Language processors -The Phases of Compiler-Errors Encountered in

Different Phases-The Grouping of Phases-Compiler Construction Tools - Programming Language basics.

Unit-II: LEXICAL ANALYSIS (8Hrs)

Need and Role of Lexical Analyzer-Lexical Errors-Expressing Tokens by Regular Expressions-Converting Regular Expression to DFA- Minimization of DFA-Language for Specifying Lexical Analyzers-LEX-Design of Lexical Analyzer for a sample Language.

Unit-III: SYNTAX ANALYSIS (10Hrs)

Need and Role of the Parser-Context Free Grammars -Top Down Parsing -General Strategies-Recursive Descent Parser Predictive Parser-LL(1) Parser-Shift Reduce Parser-LR Parser-LR (0)Item-Construction of SLR Parsing Table -Introduction to LALR Parser - Error Handling and Recovery in Syntax Analyzer-YACC-Design of a syntax Analyzer for a Sample Language .

Unit-IV: SYNTAX DIRECTED TRANSLATION & RUN TIME ENVIRONMENT (10Hrs)

Syntax directed Definitions-Construction of Syntax Tree-Bottom-up Evaluation of S-Attribute Definitions- Design of predictive translator - Type Systems-Specification of a simple type checker-Equivalence of Type Expressions-Type Conversions. RUN-TIME ENVIRONMENT: Source Language Issues-Storage Organization-Storage Allocation-Parameter Passing-Symbol Tables-Dynamic Storage Allocation-Storage Allocation in FORTAN.

Unit-V: CODE OPTIMIZATION AND CODE GENERATION (9Hrs)

Principal Sources of Optimization-DAG- Optimization of Basic Blocks-Global Data Flow Analysis- Efficient Data Flow Algorithms-Issues in Design of a Code Generator - A Simple Code Generator Algorithm.

Text Book:

1. A Retarget able C Compiler: Design and Implementation Fraser and Hansen, Benjamin-Cummings, 1995.

References Books:

1. Advanced Compiler Design and Implementation, Much nick, Morgan and Kaufmann,1998.
2. Crafting a Compiler, Fischer and LeBlanc, Benjamin-Cummings, 1988.

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PCC	PCC-CSE 309	Data Mining & Warehousing	3	4	0	3

Total Hrs: 45

UNIT-I (9Hrs)

Data warehouse: Introduction to Data warehouse, Difference between operational database systems and data warehouses, Data warehouse Characteristics, Data warehouse Architecture and its Components, Extraction-Transformation-Loading, Logical(Multi-Dimensional), Data Modeling, Schema Design, Star and Snow-Flake Schema, Fact Constellation, Fact Table, Fully Addictive, Semi-Addictive, Non Addictive Measures; Fact-Less-Facts, Dimension Table Characteristics; OLAP Cube, OLAP Operations, OLAP Server Architecture-ROLAP, MOLAP and HOLAP.

UNIT-II (9Hrs)

Introduction: Fundamentals of data mining, Data Mining Functionalities, Classification of Data Mining systems, Data Mining Task Primitives, Integration of a Data Mining System with a Database or Data Warehouse System, Major issues in Data Mining. Data Preprocessing: Need for Preprocessing the Data, Data Cleaning, Data Integration &Transformation, Data Reduction, Discretization and Concept Hierarchy Generation.

UNIT-III (9Hrs)

Association Rules: Problem Definition, Frequent Item Set Generation, The APRIORI Principle, Support and Confidence Measures, Association Rule Generation; APRIOIRI Algorithm, The Partition Algorithms, FP-Growth Algorithms, Compact Representation of Frequent Item Set-Maximal Frequent Item Set, Closed Frequent Item Set.

UNIT-IV (9Hrs)

Classification: Problem Definition, General Approaches to solving a classification problem, Evaluation of Classifiers , Classification techniques, Decision Trees-Decision tree Construction, Methods for Expressing attribute test conditions, Measures for Selecting the Best Split, Algorithm for Decision tree Induction ; Naive-Bayes Classifier, Bayesian Belief Networks; K- Nearest neighbor classification-Algorithm and Characteristics. Prediction: Accuracy and Error measures, Evaluating the accuracy of classifier or a predictor, Ensemble methods.

UNIT-V (9Hrs)

Clustering: Clustering Overview, A Categorization of Major Clustering Methods, Partitioning Methods, Hierarchical Methods, , Partitioning Clustering-K-Means Algorithm, PAM Algorithm; Hierarchical Clustering-Agglomerative Methods and divisive methods, Basic Agglomerative Hierarchical Clustering Algorithm, Key Issues in Hierarchical Clustering, Strengths and Weakness, Outlier Detection.

Text Book:

1. Han, Kamber, "Data Mining Concepts and Techniques", Morgan Kaufmann.

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PCC	PCC-CSE 310	Computer Network	3	0	0	3

Total Hrs:45

UNIT – I (9Hrs)

INTRODUCTION: Network applications, network hardware, network software, reference models: OSI, TCP/IP, Internet, Connection oriented network - X.25, frame relay. THE PHYSICAL LAYER: Theoretical basis for communication, guided transmission media, wireless transmission, the public switched telephone networks, mobile telephone system.

UNIT – II (9Hrs)

THE DATA LINK LAYER: Design issues, error detection and correction, elementary data link protocols, sliding window protocols, example data link protocols - HDLC, the data link layer in the internet. THE MEDIUM ACCESS SUBLAYER: Channel allocations problem, multiple access protocols, Ethernet, Data Link Layer switching, Wireless LAN, Broadband Wireless Bluetooth.

UNIT – III (9Hrs)

THE NETWORK LAYER: Network layer design issues, routing algorithms, Congestion control algorithms, Internetworking, the network layer in the internet (IPv4 and IPv6), Quality of Service.

UNIT – IV (9Hrs)

THE TRANSPORT LAYER: Transport service, elements of transport protocol, Simple Transport Protocol, Internet transport layer protocols: UDP and TCP.

UNIT – V (9Hrs)

THE APPLICATION LAYER: Domain name system, electronic mail, World Wide Web: architectural overview, dynamic web document and http. APPLICATION LAYER PROTOCOLS: Simple Network Management Protocol, File Transfer Protocol, Simple Mail Transfer Protocol, Telnet..

Text Books:

1. Data Communication & Networking by Behrouz A. Forouzan McGraw Hill

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PEC	PEC-CSE 304	Distributed System	4	0	0	4

Total Hrs:45

UNIT – I (9Hrs)

Characterization of Distributed Systems-Introduction, Examples of Distributed systems, Resource sharing and web, challenges, System models -Introduction, Architectural and Fundamental models, Networking and Internetworking, Interprocess Communication, Distributed objects and Remote Invocation-Introduction, Communication between distributed objects, RPC, Events and notifications, Case study-Java RMI.

UNIT – II (9Hrs)

Operating System Support- Introduction, OS layer, Protection, Processes and Threads, Communication and Invocation, Operating system architecture, Distributed File Systems-Introduction, File Service architecture.

UNIT – III (9Hrs)

Peer to Peer Systems–Introduction, Napster and its legacy, Peer to Peer middleware, Routing overlays, Overlay case studies-Pastry, Tapestry, Application case studies-Squirrel, Ocean Store.

Time and Global States-Introduction, Clocks, events and Process states, Synchronizing physical clocks, logical time and logical clocks, global states, distributed debugging.

Coordination and Agreement-Introduction, Distributed mutual exclusion, Elections, Multicast communication, consensus and related problems.

UNIT – IV (9Hrs)

Transactions and Concurrency Control-Introduction, Transactions, Nested Transactions, Locks, Optimistic concurrency control, Timestamp ordering. Distributed Transactions-Introduction, Flat and Nested Distributed Transactions, Atomic commit protocols, Concurrency control in distributed transactions, Distributed deadlocks, Transaction recovery.

UNIT – V (9Hrs)

Replication-Introduction, System model and group communication, Fault tolerant services, Transactions with replicated data.

Distributed shared memory, Design and Implementation issues, Consistency models.

Text Books:

1. Singhal&Shivaratri, "Advanced Concept in Operating Systems", McGraw Hill

2. Ramakrishna,Gehrke," Database Management Systems", McGraw Hill

Reference Books:

1. Vijay K.Garg Elements of Distributed Compuitng , Wiley

2. Coulouris, Dollimore, Kindberg, "Distributed System: Concepts and Design", Pearson Education

3. Tenanuanbaum, Steen," Distributed Systems", PHI.

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PEC	PEC-CSE 305	Theory of computation	4	0	0	4

Total Hrs:45

Unit I: Mathematicalpreliminaries (7Hrs)

Sets, operations, relations, strings, transitive closure, count ability and diagonalisation, induction and proof methods-pigeon-hole principle and simple applications – concept of language – grammars and production rules –Chomsky hierarchy.

Unit II: Finite automata & regular expressions (8Hrs)

Finite State machine, regular languages, deterministic finite automata, conversion to deterministic automata, E-closures – regular expressions, finite automata, and minimization of automata, Moore and Mealy machine and their equivalence.

Unit III: Regular grammar & context free grammar (9Hrs)

Pumping lemma for regular sets- closure properties of regular sets- decision properties for regular sets, equivalence between regular language and regular grammar. Context – freelanguages – parse trees and ambiguity, reduction of CFGS ,Chomsky and Griebach normalforms.

Unit IV: Push – down Automata (PDA) (9Hrs)

Non Determinism – acceptance by two methods and their equivalence, conversion of PDA to CFG CFLs and PDAs-closure and decision properties of CFLs.

Unit V: Turing machines (12Hrs)

Variants – recursively enumerable (r.e.) set – recursive sets ,TM as computer of function – decidability and solvability – Halting Problem – reductions – Post correspondence Problem (PCP) and un solvability of ambiguity problem of CFGs, Church‟s hypothesis, Introduction to recursive function theory – primitive recursive and partial recursive functions.

Text Books

1. Introduction Of Automata Theory, Languages and computation- J.E. Hopcroft , J.D.Ulman, Pearson education.

Reference Books

1. John Martin, „Introduction Of Automata Theory, Languages and computation‟
2. Peter Linz , „Introduction to formal languages and automata‟,Norasa,2000.

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PEC	PEC-CSE 306	Speech and Natural Language Processing	4	0	0	4

Total Hrs: 45

UNIT-I: INTRODUCTION (9Hrs)

Origins and challenges of NLP – Language Modeling: Grammar-based LM, Statistical LM – Regular Expressions, Finite-State Automata – English Morphology, Transducers for lexicon and rules, Tokenization, Detecting and Correcting Spelling Errors, Minimum Edit Distance

UNIT-II: WORD LEVEL ANALYSIS (9Hrs)

Unsmoothed N-grams, Evaluating N-grams, Smoothing, Interpolation and Backoff – Word Classes, Part-of-Speech Tagging, Rule-based, Stochastic and Transformation-based tagging, Issues in PoS tagging – Hidden Markov and Maximum Entropy models.

UNIT-III: SYNTACTIC ANALYSIS (9Hrs)

Context-Free Grammars, Grammar rules for English, Treebanks, Normal Forms for grammar – Dependency Grammar – Syntactic Parsing, Ambiguity, Dynamic Programming parsing – Shallow parsing – Probabilistic CFG, Probabilistic CYK, Probabilistic Lexicalized CFGs – Feature structures,Unification of feature structures.

UNIT-IV: SEMANTICS AND PRAGMATICS (9Hrs)

Requirements for representation, First-Order Logic, Description Logics – Syntax-Driven Semantic analysis, Semantic attachments – Word Senses, Relations between Senses, Thematic Roles, selectional restrictions – Word Sense Disambiguation, WSD using Supervised, Dictionary & Thesaurus, Bootstrapping methods – Word Similarity using Thesaurus and Distributional methods.

UNIT-V: DISCOURSE ANALYSIS AND LEXICAL RESOURCES (9Hrs)

Discourse segmentation, Coherence – Reference Phenomena, Anaphora Resolution using Hobbs and Centering Algorithm – Co reference Resolution – Resources: Porter Stemmer, Lemmatizer, Penn Treebank, Brill‟s Tagger, WorldNet, Prop Bank, Frame Net, Brown Corpus, British National Corpus (BNC).

TEXT BOOKS:

1. Daniel Jurafsky, James H. Martin―Speech and Language Processing: An Introduction toNatural Language Processing, Computational Linguistics and Speech, Pearson Publication, 2014.

2. Steven Bird, Ewan Klein and Edward Loper, ―Natural Language Processing with Python, First Edition,
OReilly Media, 2009.

REFERENCES:

1. Breck Baldwin, ―Language Processing with Java and LingPipe Cookbook, Atlantic Publisher, 2015.
2. Richard M Reese, ―Natural Language Processing with Java, OReilly Media, 2015.
3. Nitin Indurkhya and Fred J. Damerau, ―Handbook of Natural Language Processing, Second Edition, Chapman and Hall/CRC Press, 2010.
4. Tanveer Siddiqui, U.S. Tiwary, ―Natural Language Processing and Information Retrieval, Oxford
University Press,
2008.

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PEC	PEC-CSE 307	Advance Operating System	4	0	0	4

Total Hrs: 45

UNIT-I: FUNDAMENTALS OF OPERATING SYSTEMS (9 Hrs)

Overview – Synchronization Mechanisms – Processes and Threads - Process Scheduling – Deadlocks: Detection, Prevention and Recovery – Models of Resources – Memory Management Techniques.

UNIT-II: DISTRIBUTED OPERATING SYSTEM (9 Hrs)

Issues in Distributed Operating System – Architecture – Communication Primitives –Lamport‟s Logical clocks – Causal Ordering of Messages – Distributed Mutual Exclusion Algorithms – Centralized and Distributed Deadlock Detection Algorithms – Agreement Protocols.

UNIT-III: DISTRIBUTED RESOURCE MANAGEMENT (9 Hrs)

Distributed File Systems – Design Issues - Distributed Shared Memory – Algorithms for Implementing Distributed Shared memory–Issues in Load Distributing – Scheduling Algorithms – Synchronous and Asynchronous Check Pointing and Recovery – Fault Tolerance – Two-Phase Commit Protocol – Nonblocking Commit Protocol – Security and Protection.

UNIT-IV: REAL TIME AND MOBILE OPERATING SYSTEMS (9 Hrs)

Basic Model of Real Time Systems - Characteristics- Applications of Real Time Systems –Real Time Task Scheduling - Handling Resource Sharing - Mobile Operating Systems –Micro Kernel Design - Client Server Resource Access – Processes and Threads - Memory Management - File system.

UNIT-V: CASE STUDIES (9 Hrs)

Linux System: Design Principles - Kernel Modules - Process Management Scheduling -Memory Management - Input-Output Management - File System - Interprocess Communication. iOS and Android: Architecture and SDK Framework - Media Layer -Services Layer - Core OS Layer - File System.

REFERENCES BOOKS:

1. Mukesh Singhal and Niranjan G. Shivaratri, “Advanced Concepts in Operating SystemsDistributed, Database, and Multiprocessor Operating Systems”, Tata McGraw-Hill, 2001.
2. Abraham Silberschatz; Peter Baer Galvin; Greg Gagne, “Operating System Concepts”, Seventh Edition, John Wiley & Sons, 2004.

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PEC	PEC-CSE 308	Real Time Operating System	4	0	0	4

Total Hrs:45

Unit-I: Introduction (9Hrs)

Real-time Versus Conventional Software, Computer Hardware for Monitoring and Control, Software Engineering Issues. SOFTWARE ARCHITECTURES: Process and State-based Systems model, Periodic and Sporadic Process, Cyclic Executives, CE definitions and Properties, Foreground-Background Organizations, Standard OS and Concurrency, Systems Objects and Object-Oriented Structures, Abstract Data Types, General Object Classes.

Unit-II: Requirements And Design Specifications (9Hrs)

Classification of Notations, Data Flow Diagrams, Tabular Languages, State Machine, Communicating Real Time State Machine- Basic features, Timing and clocks, Semantics Tools and Extensions, State chartsConcepts and Graphical Syntax, Semantics and Tools.

Unit-III: Declarative Specifications And Deterministic Scheduling (9Hrs)

DECLARATIVE SPECIFICATIONS Regular Expressions and Extensions, Traditional Logics-Propositional Logic, Predicates, Temporal logic, Real time Logic. DETERMINISTIC SCHEDULING Assumptions and Candidate Algorithms, Basic RM and EDF Results, Process Interactions-Priority Inversion and Inheritance.

Unit-IV: Execution Time Specification (9Hrs)

Measurement of Software by software, Program Analysis with Timing Schema, Schema Concepts, Basic Blocks, Statements and Control, Schema Practice, Prediction by optimization, System Interference and Architectural Complexities Timer Application, Prosperities of Real and ideal clocks, Clock Servers – Lamport "s Logical clocks, Monotonic Clock service, A software Clock server, Clock Synchronization Centralized Synchronization, Distributed Synchronization.

Unit-V: Programming Language (9Hrs)

PROGRAMMING LANGUAGES: Real Time Language Features, Ada-Core Language, Annex Mechanism for Real Time Programming, Ada and Software Fault Tolerance, Java and Real-time Extensions, CSP and Occam.

Text Book:

Real – Time Systems and software by Alan C. Shaw ; John Wiley & Sons Inc, 2001.

Reference Book:

1. Real-Time Systems, Jane W.S. Liu, Prentice Hall, 2000.

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PEC	PEC-CSE 309	Web and Internet	4	0	0	4

Total Hrs: 45

UNIT I: (9Hrs)

Web Basics and Overview: Introduction to Internet, World Wide Web, Web Browsers, URL, MIME, HTTP, Web Programmers Toolbox. HTML Common tags: List, Tables, images, forms, frames, Cascading Style Sheets (CSS) & its Types. Introduction to Java Script, Declaring variables, functions, Event handlers (onclick, on submit, etc.,) and Form Validation.

UNIT II: (9Hrs)

Introduction to XML: Document type definition, XML Schemas, Presenting XML , Introduction to XHTML, Using XML Processors: DOM and SAX. PHP: Declaring Variables, Data types, Operators, Control structures, Functions.

UNIT III: (9Hrs)

Web Servers and Servlets: Introduction to Servlets, Lifecycle of a Servlet, JSDK, Deploying Servlet, The Servlet API, The javax. Servlet Package, Reading Servlet parameters, Reading Initialization parameters. The javax. servlet HTTP package, Handling Http Request & Responses, Cookies and Session Tracking.

UNIT IV: (9Hrs)

Database Access: Database Programming using JDBC, JDBC drivers, Studying Javax.sql.* package, Connecting to database in PHP, Execute Simple Queries, Accessing a Database from a Servlet. Introduction to struts frameworks.

UNIT V: (9Hrs)

JSP Application Development: The Anatomy of a JSP Page, JSP Processing. JSP Application Design and JSP Environment, JSP Declarations, Directives, Expressions, Scripting Elements, implicit objects. Java Beans: Introduction to Beans, Deploying java Beans in a JSP page.

Reference Book

1. Greenlaw R and Hepp E "Fundamentals of Internet and www" 2nd EL, Tata McGrawHill,2007.

2. Ivan Bayross, "HTML, DHTML, JavaScript, Perl CGI", 3rd Edition, BPB Publications.

3.D. Comer, "The Internet Book", Pearson Education, 2009.

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
OEC	OEC-CSE 301	Management & employee performance	3	0	0	3

Total Hrs: 45

Unit I: Performance Management (PM) Conceptual FrameWork (9 Hrs)

Introduction to Performance Management, Definition, nature, scope, importance, Business and sub functional Performance Management, Performance Management as a management Tool, Performance objectives and standards, Standards of Performance. Performance Domains and dimensions.

Unit II: Performance Planning (9 Hrs)

Performance Planning Process, Contents of Performance Plan, 8 Step Model, Individual and Group Performance Planning, Role clarity and Job description, Meaning of Performance appraisal, methods and approaches to performance appraisal, Obstacles in appraisal, Designing appraisal for better results, Performance Appraisal Interview, Potential Appraisal.

Unit III: Performance Appraisal (9 Hrs)

Introduction, Definition, Purpose and Role of appraisal in Performance Management, Methods and Steps in Performance Appraisal. Why Appraisal Fail, Types of Appraisal, Approaches and Design, MBO, 360*, Potential Appraisal, Performance Review, Performance counseling/ Mentoring. Team Performance Appraisal.

Unit IV: Performance Management System (9Hrs)

Introduction to PMS, Importance, Features, Process of Building PMS, PMS Dimensions, Conceptual Framework. 4 pillars of PMS, PMS Prism, Strategic Performance Management, Performance and Strategy linkage, Components of SPM, SPM- Balanced Score Card, SPM and Metrix, SPM Environment teatre and Risks.

Unit V: Latest trends in Performance Management (9 Hrs)

Competency Based Performance Management System, Performance Measurement, Performance Measurement through BSC, Performance and Succession Plan/ Career Development, International Performance Management, Performance Audit, Human Resource Valuation accounting andAudit.

Recommended Book:

D. K. Bhattacharya, Performance Management Systems and Strategies- Text book, Pearson.

Reference Books:

- Aquinis, Performance Management, Pearson.
- Chadha, Performance Management, Macmillan.
- Armstrong, Michael, Baron, Jaico, Performance Management.
- Cardy, Performance Management, PHI.
- Kohli, Deb, Performance Management, Oxford.
- D Sharma, Performance Management, HPH.
- R.K. Sahu, Performance Management System, EB.
- TV Rao, Performance Management and Appraisal, Sage.

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
OEC	OEC-CSE 302	Cyber law & ethics	3	0	0	3

Total Hrs:45

Unit-I: Introduction (9 Hrs)

Concepts of Technology and Law Understanding Technology, Basic Concepts ofTechnology and Law Understanding the Technology of Internet, Scope of Cyber Laws, CyberJurisprudence.

Unit-II: Law of Digital Contracts (9 Hrs)

The Essence of Digital Contracts, the System of Digital Signatures, The Role and Function of Certifying Authorities, The Science of Cryptography.

Unit-III: Intellectual Property Issues in Cyber Space (9 Hrs)

Domain Names and Related issues, Copyright in the Digital Media, Patents in the Cyber World, Rights of Netizens and E-Governance ,Privacy and Freedom Issues in the Cyber World, E-Governance E-Governance, Cyber Crimes and Cyber Laws.

Unit-IV: International Scenario in Cyber Laws (9Hrs)

Data Protection Laws in EU and USA ,Child Abuse Protection Laws in EU and USA, Cyber Laws - the Malaysian Approach.

Unit-V: Cyber law Issues For Management (9Hrs)

Cyber Law Issues in E-Business Management, Major issues in Cyber Evidence Management ,Cyber Law Compliancy Audit

Text Book:

1. “The Law of the Internet” by J. Rosenoer, Cyber Law (Springer Verlag).

Reference Books:

1. "Cyber Laws in India.. ITA-2000 and Beyond" by Navvi
2. “Handbook of Cyber Laws” By Sharma Vakul.

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
OEC	OEC-CSE 303	Non- Conventional Energy Sources	3	0	0	3

Total Hours: 45

Unit-I (9 Hrs)

Global and National scenarios, Form and characteristics of renewable energy sources.

Solar Energy: Solar radiation, its measurements and prediction, Solar thermal collectors, flat plate collectors, concentrating collectors, Basic theory of flat plate collectors, solar heating of buildings, solar still, solar water heaters, solar driers, conversion of heat energy in to mechanicalenergy, solar thermal power generation systems.

Solar Photovoltaic: Principle of photovoltaic conversion of solar energy, types of solar cells and fabrication, Photovoltaic applications: battery charger, domestic lighting, street lighting, water pumping, power generation schemes.

Unit-II (9 Hrs)

Wind Energy: Atmospheric circulations, classification, factors influencing wind, wind shear, turbulence, wind speed monitoring, Betz limit, WECS- classification, characteristics and applications.

Unit-III (9 Hrs)

Ocean Energy: Ocean energy resources, ocean energy routes, Principles of ocean thermal energy conversion systems, ocean thermal power plants, Principles of ocean wave energy conversion and tidal energy conversion.

Unit-IV (9 Hrs)

Other Sources: Nuclear fission and fusion, Geothermal energy- Origin, types of geothermal energy sites, site selection, geothermal power plants, Magneto-hydro-dynamic (MHD) energy conversion, Formation of biomass, photosynthesis, Biomass resources and their classification, Chemical constituents and physicochemical characteristics of biomass, Biomass conversion processes.

Unit-V (9 Hrs)

Fuel Cells: Thermodynamics and electrochemical principles, Basic design, types, applications.
Hydrogen Energy:
Economics of hydrogen, Production methods.

References Books:

1. Power Generation through Renewable Source of Energy, Rai and Ram Prasad, Tata McGraw-Hill,

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PCC	PCC-CSE 311	Compiler Design Lab	0	0	2	1

Total Hrs:20

List of Practical's-

1 & 2 implement a lexical analyzer in "C".

3. Use LEX tool to implement a lexical analyzer.

4. Implement a recursive descent parser for an expression grammar that generates arithmetic expressions with digits, + and *.

5. Use YACC and LEX to implement a parser for the same grammar as given in problem

6. Write semantic rules to the YACC program in problem 5 and implement a calculator that takes an expression with digits, + and * and computes and prints its value.

7 & 8. Implement the front end of a compiler that generates the three address code for a simple language with: one data type integer, arithmetic operators, relational operators, variable declaration statement, one conditional construct, one iterative construct and assignment statement.

9 &10. Implement the back end of the compiler which takes the three address code generatedin problems 7 and 8, and produces the 8086 assembly language instructions that can be assembled and run using a 8086 assembler. The target assemblies instructions can be simple move, add, sub, and jump. Also simple addressing modes are used.

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PCC	PCC-CSE 312	Computer Network Lab	0	0	2	1

Total Hrs:20

List of Practical's-

1. To demonstrate the operation of the Ethernet – network using OPNET IT Guru
2. To demonstrate the implementation of the token ring network using OPNET IT Guru
3. To demonstrate the implementation of the Switched local area network using OPNET IT Guru
4. To demonstrate the basics of designing a network using OPNET IT Guru
5. To examine the effect of ATM adaptation layers and service classes on the performance of network using OPNET IT Guru.
6. To Configure & analyze the performance of routing information protocol (RIP) model using OPNET IT Guru
7. To configure & analyze the performance of open shortest path first (OSPF) routing protocol using OPNET IT Guru
8. To demonstrate the congestion control algorithm implemented by the TCP using OPNET ITGuru
9. To create a network cable using RJ-45 connectors. 10. To install a network interface card
10. Simulation of Dijkstra Algorithm in C
11. Simulation of Spanning tree algorithm in C
12. To configure a Wireless access point in a local network
13. To install and configure wireless LAN card in the computer
14. To understand the working of layer-3 switch for address sub netting in the network.

Semester VII (Fourth Year) curriculum

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PCC	PCC-CSE401	Cyber Security & Cryptography	3	1	0	4

Total Hrs: 45

UNIT– I: Security Concepts (9 Hrs)

Introduction, The need for security, Security approaches, Principles of security, Types of Security attacks, Security services, Security Mechanisms, A model for Network Security Cryptography Concepts and Techniques: Introduction, plain text and cipher text, substitution techniques, transposition techniques, encryption and decryption, symmetric and asymmetric key cryptography, steganography, key range and key size, possible types of attacks.

UNIT– II: Symmetric key Ciphers (9 Hrs)

Block Cipher principles, DES, AES, Blowfish, RC5, IDEA, Block cipher operation, Stream ciphers, RC4. Asymmetric key Ciphers: Principles of public key cryptosystems, RSA algorithm, Elgamal Cryptography, Diffie-Hellman Key Exchange, Knapsack Algorithm.

UNIT– III: Cryptographic Hash Functions (9 Hrs)

Message Authentication, Secure Hash Algorithm (SHA-512), Message authentication codes: Authentication requirements, HMAC, CMAC, Digital signatures, Elgamal Digital Signature Scheme. Key Management and Distribution: Symmetric Key Distribution Using Symmetric & Asymmetric Encryption, Distribution of Public Keys, Kerberos, X.509 Authentication Service, Public – Key Infrastruct ure

UNIT – IV: Transport-level Security (9 Hrs)

Web security considerations, Secure Socket Layer and Transport Layer Security, HTTPS, Secure Shell (SSH) Wireless Network Security: Wireless Security, Mobile Device Security, IEEE 802.11 Wireless LAN, IEEE

802.11i Wireless LAN Security

UNIT – V: E-Mail Security (9 Hrs)

Pretty Good Privacy, S/MIME IP Security: IP Security overview, IP Security architecture, Authentication Header, Encapsulating security payload, Combining security associations, Internet Key Exchange Case Studies on Cryptography and security: Secure Multiparty

Calculation, Virtual Elections, Single sign On, Secure Inter-branch Payment Transactions, Crosssite Scripting Vulnerability.

TEXT BOOKS:

1. Cryptography and Network Security – Principles and Practice: William Stallings, PearsonEducation, 6th Edition
2. Cryptography and Network Security: Atul Kahate, Mc Graw Hill, 3rd Edition

REFERENCE BOOKS:

1. Cryptography and Network Security: C K Shyamala, N Harini, Dr T R Padmanabhan, WileyIndia, 1st Edition.
2. Cryptography and Network Security : Forouzan Mukhopadhyay, Mc Graw Hill, 3rdEdition.

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PEC	PEC-CSE401	Data Analytics	4	0	0	4

Total Hrs: 45

UNIT-I: INTRODUCTION TO BIG DATA [9 hours]

Introduction to Big Data Platform – Challenges of conventional systems – Web data – Evolution of Analytic scalability, analytic processes and tools, Analysis v/s reporting – Modern data analytic tools, Statical concepts: Sampling distributions, re-sampling, statistical inference, prediction error.

UNIT-II: DATA ANALYSIS [9 hours]

Regression modeling, Multivariate analysis, Bayesian modeling, inference and Bayesiannetworks, Support vector and kernel methods, Analysis of time series: linear systems analysis, nonlinear dynamics – Rule induction – Neural networks: learning and generalization, competitive learning, principal component analysis and neural networks; Fuzzy logic: extracting fuzzy models from data, fuzzy decision trees, Stochastic search methods.

UNIT-III: MINING DATA STREAMS [9 hours]

Introduction to Streams Concepts – Stream data model and architecture – Stream Computing, Sampling data in a stream – Filtering streams – Counting distinct elements in a stream –Estimating moments – Counting oneness in a window – Decaying window – Realtime Analytics Platform(RTAP) applications – case studies – real time sentiment analysis, stock market predictions.

UNIT-IV :FREQUENT ITEMSETS AND CLUSTERING [9 hours]

Mining Frequent item sets – Market based model – Apriori Algorithm – Handling large data sets in Main memory – Limited Pass algorithm – Counting frequent itemsets in a stream – Clustering Techniques – Hierarchical – K- Means

– Clustering high dimensional data – CLIQUE and PROCLUS – Frequent pattern based clustering methods – Clustering in non-euclidean space – Clustering for streams and Parallelism.

UNIT-V: FRAMEWORKS AND VISUALIZATION [9 hours]

Map Reduce – Hadoop, Hive, MapR – Sharding – NoSQL Databases – S3 – Hadoop Distributed file systems –

Visualizations – Visual data analysis techniques, interaction techniques; Systems and applications:

TEXT BOOKS:

1. Michael Berthold, David J. Hand, Intelligent Data Analysis, Springer, 2007.
2. Anand Rajaraman and Jeffrey David Ullman, Mining of Massive Datasets,CambridgeUniversity Press, 2012.

REFERENCES:

1. Bill Franks, Taming the Big Data Tidal Wave: Finding Opportunities in Huge Data Streamswith advanced analystics, John Wiley & sons, 2012.
2. Glenn J. Myatt, Making Sense of Data, John Wiley & Sons, 2007 Pete Warden, Big DataGlossary,
   O"Reilly, 2011.
3. Jiawei Han, Micheline Kamber "Data Mining Concepts and Techniques", Second Edition, Elsevier,
   Reprinted 2008.

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PEC	PEC-CSE402	Parallel and Distributed Algorithm	4	0	0	4

Total Hrs: 45

Unit - I: Fundamentals: (9 Hrs)

Introduction to distributed systems, synchronous / asynchronous network models, leader election problem in ring and general networks; Type of faults, fail safe systems, Byzantine faults, distributed consensus with link and process failures.

Unit- ll: The PRAM Model: (9 Hrs)

Balancing, divide and conquer, parallel prefix computation, pointer jumping, symmetry breaking, list ranking, sorting and searching, graph algorithms, parallel complexity and complexity classes, lower bounds.

Unit - lll: Interconnection Networks: (9 Hrs)

Topologies (arrays and mesh networks, trees, systolic networks, hyper cubes, butterfly) and fundamental algorithms, matrix algorithms, sorting, graph algorithms, routing, and relationship with PRAM models; Asynchronous Parallel Computation; Distributed Models and Algorithms.

Unit- IV: Concepts of Distributed Computation: (9Hrs)

Termination; Failure tolerance; Network topology. Distributed Search: Algorithms for BFS, DFS,shortest paths and spanning trees in distributed systems.

Unit - V: Distributed Networks: (9 Hrs)

Broadcasting; Robust distributed networks. Processor organizations such as mesh andhypercube, embedding of problem graphs into processor graphs.

REFERENCES BOOK:

1. V. Kumar, A. Grama, A. Gupta, G. Kaarypis, Introduction to Parallel Computing, AddisonWesley Press

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PEC	PEC-CSE403	Neural Networks and Deep Learning	4	0	0	4

Total Hrs: 45

Unit - I: Introduction: Neuro Computing andNeuroscience (9 Hrs)

Historical notes, human Brain, neuron Mode l, Knowledge representation, Al and NN. Learning process: Supervised and unsupervised learning, Error correction learning, competitive learning, adaptation, statistical nature of the learning process.

Unit - II: Data processing (9 Hrs)

Scaling, normalization, Transformation (FT/FFT), principal component analysis, regression, co-variance matrix, Eigen values & eigen vectors. Basic Models of Artificial neurons, activation Functions, aggregation function, single neuron computation, multilayer perceptron, least mean square algorithm, gradient descent rule, nonlinearly separable problems and bench mark problems in NN.

Unit - III: Multilayered network architecture (9 Hrs)

Back propagation algorithm, heuristics for making BP-algorithm performs better. Accelerated learning BP (like recursive least square, quick prop, RPROP algorithm), approximation properties of RBF networks and comparison with multilayer perceptron.

Unit - IV: Deep Learning (9 Hrs)

Deep Feed Forward network, regularizations, training deep models, dropouts, Convolutional Neural Network, Recurrent Neural Network, Deep Belief Network. Deep Learning research: Object recognition, sparse coding, computer vision, natural language processing.

Unit - V: Deep Learning Search and tools (9 Hrs)

Various paradigms of earning problems, Perspectives and Issues in deep learning framework, review of fundamental learning techniques. Deep Feed Forward network, regularizations, training deep models, dropouts, Convolutional Neural Network, Recurrent Neural Network, Deep Belief Network. Deep Learning research: Object recognition, sparse coding, computer vision, natural language processing.Deep Learning Tools: Caffe, Theano,Torch.

REFERENCE BOOKS:

1.J.A. Anderson, An Introduction to Neural Networks, MIT

2.Hagen Demuth Beale, Neural Network Design, Cengage Learning

TEXT BOOKS:

T1. Goodfellow, I., Bengio,Y., and Courville, A., Deep Learning, MIT Press,

2016.T2. Bishop, C.,M., Pattern Recognition and Machine Learning, Springer,

2006

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PEC	PEC-CSE 404	Multi-agent Intelligent	3	0	0	3

Total Hrs: 45

Unit I:- **Introduction to Agents** (9 Hrs)

Agents and Environment; Performance measure; Nature of Environment; Abstract and Concrete Architecture for intelligent agents; Problem solving and planning: Result sharing, Task sharing and Distributed planning

Unit - II: The design of Intelligent Agents (9 Hrs)

Deductive reasoning agents: AgentO, Practical Reasoning Agents: HOMER architecture; Reactive agents: Subsumption architecture; Hybrid agents: Touring Machines, InteRRaP.

Unit - III: Agent Communication and Interaction Protocols (9 Hrs)

Agent Communications: Knowledge Query and manipulation Language (KQML), Knowledge Interchange Format (KIF), Ontology, Coordination protocols, Cooperation Protocols, Contract Net, Blackboard Systems, Negotiation, Multi-agent Belief Maintenance, Market Mechanisms.

Unit - IV: Multi-Agent System Interactions & Agreements (9 Hrs)

Classifying multi-agent interactions: Multi-agent Encounters - Dominant Strategies and Nash Equilibria - Competitive and zero-sum and other interactions; Cooperation: the Prisoner's dilemma and Axelrod's experiments; Reaching Agreements: Interactions between self-interested agentsauctions & voting systems – negotiation - Argumentation; Interactions between benevolent agents: Cooperative Distributed Problem Solving (CDPS), partial global planning; coherence and coordination

Unit -V: Multi-agent Methodologies and Applications (9 Hrs)

Agent Methodologies- Mobile agents; Typical application areas of agent systems: Business Process Management, Distributed Sensing, Information Retrieval and Management, Electronic Commerce, Human-Computer Interfaces, Social Simulation etc.

REFERENCE BOOKS:

1.M. Wooldridge, An Introduction to Multiagent Systems; John Wiley & Sons, New York, NY, 2002.

2.J.M. Vidal, Fundamentals of Multiagent Systems with NetLogo Examples; Lecture Notes, University of South Car olina, Columbia, SC, 2007.

3.St. Preitl, R.-E. Precup, Regulatoare pentru servosisteme: metode de proiectare; Editura Orizonturi Universitare, T imisoara, 2007 (in Romanian + slides in English).

TEXT BOOKS:

1.K.-H. Dietsche, M. Klingebiel, Automotive Handbook; Robert Bosch GmbH, Plochingen, 2007.

2.N.P. Padhy, Artificial Intelligence and Intelligent Systems; Oxford University Press, Oxford,2005.

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PEC	PEC-CSE405	Internet of Things	3	0	0	3

Total Hrs: 45

UNIT-I: FUNDAMENTALS OF IoT (9Hrs)

Evolution of Internet of Things – Enabling Technologies – IoT Architectures: oneM2M, IoT World Forum (IoTWF) and Alternative IoT models – Simplified IoT Architecture and Core IoT Functional Stack -– Fog, Edge and Cloud in IoT – Functional blocks of an IoT ecosystem – Sensors, Actuators, Smart Objects and Connecting Smart Objects

UNIT-II: IoT PROTOCOLS (9Hrs)

IoT Access Technologies: Physical and MAC layers, topology and Security of IEEE 802.15.4, 802.15.4g, 802.15.4e,
1901.2a, 802.11ah and LoRaWAN – Network Layer: IP versions, Constrained Nodes and Constrained Networks –
Optimizing IP for IoT: From 6LoWPAN to 6Lo, Routing over Low Power and Lossy Networks – Application
Transport Methods: Supervisory Control and Data Acquisition – Application Layer Protocols: CoAP and MQTT

UNIT-III:DESIGN AND DEVELOPMENT (9Hrs)

Design Methodology – Embedded computing logic – Microcontroller, System on Chips – IoT system building blocks – Arduino – Board details, IDE programming – Raspberry Pi – Interfaces and Raspberry Pi with Python Programming.

UNIT-IV: DATA ANALYTICS AND SUPPORTING SERVICES (9 Hrs)

Structured Vs Unstructured Data and Data in Motion Vs Data in Rest – Role of Machine Learning
– No SQL Databases – Hadoop Ecosystem – Apache Kafka, Apache Spark – Edge StreamingAnalytics and Network Analytics
– Xively Cloud for IoT, Python Web Application Framework – Django – AWS for IoT – System Management with
NETCONF-YANG

UNIT-V: CASE STUDIES/INDUSTRIAL APPLICATIONS (9Hrs)

Cisco IoT system – IBM Watson IoT platform – Manufacturing – Converged Plantwide EthernetModel (CPwE) – Power Utility Industry – GridBlocks Reference Model – Smart and Connected

Cities: Layered architecture, Smart Lighting, Smart Parking Architecture and Smart Traffic Control Analyze applications of IoT in real time scenario.

TEXTBOOK:

1. David Hanes, Gonzalo Salgueiro, Patrick Grossetete, Rob Barton and Jerome Henry, ―IoT Fundamentals:
   Networking Technologies, Protocols and Use Cases for Internet of Things, Cisco Press,2017

REFERENCES:

1. Arshdeep Bahga, Vijay Madisetti, ―Internet of Things – A hands-on approach,Universities Press, 2015
2. Olivier Hersent, David Boswarthick, Omar Elloumi , ―The Internet of Things – Keyapplications and Protocols, Wiley, 2012 (for Unit 2).

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PEC	PEC-CSE 406	Cloud Computing	3	0	0	3

Total Hrs: 45

Unit-l: Introduction to Cloud Computing (9Hrs)

Virtualization Concepts, Cloud Computing Fundamental: Overview of Computing Paradigm, Evolution of cloud computing, Defining cloud computing, Components of a computing cloud, Essential Characteristics of Cloud Computing, Cloud Taxonomy.

Unit-II: Cloud Computing Architectural Framework (10Hrs)

Cloud architectural principles, Role of Networks in Cloud computing, Role of Web services, Benefits and challenges to Cloud architecture, Cloud Service Models, cloud computing vendors. Cloud Services Management, Performance and scalability of services, tools and technologies used to manage cloud services deployment.

Unit-III: Exploiting Cloud Services (9Hrs)

Software as a Service(SaaS): Introduction to SaaS, Inspecting SaaS technologies, Implementing web services, Deploying Infrastructure as a Service(IaaS): Introduction to IaaS, Scalable server clusters, Machine Image, Virtual Machine (VM). Elastic storage devices, Data storage in cloud computing, Delivering Platform as a Service(PaaS): Introduction to PaaS, Service Oriented Architecture (SOA), Cloud Platform and Management, Hardware-as-a-service: HaaS.

Unit-IV: Cloud Application Development (9 Hrs)

Role of business analyst, Technical architecture considerations, Service creation environmentsto develop cloud based applications, Technologies and the processes required when deploying web services; Deploying a web service from inside and outside a cloud architecture, advantages and disadvantages, Cloud Economics.

Unit-V: Cloud Security and Risk Management (9Hrs)

Cloud Security: Understanding cloud based security issues and threats, Data security and Storage, Identity & Access Management, Risk Management in cloud, Governance and Enterprise Risk Management.

TEXT BOOKS:

1. Distributed and Cloud Computing: Clusters, Grids, Clouds, and the Future Internet by KaiHwang, Jack Dongarra & Geoffrey C. Fox., Morgan Kaufmann Publishers, 2012.

2. Cloud Computing Bible, Barrie Sosinsky, WileyIndia, 2010

3. Cloud Computing: Principles and Paradigms, Editors: Rajkumar Buyya, James Broberg, Andrzej M. Goscinski, Wile, 2011

4. Cloud Computing: Principles, Systems and Applications, Editors: Nikos Antonopoulos, LeeGillam, Springer, 2012

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
OEC	OEC-CSE 401	Economics Policy in India	3	0	0	3

Total Hrs: 45

Unit – I: Economic Development and its Determinants (9 Hrs)

Approaches to economic development and its measurement – sustainable development; Role of State, market and other institutions; Indicators of development – PQLI, Human Development Index (HDI), gender development indices.

Unit-II: Planning in India (9 Hrs)

Objectives and strategy of planning; Failures and achievements of Plans; Developing grass-root organizations for development – Panchayats, NGOs and pressure groups.Demographic Features, Poverty and Inequality. Broad demographic features of Indian population; rural-urbanmigration; Urbanization and civic amenities; Poverty and

Unit-III: Inequality (9 Hrs)

Resource Base and Infrastructure**.** Energy; social infrastructure – education and health; Environment; Regional imbalance; Issues and policies in financing

Unit-IV: Infrastructure development and Polices (9 Hrs)

The Agricultural Sector, Institutional Structure – land reforms in India; Technological change in agriculture – pricing of agricultural inputs and output; industry; Agricultural finance policy; Agricultural Marketing and Warehousing; Issues Terms of trade between agriculture and in food security – policies for sustainable agriculture. Industrial policy; Public Sector enterprises and their performance; Problem of sick units in India; Privatization and policy – issues in labour market reforms; approaches for employment generation.

Unit-V: Public Finances (9 Hrs)

Fiscal federalism – Centre-State financial relations; Finances of central government; Finances of state governments; Parallel economy; Problems relating to fiscal policy; Fiscal sector reforms in India. Money, Banking and Prices. Analysis of price behavior in India; Financial sector reforms; Interest rate policy; Review of monetary policy of RBI; Money and capital markets; Working of SEBI in India. External Sector Structure and direction of foreign trade; Balance of payments; Issues in export-import policy and FEMA; Exchange rate.

REFERENCE BOOKS:

1. Ahluwalia, I. J. and I. M. D Little (Eds.) (1999), India's Economic Reforms and Development (Essays in honour of Manmohan Singh), Oxford University Press, NewDelhi.
2. Bardhan, P. K. (9th Edition) (1999), The Political Economy of Development in India,Oxford University Press, New Delhi.
3. Bawa, R. s. and P. S. Raikhy (Ed.) (1997), Structural Changes in Indian Economy, GuruNanak Dev University Press.

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
OEC	OEC-CSE 402	Reliability & Maintenance engineering	3	0	0	3

Total Hrs: 45

Unit-I Introduction: (9Hrs)

Maintenance Objectives and Functions, Maintenance Systems, Need of planned maintenance, Maintenance policies, Breakdown, time based maintenance, Block replacement, age replacement and periodic replacement policy, Corrective and preventive maintenance, Maintenance planning, Scheduled maintenance, Costof maintenance versus Cost of equipment and production delays.

Inspection: Inspection intervals, Inspection reports, card history system.

Unit-II Predictive Maintenance: (9Hrs)

Equipment wear records, standards, Equipment used in predictive maintenance. Computerized maintenance, Total Productive Maintenance, Methods of conditionmonitoring, Non-destructive testing, Liquid Penetrate, Magnetic particles, Ultrasonic testing, and Vibration analysis, Oil analysis, Radiographic testing.

Unit-III Reliability: (9Hrs)

Definition, failure data analysis, Mean failure rate, mean time to failure(MTTF), mean time between failures (MTBF), hazard rate, Bathtub curve, Use of Weibull probability chart foe assessing characteristics life, guarantee period etc.

Unit-IV System Reliability Improvement: (9Hrs)

Series, parallel and mixed configuration, Simple problems. Techniques, use of Pareto analysis-Design for reliability, redundancy unit and stand by redundancy, Optimization of reliability.

Unit-V Spare Parts Management: (9Hrs)

Spare parts, features and categorization of spares, cost considerations, Techniques of cost reduction, Selective controls used in spare parts control, ABCanalysis, FSN, XYZ, VED and other approaches, Inventory control of spares.

Reference Books

1. Reliability Engineering, Srinath L.S., Affiliated East West Press.
2. Maintainability Principles and Practices, Blanchand, B.S., McGraw Hill

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
OEC	OEC-CSE 403	Management training & development	3	0	0	3

Total Hours: 45

Unit-I: Training (9 Hrs)

Training: Introduction - Conceptual framework of training - approaches on training – Difference between Training and Development - Training and applied psychology - principles of training - Learning and skills acquisition - Transfer and retention of skills.

Unit-II: Need for Training (9 Hrs)

Methods of Identification of Training needs - Training policy - Planning and organizing the training programmes - Methods of Training - – on the job training – off the job training – choosing optimum method – the lecture –panel discussion – behavior modeling – interactive demonstrations – brain storming – case studies, incident process, in- transactional analysis, exception analysis.

Unit-III: Management Development (9 Hrs)

Management Development (MD) and Organizational Development (OD) - Difference between MD and OD - Aims and objectives of MD and OD - Methods of MD -OD interventions – Succession Planning and Career development.

Unit-IV: Evaluation of training (9 Hrs)

Evaluation of training-need for evaluation, Principles of evaluation, Criterion and Approaches: Return on investment in training, Process of calculating ROI in training; emerging trends in training and development; new perspectives on training- Cross culture training.

Unit-V: Technology in training (9 Hrs)

Technology in training: CBT, Multimedia training, e-learning/Online learning,Distance learn.

TEXT BOOK

1. B.L.Gupta(2011), Management Training and Development, Vrinda Publication, New Delhi.

REFRENCE BOOKS

1. Alan M. Saks, Robert R. Haccoun (2010): Managing Performance Through Training andDevelopment, 5e, Nelson Education ltd. USA.
2. Craig Eric Schneier, Craig J. Russell (1994): The Training and Development Sourcebook
3. 2e, Human Resource Development Press Inc, USA.

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PCC	PCC-CSE-402	Network Security & Cryptography lab	0	0	2	1

Total Hrs: 20

List of Practical's-

1. Write a program to implement the Caesar Cipher
2. Write a program to implement the Play air Cipher
3. Write a program to implement the Hill Cipher
4. Write a program to implement the Vigenere Cipher
5. Write a program to implement the Rail fence row & Column Transformation
6. Write a program to implement the DES algorithms
7. Write a program to implement the RSA Algorithm
8. Write a program to implement the Diffiee-Hellman algorithms
9. Write a program to implement the MD5 algorithms
10. Write a program to implement the SHA-1 algorithms
11. Implement the SIGNATURE SCHEME -Digital Signature Standard
12. Demonstrate how to provide secure data storage, secure data transmission

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PROJ	PROJ-CSE-401	Minor Project	0	0	16	8

The minor project work can be a design project, experimental fabrication project or software development project on any of the topics of mechanical engineering interest - it can be allotted as a group project with groups consisting of three or four students The assessment of all the minor projects should be done by a committee consisting of three or four faculty members specialized in the various fields of Mechanical Engineering - the students will present their project work and give a seminar on that topic for about thirty minutes - a committee consisting of at least three faculty members (preferably specialized in different fields of mechanical engineering) will assess the presentation of the seminars before the committee - the relative grading and group average marks for the various projects will be fixed by the committee - the guide will award the marks for the individual students in the project maintaining the group average - each group will prepare the project report and submit one copy of a write up of his minor project to the department through the guide - the Head of the Department will certify the copies and keep them in the departmental library

INSTRUCTIONS FOR PROJECT REPORT/ DISSERTATION WRITING

It is important that the procedures listed below be carefully followed by all the students of B.E. (Computer Science engineering).

1. Prepare one spiral Bound Copies of your manuscript
2. Limit your Dissertation report to 50– 60 pages (preferably)
3. The footer must include the following: Institute Name, B.E. (CSE) Times New Roman 10 pt.and centrally aligned.
4. Page number as second line of footer, Times New Roman 10 Pt, centrally aligned.
5. Print the manuscript using

I. Letter quality computer printing.
II. The main part of manuscript should be Times New Roman 12 pt. with alignment - justified.
III. Use 1.5 line spacing.

Semester VIII (Fourth Year) curriculum

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PCC	PCC-CSE-403	Advanced Computer Architecture	3	1	0	4

Total Hrs: 45

UNIT-I: FUNDAMENTALS OF COMPUTER DESIGN [9 hours]

Review of Fundamentals of CPU, Memory and IO – Trends in technology, power, energy and cost, Dependability – Performance Evaluation

UNIT-II : INSTRUCTION LEVEL PARALLELISM [9 hours]

ILP concepts – Pipelining overview – Compiler Techniques for Exposing ILP – Dynamic Branch Prediction – Dynamic Scheduling – Multiple instruction Issue – Hardware Based Speculation – Static scheduling – Multi-threading – Limitations of ILP – Case Studies.

UNIT- III : DATA-LEVEL PARALLELISM [9 hours]

Vector architecture – SIMD extensions- Graphics Processing units – Loop level parallelism

UNIT-IV : THREAD LEVEL PARALLELISM [9 hours]

Symmetric and Distributed Shared Memory Architectures – Performance Issues –Synchronization –

Models of Memory Consistency – Case studies: Intel i7 Processor, SMT & CMP Processors

UNIT-V : MEMORY AND I/O [9 hours]

Cache Performance – Reducing Cache Miss Penalty and Miss Rate – Reducing Hit Time – Main Memory and Performance – Memory Technology. Types of Storage Devices – Buses – RAID – Reliability, Availability and Dependability – I/O Performance Measures.

TEXT BOOK:

John L Hennessey and David A Patterson, “Computer Architecture A Quantitative Approach”, Morgan Kaufmann/ Elsevier, Fifth Edition, 2012.

REFERENCES:

Kai Hwang and Faye Briggs, “Computer Architecture and Parallel Processing”, Mc Graw-Hill International Edition, 2000.

Sima D, Fountain T and Kacsuk P, ”Advanced Computer Architectures: A Design Space Approach”, Addison Wesley, 2000.

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PCC	PCC-CSE 404	Artificial Intelligence & Expert System	3	0	0	3

Total Hrs:45

Unit-I: Introduction (9Hrs)

Introduction: Aim and objective of AI, AI problems, AI technique, Production system Characteristics, Basics of problem solving: problem representation paradigms defining problem as a state space representation. Intelligent Agents, Performance Measure, Rationality, Structure of Agents, Problem solving agents, Problem Formulation.

Unit-II: Search Techniques (9Hrs)

Search Techniques: Uninformed Search Strategies Problem size, complexity, approximation and search; depth, breadth and best search; Informed Heuristic Based Search: Informed (Heuristic) Search and Exploration, Greedy best first search, Memory bounded heuristic search, Heuristic functions, inventing admissible heuristic functions, Hill climbing, best-first search, branch and bound And OR Graph: A* algorithm and AO* Algorithm. Simulated Annealing, Online search.

Unit-III: A.I Problems (9Hrs)

Constraint Satisfaction Problems, Backtracking Search, variable and value ordering, constraint propagation, intelligent backtracking, local search for CSPs, Adversarial Search, Games, The minimax algorithm, Alpha-Beta pruning, Imperfect Real-Time Decisions, Games that include an Element of Chance

Unit-IV Structured Knowledge Representation (9Hrs)

Structured Knowledge Representation: Semantic Nets, Frames, and Scripts. Learning: Block architecture of learning system, Types of learning, performance Measures First order logic, Unification, and Resolution in Predicate Logic Uncertainty Treatment: formal and empirical approaches including Exact and Approximate inference in Bayesian Networks, Bayesian theory, belief functions, certainty factors

Unit-V: Inference Techniques (9Hrs)

Inference Techniques: Types of reasoning deductive, inductive, abductive, analogical, common-sense and non-monotonic, types of inference forward and backward chaining, inference using full joint distributions, fuzzy logic. Recent advances in Artificial Intelligence, Algorithms for artificial intelligence, Genetic algorithms. Tools for development of Artificial Intelligence: Open Neural network library. Applications of artificial Intelligence.

Text Books:

1. Artificial Intelligence a Modern Approach: Russel and Norvig , Pearson Education, 2nd
2. 2. Artificial Intelligence – A Practical Approach: Patterson, Tata McGraw Hill, 3rd

Reference Books:

1. Maus, R. and Keyes, J., “Handbook of Expert Systems in Manufacturing”, McGraw Hill, 1991
2. Robert Levine, “A comprehensive guide to artificial intelligence and expert systems",
3. Elain Rich ,”Artificial Intelligence”, PHI Publication
4. Introduction to Artifitial Intelligence by E.Charniack and D. Mcdermott, Pearson Education.
5. Artifitial Intelligence structures and strategies for complex problem solving, 4 th edition, Pearson education.

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PEC	PEC-CSE407	Optimization Techniques	3	1	0	4

Total Hours: 40

UNIT- I: LINEAR PROGRAMMING (10 Hrs)

Introduction – formulation of linear programming model-Graphical solution–solving LPP using simplex algorithm – Revised Simplex Method.

UNIT- II: ADVANCES IN LPP (10 Hrs)

Duality theory- Dual simplex method – Sensitivity analysis–-Transportation problems Assignment problems-Traveling sales man problem -Data Envelopment Analysis.

UNIT- III: NON LINEAR PROGRAMMING (10 Hrs)

Classification of Non Linear programming – Lagrange multiplier method – Karush – Kuhn Tucker conditions– Reduced gradient algorithms–Quadratic programming method – Penalty and Barrier method.

UNIT- lV: DYNAMIC PROGRAMMING (10 Hrs)

Formulation of Multi stage decision problem–Characteristics–Concept of sub-optimization and the principle of optimality–Formulation of Dynamic programming–Backward and Forward recursion–Computational procedure– Conversion offinal value problem in to Initial value problem.

TEXT BOOKS:

1.Hillier and Lieberman “Introduction to Operations Research”, TMH, 2000.

2.R.Panneerselvam, “Operations Research”, PHI, 2006

3.Hamdy ATaha, “Operations Research –An Introduction”, Prentice Hall India, 2003.

REFERENCES:

1. Philips, Ravindran and Solberg, “Operations Research”, John Wiley, 2002.
2. Ronald L.Rardin, “Optimization in Operation Research” Pearson Education Pvt. Ltd. New Delhi, 2005.

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PEC	PEC-CSE408	Human Computer Interaction	3	1	0	4

Total Hours:45

UNIT- I: FOUNDATIONS OF HCI (9Hrs)

The Human: I/O channels – Memory – Reasoning and problem solving; The computer: Devices – Memory – processing and networks; Interaction: Models – frameworks – Ergonomics – styles – elements – interactivity-Paradigms.

UNIT- II: DESIGN & SOFTWARE PROCESS (9Hrs)

Interactive Design basics – process – scenarios – navigation – screen design – Iteration and prototyping. HCI in software process – software life cycle – usability engineering – Prototyping in practice – design rationale. Design rules – principles, standards, guidelines, rules. Evaluation Techniques – Universal Design.

UNIT- III: MODELS AND THEORIES (9Hrs)

Cognitive models –Socio-Organizational issues and stake holder requirements –Communication and collaboration models-Hypertext, Multimedia and WWW.

UNIT- IV: MOBILE HCI (9Hrs)

Mobile Ecosystem: Platforms, Application frameworks- Types of Mobile Applications: Widgets, Applications, Games- Mobile Information Architecture, Mobile 2.0, Mobile Design: Elements of MobileDesign, Tools.

UNIT- V: WEB INTERFACE DESIGN (9Hrs)

Designing Web Interfaces – Drag & Drop, Direct Selection, Contextual Tools, Overlays, Inlays and Virtual Pages, Process Flow. Case Studies.

TEXT BOOKS:

1. Alan Dix, Janet Finlay, Gregory Abowd, Russell Beale, "Human Computer Interaction", 3rd Edition,
   Pearson Education, 2004 (UNIT I , II & III)
2. Brian Fling, "Mobile Design and Development", First Edition , O"Reilly Media Inc., 2009 (UNIT –IV)

3. Bill Scott and Theresa Neil, “Designing Web Interfaces”, First Edition, O‟Reilly, 2009.(UNIT-V)

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PEC	PEC-CSE409	Digital Signal Processing	3	1	0	4

Total Hours: 45

UNIT-I: SIGNALS AND SYSTEMS (9 Hrs)

Basic elements of DSP – concepts of frequency in Analog and Digital Signals – sampling theorem – Discrete – time signals, systems – Analysis of discrete time LTI systems – Z transform – Convolution – Correlation.

UNIT – II: FREQUENCY TRANSFORMATIONS (9 Hrs)

Introduction to DFT – Properties of DFT – Circular Convolution - Filtering methods based on DFT – FFT Algorithms - Decimation – in – time Algorithms, Decimation – in – frequency Algorithms – Use of FFT in Linear Filtering – DCT – Use and Application of DCT.

UNIT – III: IIR FILTER DESIGN (9 Hrs)

Structures of IIR – Analog filter design – Discrete time IIR filter from analog filter – IIR filter design by Impulse Invariance, Bilinear transformation, Approximation of derivatives – (LPF, HPF,BPF, BRF) filter design using frequency translation.

UNIT – IV: FIR FILTER DESIGN (9 Hrs)

Structures of FIR – Linear phase FIR filter – Fourier series - Filter design using windowing techniques (Rectangular Window, Hamming Window, Hanning Window), Frequency sampling techniques.

UNIT-V: FINITE WORD LENGTH EFFECTS IN DIGITAL FILTERS (9 Hrs)

Binary fixed point and floating point number representations – Comparison - Quantization noise – truncation and rounding – quantization noise power- input quantization error- coefficient quantization error – limit cycle oscillations-dead band- Overflow error-signal scaling.

REFRENCES:

1. Emmanuel C..Ifeachor, & Barrie.W.Jervis, “Digital Signal Processing”, Second Edition, Pearson
   Education / Prentice Hall, 2002.

2. Sanjit K. Mitra, “Digital Signal Processing – A Computer Based Approach”, Tata Mc Graw Hill, 2007.

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
OEC	OEC-CSE404	Human Resources Management	3	0	0	3

Total Hours:45

Unit-I: Overview (9 Hours)

Overview of Human Resources, Historical evolution, Integrated HR function, Corporate and HR environment, Strategic environment, Strategic Management

Unit-II: Planning (9 Hours)

HR planning at Enterprise level, Need for systematic planning, Planning process, Operating Environment- Internal & External, Job description, Models & techniques of Manpower demand and Supplyforecasting. Retention-Redeployment and Exit strategies

Unit-III: Career management (9 Hours)

Career management-Recruitment and Selection, Employee Induction Programme, Employee training, Training needs & objective setting, Methods of training, Development & Development needs, Human Resource Development, Development process

Unit-IV: Performance Policies (9 Hours)

Performance planning – Performance appraisal, Measures of appraisal, System components appraisal methods, Ethics of appraisal, Problems & issues

Unit-V: Human Resource Information System (9 Hours)

Human Resource Information System- Concept, Objectives of HRIS, Types of information, Sources of Information, Method of Data collection, Procedure of maintaining HRIS at Micro & Macro level

Recommended Book

1. Praveen Durai (2010), Human Resource Management, Pearson Education, South Asia

Reference Books

1. John Storey, Graeme Salaman, Christopher Mabey(1998): Strategic Human Resource Management: A Reader, SAGE Publications, 1998
2. Christopher Mabey, Rosemary Thomson (2011): Developing Human Resources,Routledge, Taylor and francis group, New York, USA.
3. Dessler & Varkkey, (2010): Human Resource Management 11e, India, Prentice Hall
4. Richard D. Johnson, Michael J. Kavanagh, Mohan Thite (2011): Human ResourceInformation System 2e, SAGE Publications, 2011.

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
OEC	OEC-CSE405	Total Quality Management	3	0	0	3

Total Hours:45

Unit-I (9 Hours)

Quality Concepts Evolution of Quality control, concept change, TQM Modern concept, Quality concept in design, Review off design, Evolution of proto type.
Control on Purchased Product Procurement of various products, evaluation of supplies,capacity verification, Development of sources, procurement procedure.
Manufacturing Quality Methods and Techniques for manufacture, Inspection and control of product, Quality in sales and services, Guarantee, analysis of claims.

Unit-II (9 Hours)

Quality Management Organization structure and design, Quality function,decentralization, Designing and fitting

organization for different types products and company, Economics of quality value and contribution, Quality cost, optimizing quality cost, seduction programme.
Human Factor in Quality Attitude of top management, co-operation, of groups, operatorsattitude, responsibility, causes of operators error and corrective methods.

Unit-III (9 Hours)
Control Charts Theory of control charts, measurement range, construction and analysis of R charts, process capability study, use of control charts.
Attributes of Control Charts Defects, construction and analysis off-chart, improvement by control chart, variable sample size, construction and analysis of C-chart.

Unit-IV (9 Hours)
Defects Diagnosis and Prevention Defect study, identification and analysis of defects, corrective measure, factors affecting reliability, MTTF, calculation of reliability, Building reliability in the product, evaluation of reliability, interpretation of test results, reliability control, maintainability, zero defects, quality circle.

Unit-V (9 Hours)

IS0-9000 and its concept of Quality Management: ISO 9000 series, Taguchi method, JIT in some details.

Text and References Books:

1. Lt. Gen. H.LaI, "Total Quality management", Wiley Eastern Limited, 1990. .
2. Greg Bounds. “Beyond Total Quality Management”. McGraw Hill, 1994.
3. Menon, H.G, "TQM in New Product manufacturing", McGraw Hill 1992.

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
OEC	OEC-CSE406	Industrial Relations	3	0	0	3

Total Hours:45

Unit - I: Industrial Relations (9 Hours)

Industrial Relations- Concept and scope, Stake holders; Approaches to Industrial Relations; Labor Market, Demand and Supply of Labor, Nature and composition of Indian labor, Employment and Unemployment Scenarios.

Unit - II: History (9 Hours)

History: Evolution of Industrial Relations UK), Emergence of Industrial relations/ Trade Union movement in India, Government initiatives, Industrial relations machineries, ILO and its impact on Indian IR scenarios.

Unit - III: Industrial Disputes resolutions (9 Hours)

Industrial Disputes resolutions: Sources – Wages, service conditions and discipline, Concept of wages, Wage theories, wage differentials, Regulations for protection of wages, service conditions and Work discipline. Law of natural justice and domestic enquiries; Workers participation in Management, Works committees, Joint Councils.

Unit - IV: Industrial Conflict (9 Hours)

Industrial Conflict: Negotiation, Mediation/ Conciliation, Arbitration, Adjudication- Labor court, Industrial Tribunal, National Tribunal; Special reference to Pay Commissions.

Unit - V: Trends (9 Hours)

Trends: Globalization and its impact on Industrial Relations, Employee Engagement practices, current trends in Industrial Relations in India, Industrial Relations bill- ifs and buts, Ethics, governance and Industrial Relations.

TEXT BOOKS

1. P. N. Singh, Neeraj Kumar, Employee Relations Management, Pearson.
2. Personnel Management and Industrial Relations, P.C. Tripathi, Sultan chand and sons.

REFERENCE BOOKS

1. Arun Monappa, Industrial Relations, Tata Mc Graw Hill.
2. Michael V P, HRM and Human Relations, Himalaya publications.
3. Mamoria and Mamoria, Dynamics of Industrial Relations in India, Himalaya publications.

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PCC	PCC-CSE 405	Artificial Intelligence & Expert system Lab	0	0	4	2

Total Hours: 20

List of Practical's-

1. Study of facts, objects, predicates and variables in PROLOG
2. Study of Rules and Unification in PROLOG
3. Study of "cut" and "fail" predicate in PROLOG
4. Study of arithmetic operators, simple input/output and compound goals in PROLOG
5. Study of recursion in PROLOG. 6 Study of Lists in PROLOG
6. Study of dynamic database in PROLOG
7. Implement string operations like substring, string position, palindrome etc.)
8. Write a prolog program to maintain family tree.
9. Write a prolog program to implement all set operations (Union, intersection, complement etc.)
10. Write a prolog program to solve "Water Jug Problem".

Category	Code	Course Title	Hours Per Week			Credit
			L	T	P	
PROJ	PROJ-CSE-402	Major Project	0	0	16	8

The major project work can be a Modeling and Simulation, Case study, Design or Experiments in the field of Mechanical Engineering. It can be allotted as a group project with groups consisting of 3 to 4 students. The major project work started in the seventh semester (minor project) may be continued in this semester - the students should complete the project work in this semester and present it before the assessment committee The assessment committee will assess the various projects, fix the relative grading and group average marks - the guides will award the marks for the individual students in a project maintaining the group average - each group should submit three copies of a write up of his major project of the completed project report signed by the department (in the format prescribed by the department) through the guide - the Head of the Department-Dean of School of engineering and Technology will certify the copies and one copy return them to the students - other copy will be kept in the departmental and university library

INSTRUCTIONS FOR PROJECT REPORT/ DISSERTATION WRITING

It is important that the procedures listed below be carefully followed by all the students of B.E. (Mechanical Engineering).

1. Prepare Three Hard Bound Copies of your manuscript and if possible publish at least one international journal paper by each group for value addition of your project.

2. Limit your Dissertation report to 80 – 120 pages (preferably)

3. The footer must include the following: Institute Name, B.E. (Mechanical) Times New Roman10 pt. and centrally aligned.

4. Page number as second line of footer, Times New Roman 10 Pt, centrally aligned.

5. Print the manuscript using

a. Letter quality computer printing.

b. The main part of manuscript should be Times New Roman 12 pt. with alignment - justified.

c. Use 1.5 line spacing.

d. Entire report shall be of 5- 7 chapters.

6.Use the paper size 8.5,,,,× 11,,,,or A4 (210 × 197 mm).

Margin Location	Paper 8.5,,,,× 11,,,,	Paper A4 (210 × 197 mm)
Top	1,,,,	25.4 mm
Left	1.5,,,,	37 mm
Bottom	1.25,,,,	32 mm
Right	1,,,,	25.4mm

7.All paragraphs will be 1.5 line spaced with a one blank line between each paragraph. Each paragraph will begin with without any indentation.

8.Section titles should be bold with 14 pt typed in all capital letters and should be left aligned.

9.Sub-Section headings should be aligning at the left with 12 pt, bold and Title Case (the firstletter of each word is to be capitalized).

10. Illustrations (charts, drawings, photographs, figures) are to be in the text. Use only illustrations really pertinent to the text. Illustrations must be sharp, clear, black and white. Illustrations downloaded from internet are not acceptable.

1. Illustrations should not be more than two per page. One could be ideal
2. Figure No. and Title at bottom with 12 pt
3. Legends below the title in 10 pt
4. Leave proper margin in all sides
5. Illustrations as far as possible should not be photo copied.

11. Photographs if any should of glossy prints

12. Please use SI system of units only.

13. Please number the pages on the front side, centrally below the footer

14. References should be either in order as they appear in the thesis or in alphabetical order bylast name of first author

15. Symbols and notations if any should be included in nomenclature section only

16. Following will be the order of report

i. Cover page and Front page as per the specimen on separate sheet
ii. Certificate from the Institute as per the specimen on separate sheet
iii. Acknowledgements
iv. List of Figures

v. List of Tables
vi. Nomenclature vii. Contents
vii. Abstract

(A brief abstract of the report not more than 150 words. The heading of abstract i.e. word ―Abstract‖ should be bold, Times New Roman, 12 pt and should be typed at the centre. The contents of abstract should be typed on new line without space between heading and contents.

Try to include one or two sentences each on motive, method, key-results and conclusions in bstract

1) Introduction (2-3 pages) (TNR – 14 Bold) Problem statement (TNR – 12)
1.1 Objectives
1.2 Scope
1.3 Methodology
1.4 Organization of Dissertation

2) Literature Review (20-30 pages) Discuss the work done so far by researchers in the domain area and their significant conclusions. No derivations, figures, tables, graphs are expected.

3)This chapter shall be based on your own simulation work (Analytical/ Numerical/FEM/CFD)(15- 20 pages)
4) Experimental Validation - This chapter shall be based on your own experimental work (15-20 pages)
5) Concluding Remarks and Scope for the Future Work (2-3 pages) References ANNEXURE (ifany) (Put all mathematical derivations, Simulation program as Annexure)
17. All section headings and subheadings should be numbered. For sections use numbers 1, 2, 3, …. and for subheadings 1.1, 1.2, …. etc and section subheadings 2.1.1, 2.1.2, …. etc.

18. References should be given in the body of the text and well spread. No verbatim copy orexcessive text from only one or two references. If figures and tables are taken from any reference then indicate source of it.

Please follow the following procedure for references / Reference Books/ Patent/ Internet

- Collier, G. J. and Thome, J. R., Convective boiling and condensation, 3rd ed., Oxford University Press, UK, 1996, pp. 110 – 112.
- 2. Papers from Journal or Transactions Jung, D. S. and Radermacher, R., Transport properties and surface tension of pure and mixed refrigerants, ASHRAE Trans, 1991, 97 (1), pp. 90 – 98.
- Bansal, P. K., Rupasinghe, A. S. and Jain, A. S., An empirical correction for sizing capillarytubes, Int. Journal of Refrigeration, 1996, 19 (8), pp.497 – 505.
- Papers from Conference Proceedings Colbourne, D. and Ritter, T. J., Quantitative assessment of flammable refrigerants in room air conditioners, Proc. of the Sixteenth International Compressor Engineering Conference and Ninth International Refrigeration and Air Conditioning Conference, Purdue University, West Lafayette, Indiana, USA, 2002,

pp. 34 – 40.

Reports, Handbooks etc.

- United Nations Environmental Programme, Report of the Refrigeration, Air Conditioning and Heat Pumps, Technical Option Committee, 2002, Assessment - 2002ASHRAE Handbook: Refrigeration, 1994 (Chapter 44)

Patent

- Patent no., Country (in parenthesis), date of application, title, year.

Internet

- www.(Site) [Give full length URL]

ABOUT THE PROGRAMMME

Raffles University, Neemrana established in 2011, to produce highly practical oriented personnel in fields of engineering to meet specific manpower requirements of industries. Electrical Engineering Department was started in 2011 and has been conducting B.Tech Course in Electrical Engineering of 4-Years duration since 2011. Students are admitted through university entrance or direct counselling nominated by university management in 1st Year and 2nd year through lateral entry entrance test. The total intake for the programme is 60. The Electrical Engineering Department has been well known for its track record of employment of the pass out students since its inception. The Department has well managed class rooms andfully equipped laboratories and Conference Room. It has excellent and distinguished faculty. The syllabi of programme in Electrical Engineering Department, has been prepared by subject experts with active participation from Industry. The Department is organizing number of expert lectures from industry experts for students in every semester. Summer training/ Industry Internship is mandatory for every student after completion of second year and third year (Two times in 4 years). Emphasis has been given on project work, workshop and Lab Course for skill enhancement of students. Choice based credit system allows students to study the subjects of his/her choice from a number of elective courses /audit courses.

PROGRAMMME EDUCATIONAL OBJECTIVES (PEOs)

PEO-1: To train students with practical skills and experimental practices related to core and applied areas of Electrical Engineering to expand their knowledge horizon beyond books.

PEO-2: To enable students to design, develop and maintain Electrical equipments which are useful for the society.

PEO-3: To improve team building, team working and leadership skills of the students with high regard for ethical values and social responsibilities.

PEO- 4: To enable students to communicate effectively and demonstrate the knowledge of project management and independent research.

PROGRAMME OUTCOMES (POs)

Engineering Graduates will be able to:

1) Engineering Knowledge: Apply knowledge of mathematics, science, engineering fundamentals, and Electrical engineering to the solution of engineering problems.

2) Problem Analysis: Identify, formulate, review literature and analyse Electrical engineering problems to design, conduct experiments, analyse data and interpret data.

3) Design /Development of Solutions: Design solution for Electrical engineering problems and design system component of processes that meet the desired needs with appropriate consideration for the public health and safety, and the cultural, societal and the environmental considerations.

4) Conduct Investigations of Complex Problems: Use research based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions in Electrical engineering.

5) Modern Tool Usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to mechanical engineering activities with an understanding of the limitations.

6) The Engineer and Society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to Electrical engineering practice.

7) Environment and Sustainability: Understand the impact of the Electrical engineering solutions in societal and environmental contexts, and demonstrate the knowledge and need for sustainable development.

8) Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the Electrical engineering practice.

9) Individual and Team Work: Function affectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings in Electrical engineering.

10) Communication: Communicate effectively on complex engineering activities with the engineering committee and with society at large, such as, being able to comprehend and write affective reports and design documentation, make effective presentations in Electrical engineering.

11) Project Management and Finance: Demonstrate knowledge & understanding of the Electrical engineering principles and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments in Electrical engineering.

12) Life - Long Learning: Recognize the need for, and the preparation and ability to engage in independent research and lifelong learning in the broadest contest of technological changes in Electrical engineering.

PROGRAM SPECIFIC OUTCOMES (PSOs):

1) To apply practical skills, knowledge of engineering fundamentals and Electrical engineering, to industries and institutions.

2) To explore, create and develop innovations in various aspects of engineering. The student will be ready to take-up career or to pursue higher studies with high regard to ethical values and social responsibilities.

B.TECH ELCTRICAL ENGINEERING SCHEME CREDITS CALCULATION

S.No.	Category of Course	Abbreviation Used	Credits
1.	Humanities and Social Sciences including Management Courses	HSMC	13
2.	Basic Sciences Courses	BSC	26
3.	Engineering Sciences Courses including workshop, Drawing, Basics of Electrical/ Mechanical/ Computer etc.	ESC	26
4.	Professional Core Courses	PCC	98
5.	Professional Elective C ourses relevant to chosen specialization/ branch	PEC	13
6.	Open Subjects- Electives from other technical and /or emerging subjects	OEC	12
7.	Project Work, Seminar and internship in industry or elsewhere	PROJ	16
8.	Mandatory Courses (Environmental Sciences, Induction Program, Indian Constitution, Essence of Indian Traditional Knowledge)	MC	Non Credit
Total			**204**

Abbreviations Used:

L -Lectuer

T - Tutorial

P - Practical

IA - Internal Assessment

EA - External Assessment

TA - Teacher's Assessment

MTA - Mid Tern Assessment

ETA - End Term Assessment

PROGRAMMME EDUCATIONAL OBJECTIVES (PEOs)

PEO-1: To train students with practical skills and experimental practices related to core and applied areas of Electrical Engineering to expand their knowledge horizon beyond books.

PEO-2: To enable students to design, develop and maintain Electrical equipments which are useful for the society.

PEO-3: To improve team building, team working and leadership skills of the students with high regard for ethical values and social responsibilities.

PEO- 4: To enable students to communicate effectively and demonstrate the knowledge of project management and independent research.

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Engineering Graduates will be able to:

1) Engineering Knowledge: Apply knowledge of mathematics, science, engineering fundamentals, and Electrical engineering to the solution of engineering problems.

2) Problem Analysis: Identify, formulate, review literature and analyse Electrical engineering problems to design, conduct experiments, analyse data and interpret data.

3) Design /Development of Solutions: Design solution for Electrical engineering problems and design system component of processes that meet the desired needs with appropriate consideration for the public health and safety, and the cultural, societal and the environmental considerations.

4) Conduct Investigations of Complex Problems: Use research based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions in Electrical engineering.

5) Modern Tool Usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to mechanical engineering activities with an understanding of the limitations.

6) The Engineer and Society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to Electrical engineering practice.

7) Environment and Sustainability: Understand the impact of the Electrical engineering solutions in societal and environmental contexts, and demonstrate the knowledge and need for sustainable development.

8) Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the Electrical engineering practice.

9) Individual and Team Work: Function affectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings in Electrical engineering.

10) Communication: Communicate effectively on complex engineering activities with the engineering committee and with society at large, such as, being able to comprehend and write affective reports and design documentation, make effective presentations in Electrical engineering.

11) Project Management and Finance: Demonstrate knowledge & understanding of the Electrical engineering principles and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments in Electrical engineering.

12) Life - Long Learning: Recognize the need for, and the preparation and ability to engage in independent research and lifelong learning in the broadest contest of technological changes in Electrical engineering.

PROGRAM SPECIFIC OUTCOMES (PSOs):

1) To apply practical skills, knowledge of engineering fundamentals and Electrical engineering, to industries and institutions.

2) To explore, create and develop innovations in various aspects of engineering.

B.TECH ELCTRICAL ENGINEERING SCHEME CREDITS CALCULATION

S.No.	Category of Course	Abbreviation Used	Credits
1.	Humanities and Social Sciences including Management Courses	HSMC	13
2.	Basic Sciences Courses	BSC	26
3.	Engineering Sciences Courses including workshop, Drawing, Basics of Electrical/ Mechanical/ Computer etc.	ESC	26
4.	Professional Core Courses	PCC	98
5.	Professional Elective C ourses relevant to chosen specialization/ branch	PEC	13
6.	Open Subjects- Electives from other technical and /or emerging subjects	OEC	12
7.	Project Work, Seminar and internship in industry or elsewhere	PROJ	16
8.	Mandatory Courses (Environmental Sciences, Induction Program, Indian Constitution, Essence of Indian Traditional Knowledge)	MC	Non Credit
Total			**204**

Abbreviations Used:

L -Lectuer

T - Tutorial

P - Practical

IA - Internal Assessment

EA - External Assessment

TA - Teacher's Assessment

MTA - Mid Tern Assessment

ETA - End Term Assessment

1	PCC-EE	PCC-EE-201	**Electrical Circuit Analysis**

UNIT	**CONTENT**

Course Outcomes:

At the end of this course, students will demonstrate the ability to:

CO1. Apply network theorems for the analysis of electrical circuits

CO2. Obtain the transient and steady-state response of electrical circuits

CO3. Analyze circuits in the sinusoidal steady-state (single-phase and three-phase).
CO4.Analyze two port circuit behavior

CO5. Synthesize networks and filters

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	1	3	3	2	1		2					2	3	2
CO2	3	3	3	2	1		2					2	3	2
CO3	3	3	3	2	2		2					2	3	2
CO4	3	3	3	2	2							2	3	2
CO5	3	3	3	2	2							2	3	2

2	**PCC-EE**	**PCC-EE-203**	**Analog Electronics**

UNIT	**CONTENT**

Course Outcomes

At the end of this course, students will demonstrate the ability to:

CO1. Understand the working principle of PN junction diode and its applications.

CO2. Understand the working of BJT and its applications.

CO3. Understand the working of JFET and MOSFET

CO4. Analysis and design of Differential, multi-stage and operational amplifiers

CO5. Analysis and design of Linear applications of op-amp. Analysis and design of Nonlinear applications of op-

amp.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	3	3	3	2	1							2	3	2
CO2	3	3	3	2	1							2	3	2
CO3	3	3	3	2	2							2	3	2
CO4	3	3	3	2	2							2	3	2
CO5	3	3	3	2	2							2	3	2

3	PCC-EE	PCC-EE-205	**Electrical Machines – I**

UNIT	**CONTENT**

Course Outcomes:

At the end of this course, students will demonstrate the ability to:

CO1. Understand the concepts of magnetic circuits

CO2. Understand the operation of DC machines

CO3. Analyse the differences in operation of different DC machine configurations

CO4. Analyse single phase transformers circuits.

CO5. Analyse three phase transformers circuits.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	1	3	3	2	1							2	3	2
CO2	3	3	3	2	1							2	3	2
CO3	3	3	3	2	2							2	3	2
CO4	3	3	3	2	2							2	3	2
CO5	3	3	3	2	2							2	3	2

4	PCC-EE	PCC-EE-207	**Electromagnetic Fields**

UNIT	**CONTENT**

Course Outcomes:

At the end of the course, students will demonstrate the ability:

CO1. To understand the basic laws of electromagnetism

CO2. To obtain the electric and magnetic fields for simple configurations under static conditions

CO3. To analyse time varying electric and magnetic fields

CO4. To understand Maxwell's equation in different forms and different media.

CO5. Investigate behavior of EM waves in different medias and to calculate average power density radiated.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	1	3	3	2	1							2	3	2
CO2	3	3	3	2	1							2	3	2
CO3	3	3	3	2	2							2	3	2
CO4	3	3	3	2	2							2	3	2
CO5	3	3	3	2	2							2	3	2

6	ESC	ESC- 201	Engineering Mechanics	3
UNIT 9	MC	MC-I	Indian Constitution	

CONTENT

Course Outcomes:

At the end of this course, students will demonstrate the ability to

CO1. Understand the concepts of co-ordinate systems

CO2. Analyse the three-dimensional motion

CO3. Understand the concepts of rigid bodies

CO4. Explain and solve numerical problems on kinematics of particles and rigid bodies

CO5. Explain and apply work-energy principle, impulse-moment principle to solve numerical problems on linear and angular motion and collision.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	1	3	3	2	1							2	3	2
CO2	3	3	3	2	1							2	3	2
CO3	3	3	3	2	2							2	3	2
CO4	3	3	3	2	2							2	3	2
CO5	3	3	3	2	2							2	3	2

Raffles University, Neemrana

School of Engineering and Technology

Department of Electrical Engineering

Syllabus**for B.Tech (Batch 2022-26)**

4th Semester

S No	Category	Code	Course Title	Hours Per Week			Credits	Examination		
				L	T	P	C	I.A Marks	ESE Marks	Total Marks
1	PCC-EE	PCC-EE202	Digital Electronics	3	0	0	3	40	60	100
2	PCC-EE	PCC-EE-204	Electrical Machines – II	3	1	0	4	40	60	100
3	PCC-EE	PCC-EE-206	Power Electronics	3	1	0	4	40	60	100
4	PCC-EE	PCC-EE-208	Signals and Systems	3	0	0	3	40	60	100
5	BSC	BSC -201	Mathematics–III	3	0	0	3	40	60	100
6	BSC	BSC -202	Biology-medical instrumentation	3	0	0	3	40	60	100
7	PCC-EE	PCC-EE-210	Digital Electronics Laboratory	0	0	2	2	60	40	100
8	PCC-EE	PCC-EE-212	Electrical Machines Laboratory – II	0	0	2	2	60	40	100
9	PCC-EE	PCC-EE-214	Power Electronics Laboratory	0	0	2	2	60	40	100
			Total	**18**	**2**	**6**	**26**			**900**

1	PCC-EE	PCC-EE202	Digital Electronics

UNIT	CONTENT

Course Outcomes:

At the end of this course, students will demonstrate the ability to:

CO1- Understand number systems, basic logic gates, Boolean algebra and derive digital logic circuits

CO2- Classify various minimization techniques and choose the best for designing logic circuit .

CO3- Define characteristics of logic families and calculate their parameters

CO4- Design combinational logic circuits such as adder, subtractor, multiplexer, decoder.

CO5. Classify the different types of flip flops and design counters, registers using flip flops.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	1	3	3	2	1							2	3	2
CO2	3	3	3	2	1							2	3	2
CO3	3	3	3	2	2							2	3	2
CO4	3	3	3	2	2							2	3	2
CO5	3	3	3	2	2							2	3	2

2	PCC-EE	PCC-EE-204	**Electrical Machines – II**

UNIT	CONTENT

Course Outcomes:

At the end of this course, students will demonstrate the ability to:

CO1- Understand the construction and working of AC machines .

CO2- Understand the generation of rotating magnetic field in AC machines.

CO3- Solve the performance parameters of AC machines.

CO4- Interpret the behavior of AC machines using phasors, equivalent circuits and its characteristics.

CO5- Examine the performance behavior of AC machines under different loading condition.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	1	3	3	2	1							2	3	2
CO2	3	3	3	2	1							2	3	2

CO3	3	3	3	2	2							2	3	2
CO4	3	3	3	2	2							2	3	2
CO5	3	3	3	2	2							2	3	2

3	PCC-EE	PCC-EE-206	Power Electronics
UNIT	**CONTENT**		

Course Outcomes:
At the end of this course students will demonstrate the ability to:

CO1-Understand the differences between signal level and power level devices

CO2-Analyse controlled rectifier circuits

CO3-Analyse the operation of DC-DC choppers

CO4-Analyse the operation of voltage source inverters

CO5- Interpret the speed control of DC motors using converters and choppers.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	1	3	3	2	1							2	3	2
CO2	3	3	3	2	1							2	3	2
CO3	3	3	3	2	2							2	3	2
CO4	3	3	3	2	2							2	3	2
CO5	3	3	3	2	2							2	3	2

4	PCC-EE	PCC-EE-208	Signals and Systems
UNIT	**CONTENT**		

Course Outcomes:
At the end of this course, students will demonstrate the ability to:

CO1-Understand the concepts of continuous time and discrete time systems.

CO2-Analyse systems in complex frequency domain

CO3-Understand sampling theorem and its implications

CO4- Understand mathematical tools to be able to apply in state variable modeling

CO5- Analyze signal and system properties like stability and causality using Laplace and Z transforms.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2

CO1	1	3	3	2	1							2	3	2
CO2	3	3	3	2	1							2	3	2
CO3	3	3	3	2	2							2	3	2
CO4	3	3	3	2	2							2	3	2
CO5	3	3	3	2	2							2	3	2

5	BSC	BSC -201	Advance Mathematics

UNIT	CONTENT

Course Objectives: The objective of this course is to familiarize the student with statistical techniques. It aims to equip he students with standard concepts and tools at an intermediate to advanced level that will serve them well towards tackling various problems in the discipline

Course Outcomes: At the end of the course, the student will be able to

CO1-Have basics knowledge about measure of central tendency, kurtosis and moments and their applications in engineering fields.

CO2-Familiarize the student with expectations of discrete and continuous random variable

CO3-Familiarize probability techniques and random variables and detailed knowledge of probability distribution with so as to use it with any date of engineering problem formulation

CO4-Have basic idea about statistics including correlation, regression and then up to advanced level with testing of large samples that is important in solving problems related to engineering

CO5- **Use Z-transform and its applications to solve difference equations**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	1	3	3											2
CO2	3	3	3											2
CO3	3	3	3											2
CO4	3	3	3											2
CO5	3	3	3											2

6	BSC	BSC -202	Bio-medical instrumentation

UNIT	CONTENT

Course Outcomes

At the end of this course students will demonstrate the ability to

CO 1. understand basic Biomedical Instruments and their functioning

CO2. describe Microelectrodes, Electro conduction systems

CO3. explain ECG, EEG, EMG, ERG, etc.

CO4. understand Ventilators and other important Clinical Instruments

CO5- Outline medical imaging techniques and equipment for certain diagnosis and therapies.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	1	3	3	2	1							2	3	2
CO2	3	3	3	2	1							2	3	2
CO3	3	3	3	2	2							2	3	2
CO4	3	3	3	2	2							2	3	2
CO5	3	3	3	2	2							2	3	2

Raffles University, Neemrana

School of Engineering and Technology

Department of Electrical Engineering

Scheme for B.Tech (Batch 2021-25)

5th Semester

S. No.	Category	Code	Course Title	Hours Per Week			Credits	Examination		
				L	T	P	C	I.A Marks	ESE Marks	Total Marks
1	PCC-EE	PCC-EE-301	Power Systems – I	3	1	0	4	40	60	100
2	PCC-EE	PCC-EE-303	Control Systems	3	1	0	4	40	60	100
3	PCC-EE	PCC-EE-305	Microprocessors	3	0	0	3	40	60	100
4	PEC-EE	PEC-EE-301	Program Elective - 1	3	0	0	3	40	60	100
5	OEC-EE	OEC-EE-301	Open Elective-1	3	0	0	3	40	60	100
6	HSMC	HSMC-301	Engineering Economics	3	0	0	3	40	60	100
7	PCC-EE	PCC-EE307	Power Systems Laboratory - I	0	0	2	2	60	40	100
8	PCC-EE	PCC-EE-309	Control Systems Laboratory	0	0	2	2	60	40	100
9	PCC-EE	PCC-EE-311	Microprocessors Laboratory	0	0	2	2	60	40	100
			Total	**18**	**2**	**6**	**26**			**900**

1	PCC-EE	PCC-EE-301	Power Systems – I

UNIT	CONTENT	No. Of Hrs.

Course Outcomes:

At the end of this course, students will demonstrate the ability to:

CO 1 Understand the concepts of power systems.

CO 2 Understand the various power system components.

CO 3 Evaluate fault currents for different types of faults.

CO 4 Understand the generation of over-voltages and insulation coordination.

CO 5 Understand basic protection schemes.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	1	3	3	2	1							2	3	2
CO2	3	3	3	2	1							2	3	2
CO3	3	3	3	2	2							2	3	2
CO4	3	3	3	2	2							2	3	2
CO5	3	3	3	2	2							2	3	2

2	PCC-EE	PCC-EE-303	Control Systems

UNIT	CONTENT

Course Outcomes:

At the end of this course, students will demonstrate the ability to

CO 1 Understand the modelling of linear-time-invariant systems using transfer function and state-space representations.

CO 2 Understand the concept of stability and its assessment for linear-time invariant systems. Design simple feedback controllers.

CO3- Formulate different types of analysis in frequency domain to explain the nature of stability of the system.

CO4- Identify the needs of different types of controllers and compensator to ascertain the required dynamic response from the system

CO5- Design simple Lag, Lead, Lag- Lead network & PID controllers.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	1	3	3	2	1							2	3	2
CO2	3	3	3	2	1							2	3	2
CO3	3	3	3	2	2							2	3	2
CO4	3	3	3	2	2							2	3	2
CO5	3	3	3	2	2							2	3	2

	PCC-EE	PCC-EE-305	Microprocessors
UNIT	**CONTENT**		

Course Outcomes:

At the end of this course, students will demonstrate the ability to:

CO 1 Study of 8085 and 8086 Microprocessors.

CO 2 Do assembly language programming.

CO 3 Do interfacing design of peripherals like 8255, 8253,8279,8251 etc

CO4: Acquire the knowledge of synchronous and asynchronous communication and interfacing to protocols like blue-tooth, etc.

CO5: Design electrical circuitry to the microcontroller I/O ports in order to interface the processor to exter

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	1	3	3	2	1							2	3	2
CO2	3	3	3	2	1							2	3	2
CO3	3	3	3	2	2							2	3	2
CO4	3	3	3	2	2							2	3	2
CO5	3	3	3	2	2							2	3	2

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2

4	PEC-EE	PEC-EE-301 a	Wind and solar Energy Systems

Course Outcomes:

At the end of this course, students will demonstrate the ability to

CO1-Understand the energy scenario and the consequent growth of the power generation from renewable energy sources.

CO2- Understand the basic physics of wind and solar power generation.

CO3- Understand the power electronic interfaces for wind and solar generation.

CO4- Understand the issues related to the solar technologies and wind topologies.

CO5: Demonstrate the Solar Thermal and PV applications along with its storage systems.

CO1	1	3	3	2	1							2	3	2
CO2	3	3	3	2	1							2	3	2
CO3	3	3	3	2	2							2	3	2
CO4	3	3	3	2	2							2	3	2
CO5	3	3	3	2	2							2	3	2

4	PEC-EE	PEC-EE-301 b	**Line Commutated and Active PWM Rectifiers**

UNIT	**CONTENT**

Course Outcomes:

At the end of this course, students will demonstrate the ability to

CO1-Analyse controlled rectifier circuits.

CO2- Understand the operation of line-commutated rectifiers – 6 pulse and multi-pulse configurations.

CO3- Understand the operation of PWM rectifiers –.

CO4- operation in rectification and regeneration modes and lagging, leading and unity power factor mode

CO5-

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	
CO1	1	3	3	2	1							2	3	2	
CO2	3	3	3	2	1							2	3	2	
CO3	3	3	3	2	2							2	3	2	
CO4	3	3	3	2	2							2	3	2	
CO5	3	3	3	2	2							2	3	2	

4	PEC-EE	PEC-EE-301 c	Electrical Drives

UNIT	**CONTENT**

Course Outcomes:

At the end of this course, students will demonstrate the ability to:

(i) Understand the characteristics of dc motors and induction motors.

(ii) Understand the principles of speed-control of dc motors and induction motors.

(iii) Apply the knowledge of power electronics to understand the working of dc-dc converters.

(iv) Apply the knowledge of control system for the speed control of electrical machines.

CO5- Illustrate control of slip ring induction motor (SLIM).

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	1	3	3	2	1							2	3	2

CO2	3	3	3	2	1							2	3	2	
CO3	3	3	3	2	2							2	3	2	
CO4	3	3	3	2	2							2	3	2	
CO5	3	3	3	2	2							2	3	2	

5	OEC-EE	OEC-EE-301a	Electronic Devices
UNIT	**CONTENT**		

Course Outcomes

At the end of this course students will demonstrate the ability to:

1. Understand physics of semiconductors and behavior of charge carriers within semiconductors 2. Understand the working of semiconductor diodes supported with mathematical explanation. 3. Understand the working of BJT and MOSFET with their equivalent small signal models.

4. Understand the chemical processes used in fabrication of integrated circuits.

5	OEC-EE	OEC-EE-301b	Data Structures and Algorithms
UNIT	**CONTENT**		

Course outcomes

Student will be able to:

CO 1. Understand operations like searching, insertion, deletion, traversing on linear Data Structures and to determine their computational complexities

CO2. Understand operations like searching, insertion, deletion, traversing on various non linear Data Structures and to determine their computational complexities

CO3. Write algorithms for Selection Sort, Bubble Sort, Insertion Sort, Quick Sort, Merge Sort, Heap Sort and compare their performance in term of Space and Time complexity.

CO4. Apply appropriate Data Structure as per specific problem definition CO5-Identify, model, solve and develop algorithms for real-life problems like shortest path and MST using graph theory.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	1	3	3	2	1							2	3	2
CO2	3	3	3	2	1							2	3	2
CO3	3	3	3	2	2							2	3	2
CO4	3	3	3	2	2							2	3	2
CO5	3	3	3	2	2							2	3	2

5	OEC-EE	OEC-EE-301c	Analog and Digital Communication

UNIT	CONTENT

Course Outcomes

At the end of this course students will demonstrate the ability to:

CO1. Analyze and compare different analog modulation schemes for their efficiency and bandwidth

CO2. Analyze the behavior of a communication system in presence of noise

CO3. Investigate pulsed modulation system and analyze their system performance

CO4. Analyze different digital modulation schemes and can compute the bit error performance

CO5-Apply time division multiplexing concepts in different pulse modulation techniques

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	1	3	3	2	1							2	3	2
CO2	3	3	3	2	1							2	3	2
CO3	3	3	3	2	2							2	3	2
CO4	3	3	3	2	2							2	3	2
CO5	3	3	3	2	2							2	3	2

6	HSMC	HSMC-301	Engineering Economics

Course Outcomes

At the end of this course students will demonstrate the ability to:

CO1. Understand the basic principles, scope and the applications of Engineering Economics

CO2. Understand and apply the knowledge of elasticity of demand and supply on price determination.

CO 3. Apply the knowledge of demand forecasting to make effective demand forecast.

CO4. Understand the complexity of uncertain market structure and be able to take decisions of price determinations.

CO 5. Understand the various management concepts and thoughts and using for better resource management.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	1	3	3	2	1							2	3	2
CO2	3	3	3	2	1							2	3	2
CO3	3	3	3	2	2							2	3	2
CO4	3	3	3	2	2							2	3	2
CO5	3	3	3	2	2							2	3	2

1	PCC-EE	PCC-EE-302	Power Systems – II

Course Outcomes:

At the end of this course, students will demonstrate the ability to:

CO1- Use numerical methods to analyze a power system in steady state.

CO2- Understand stability constraints in a synchronous grid.

CO3- Understand methods to control the voltage, frequency and power flow.

CO4-Understand the monitoring and control of a power system

CO5- Acquire knowledge about the Regulatory framework, ancillary services, power system economics and power management.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO
CO1	1	3	3	2	1							2	3	2
CO2	3	3	3	2	1							2	3	2
CO3	3	3	3	2	2							2	3	2
CO4	3	3	3	2	2							2	3	2
CO5	3	3	3	2	2							2	3	2

2	PCC-EE	PCC-EE-304	**Measurements and Instrumentation**

Course Outcomes

After completion of this course, students will be able to –
CO1-Identify various types instrument suitable for specific measurement.
CO2- Classify various errors present in measuring instruments.
CO3- Understand construction, working principle and types of oscilloscopes.
CO4-Comprehend different types of signal generators and analyzers, their construction and operation.
CO5-Describe the working principle, selection criteria and applications of various transducers used in measurem systems.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	1	3	3	2	1							2	3	2
CO2	3	3	3	2	1							2	3	2
CO3	3	3	3	2	2							2	3	2
CO4	3	3	3	2	2							2	3	2
CO5	3	3	3	2	2							2	3	2

3	PEC-EE	PEC-EE-302 a	**Electrical Engineering Materials**

UNIT	**CONTENT**

Course Outcomes:
CO 1 To Understand the basic concepts of materials.
CO 2 To use simplified materials selection concepts for design purposes.
CO 3 To Understand the properties of Materials.

CO4 Acquire knowledge of Conductivity of metals Ohm's law and relaxation time of electrons, collision time and mean free path, electron scattering and resistivity of metals.
CO5: Acquire knowledge of Classification of semiconductors, semiconductor conductivity, temperature dependence, Carrier density and energy gap, Trends in materials used in Electrical Equipment.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	1	3	3	2	1							2	3	2
CO2	3	3	3	2	1							2	3	2
CO3	3	3	3	2	2							2	3	2
CO4	3	3	3	2	2							2	3	2
CO5	3	3	3	2	2							2	3	2

3	PEC-EE	PEC-EE-302 b	**Electrical Machine Design**

UNIT	**CONTENT**

Course Outcomes:

At the end of this course, students will demonstrate the ability to

CO 1 Understand the construction and performance characteristics of electrical machines.

CO 2 Understand the various factors which influence the design: electrical, magnetic and thermal loading of electrical machines

CO 3 Understand the principles of electrical machine design and carry out a basic design of an ac machine.

CO 4 Use software tools to do design calculation

CO5 Identify the limitations (assumptions) of traditional designs and need for CAD analysis, synthesis and hybrid models.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO
CO1	1	3	3	2	1							2	3	2
CO2	3	3	3	2	1							2	3	2
CO3	3	3	3	2	2							2	3	2
CO4	3	3	3	2	2							2	3	2
CO5	3	3	3	2	2							2	3	2

3	PEC-EE	PEC-EE-302 c	**Power System Protection**

UNIT	**CONTENT**

Course Outcomes:

At the end of this course, students will demonstrate the ability to:

CO 1 Understand power system protection.

CO 2 Understand the main components used in power system protection for electric machines, transformers.

CO 3 Understand the bus bars, overhead and underground feeders.

CO 4 Understand the earthing protection.

CO5 Explain the simulation of protection schemes by using Electro-Magnetic Transients (EMT) programs.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO
CO1	1	3	3	2	1							2	3	2
CO2	3	3	3	2	1							2	3	2
CO3	3	3	3	2	2							2	3	2
CO4	3	3	3	2	2							2	3	2
CO5	3	3	3	2	2							2	3	2

4	PEC-EE	PEC-EE-303 b	**Renewable Energy Sources**

UNIT	CONTENT

Course Outcomes:

CO 1 To Understand the Need, importance and scope of non-conventional and alternate energy resources.

CO 2 To understand role significance of solar energy and wind energy

CO 3 To understand the role of ocean energy in the Energy Generation.

CO 4 To get the utilization of Biogas plants and geothermal energy

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO
CO1	1	3	3	2	1							2	3	2
CO2	3	3	3	2	1							2	3	2
CO3	3	3	3	2	2							2	3	2
CO4	3	3	3	2	2							2	3	2

4	PEC-EE	PEC-EE-303 c	**High Voltage Engineering**

UNIT	CONTENT

Course outcomes:

At the end of the course, the student will demonstrate

CO1-Understand the basic physics related to various breakdown processes in solid, liquid, and gaseous insulating materials.

CO2- Knowledge of generation and measurement of D. C., A.C., & Impulse voltages.

CO3- Knowledge of tests on H. V. equipment and on insulating materials, as per the standards.

CO4- Knowledge of how over-voltages arise in a power system, and protection against these over-voltages.

CO5- Study and understand the nature of faults happening on both the AC and DC sides of the converters and formulate protection schemes for the same.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO
CO1	1	3	3	2	1							2	3	2
CO2	3	3	3	2	1							2	3	2
CO3	3	3	3	2	2							2	3	2
CO4	3	3	3	2	2							2	3	2

5	OEC-EE	OEC-EE-302 a	**Computer Networks**

UNIT	**CONTENT**

Course Outcomes: The student will be able to:

CO1: Explain the functions of the different layer of the OSI Protocol;

CO2:. Describe the function of each block of wide-area networks (WANs), local area networks (LANs) and Wireless LANs (WLANs);

CO3: Develop the network programming for a given problem related TCP/IP protocol; &

CO4: Configure DNS DDNS, TELNET, EMAIL, File Transfer Protocol (FTP), WWW, HTTP, SNMP, Bluetooth, Firewalls using open source available

CO5 ***Analyze*** the features and operations of various application layer protocols such as HTTP, DNS and SMTP.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO
CO1	1	3	3	2	1							2	3	2
CO2	3	3	3	2	1							2	3	2
CO3	3	3	3	2	2							2	3	2
CO4	3	3	3	2	2							2	3	2

5	OEC-EE	OEC-EE-302 b	Embedded System

Course Outcomes

After completion of this course, students will be able to –
CO1-Define basic operations of embedded microcontroller cores, processors and memories.
CO2-Describe the concept of Embedded System and its design for real life applications.
CO3-Explain the technological aspects of embedded systems through analog and digital blocks, sub systems user interfacing.
CO4-Examine design metrics, design tradeoffs and software aspects of embedded systems.
CO5- Illustrate Real Time Programming Languages and Real Time operating systems.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO
CO1	1	3	3	2	1							2	3	2
CO2	3	3	3	2	1							2	3	2
CO3	3	3	3	2	2							2	3	2
CO4	3	3	3	2	2							2	3	2
CO4	3	3	3	2	2							2	3	2

5	OEC-EE	OEC-EE-302 c	VLSI Circuits

UNIT	CONTENT

Course Outcomes:

At the end of this course students will demonstrate the ability to

1. understand the process of VLSI fabrication

2. Investigate the Oxidation processes for VLSI/ULSI device fabrication

3. Learn about the environment for VLSI/ULSI technology

4. Understand Lithography and deposition processes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	1	3	3	2	1							2	3	2
CO2	3	3	3	2	1							2	3	2
CO3	3	3	3	2	2							2	3	2
CO4	3	3	3	2	2							2	3	2

6	HSMC	HSMC-302	Personality Development Programme

UNIT	CONTENT

Raffles University, Neemrana

School of Engineering and Technology

Department of Electrical Engineering

Scheme for B.Tech (Batch 2022-26)

7th Semester

S. No.	Category	Code	Course Title	Hours Per Week			Credits	Examination		
				L	T	P	C	I.A Marks	ESE Marks	Total Marks
1	PEC-EE	PEC-EE404	Program Elective -4	3	0	0	3	40	60	100
2	PEC-EE	PEC-EE-405	Program Elective -5	3	1	0	4	40	60	100
3	OEC-EE	OEC-EE-403	Open Elective -3	3	0	0	3	40	60	100
4	OEC-EE	OEC-EE-404	Open Elective -4	3	0	0	3	40	60	100
5	PROJ-EE	PROJ-EE01	Project Stage-I	0	0	2	2	180	120	300
6	SI	EE-SI	Summer Internship	0	0	2	2	120	80	200
			Total	**12**	**1**	**4**	**17**			**900**

1	PEC-EE	PEC-EE304a	**Electrical Energy Conservation and Auditing**

UNIT	**CONTENT**

Course Outcomes:

At the end of this course, students will demonstrate the ability to:

CO 1 Understand the current energy scenario and importance of energy conservation. Understand the concepts of energy management.

CO 2 Understand the methods of improving energy efficiency in different electrical systems.

CO 3 Understand the concepts of different energy efficient devices.

CO4: To analyze, calculate and improve the energy efficiency and performance of electrical and industrial utilities.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO
CO1	1	3	3	2	1							2	3	2
CO2	3	3	3	2	1							2	3	2
CO3	3	3	3	2	2							2	3	2
CO4	3	3	3	2	2							2	3	2

1	PEC-EE	PEC-EE304b	**Industrial Electrical Systems**

UNIT	**CONTENT**

Course Outcomes:

CO1-At the end of this course, students will demonstrate the ability to

CO2- Understand the electrical wiring systems for residential, commercial, and industrial consumers, representing the systems with standard symbols and drawings, SLD.

CO3- Understand various components of industrial electrical systems.

CO4- Analyze and select the proper size of various electrical system components.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	1	3	3	2	1							2	3	2
CO2	3	3	3	2	1							2	3	2
CO3	3	3	3	2	2							2	3	2
CO4	3	3	3	2	2							2	3	2

1	PEC-EE	PEC-EE304c	**Power System Dynamics and Control**

UNIT	**CONTENT**

Course Outcomes:

At the end of this course, students will demonstrate the ability to

CO1- Understand the problem of power system stability and its impact on the system.

CO2- Analyse linear dynamical systems and use of numerical integration methods.

CO3-Model different power system components for the study of stability.

CO4-Understand the need and plan the methods to improve stability.

CO5: Design a mini project on having 2-3 generation sources having 3 generation sources and perform the process of power transfer from source to load with the help of transformers and at least three loads.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO
CO1	1	3	3	2	1							2	3	2
CO2	3	3	3	2	1							2	3	2
CO3	3	3	3	2	2							2	3	2
CO4	3	3	3	2	2							2	3	2
CO5	3	3	3	2	2							2	3	2

2	PEC-EE	PEC-EE-305a	**NEURAL NETWORKS**

UNIT	**CONTENT**

Course Outcomes:

At the end of the course, students will demonstrate the ability to

CO1. Attain the capability to represent various real life problem domains using logic based techniques and use this to perform inference or planning

CO2. Get the response of an Learning Processes system

CO3 Apply Artificial Neural Network models to handle uncertainty and solve engineering problems.

CO4 Recognize the feasibility of applying a Neuro-model for a particular problem

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO
CO1	1	3	3	2	1							2	3	2
CO2	3	3	3	2	1							2	3	2
CO3	3	3	3	2	2							2	3	2
CO4	3	3	3	2	2							2	3	2

2	PEC-EE	PEC-EE-305b	**Digital signal Processing**

UNIT	CONTENT

Course Outcomes

At the end of this course students will demonstrate the ability to

1. Represent signals mathematically in continuous and discrete time and frequency domain

2. Get the response of an LSI system to different signals

3. Design of different types of digital filters for vari ous applications

4 Implement Z transform and inverse Z transform of discrete signals

5 Model IIR and FIR filter using window techniques

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	1	3	3	2	1							2	3	2
CO2	3	3	3	2	1							2	3	2
CO3	3	3	3	2	2							2	3	2
CO4	3	3	3	2	2							2	3	2
CO5	3	3	3	2	2							2	3	2

2	PEC-EE	PEC-EE-305c	**Computer Architecture**

Course Outcomes:

After completion of this course, students will be able to:
CO1: Understand the basics of computer architecture and its organization.
CO2: Recognize processor models based on their organization, addressing modes and instruction set.
CO3: Understand basics of ALU, control unit and computer organization such as memory & I/O.
CO4: Understand various architectures based on performance, cost and applicability.
CO5: Understand impact of modern techniques like pipelining, express buses processor performance.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	1	3	3	2	1							2	3	2
CO2	3	3	3	2	1							2	3	2
CO3	3	3	3	2	2							2	3	2
CO4	3	3	3	2	2							2	3	2
CO5	3	3	3	2	2							2	3	2

3	OEC-EE	OEC-EE-403a	**Image Processing**

Course Outcomes:

After completion of this course, students will be able to:

CO1- ***Identify*** the fundamental elements of an image and ***Describe*** the need of digital image processing

CO2- ***Understand*** different types of image transformation techniques and their properties.

CO3- ***Use*** various noise models and ***Calculate*** the values for restoration and degradation models.

CO4- ***Analyze*** and ***Evaluate*** various image compression techniques.

CO5- ***Integrate*** and ***Demonstrate*** various Image Transformation and Segmentation Techniques

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	1	3	3	2	1							2	3	2
CO2	3	3	3	2	1							2	3	2
CO3	3	3	3	2	2							2	3	2
CO4	3	3	3	2	2							2	3	2
CO5	3	3	3	2	2							2	3	2

3	OEC-EE	OEC-EE-403b	**Power Quality and FACTS**

Course Outcomes

After completion of this course, students will be able to:

CO1: Acquire knowledge of the advantage of compensation and will learn several aspects such as description, operation and characteristics of Thyristor-based FACTS devices: Static VAR Compensator (SVC), Thyristor Controlled Series Capacitor (TCSC), Thyristor Controlled Braking Resistor and Single Pole Single Throw (SPST) Switch.

CO2: Acquire knowledge of the operation and applicability of Voltage Source Converters and their realization details for implementation in FACTS Devices.

CO3: Analyze different possible applications of FACTS devices in order to improve stability and for achieving better voltage regulation along with the applicability of these as a solution provider for power quality problems in distribution networks.

CO4: Acquire the knowledge of custom power device DSTATCOM, classification of DSTATCOM, different topological realizations, operation control of DSTATCOM and reference current extraction paradigm based on Synchronous Reference Frame Theory.

CO5: Acquire the knowledge of custom power devices for voltage power quality problems (DVR, UPQC) and for current power quality problems (UPQC), different topological aspects of DVR and UPQC, principle of operation of these devices along with control paradigms

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	1	3	3	2	1							2	3	2

CO2	3	3	3	2	1							2	3	2	
CO3	3	3	3	2	2							2	3	2	
CO4	3	3	3	2	2							2	3	2	
CO5	3	3	3	2	2							2	3	2	

3	OEC-EE	OEC-EE-403c	GENERATION OF ELECTRICAL POWER
UNIT	**CONTENT**		

Course Outcomes:

At the end of the course, students will demonstrate the ability to

CO1- Understand the load curves, load-duration Curve.

CO2-Understand the power plant economics and tariff

CO3- Explore the significance of economic operation of steam plants

CO4- Apply techniques to evaluate generation cost, depreciation reserve and Acquire knowledge of different method of energy cost reduction.

CO5- Apply techniques to evaluate tariff and comparative study of various power plants.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO
CO1	1	3	3	2	1							2	3	2
CO2	3	3	3	2	1							2	3	2
CO3	3	3	3	2	2							2	3	2
CO4	3	3	3	2	2							2	3	2
CO5	3	3	3	2	2							2	3	2

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Raffles University, Neemrana

School of Engineering and Technology

Department of Electrical Engineering

Scheme for B.Tech (Batch 2022-26)

8th Semester

S. No.	Category	Code	Course Title	Hours Per Week			Credits	Examination		
				L	**T**	**P**	**C**	I.A Marks	ESE Marks	**Total Marks**
1	PEC-EE	PEC-EE-406	Program Elective -6	3	0	0	3	40	60	100
2	OEC-EE	OEC-EE-405	Open Elective -5	3	0	0	3	40	60	100
3	OEC-EE	OEC-EE-406	Open Elective -6	3	1	0	4	40	60	100
4	PROJ-EE	PROJ-EE-02	Project Stage-II	0	0	2	2	360	240	600
			Total	**9**	**1**	**2**	**12**			**900**

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1	PEC-EE	PEC-EE-306a	**MODERN CONTROL THEORY**

UNIT	**CONTENT**

Course Outcomes:

At the end of this course, students will demonstrate the ability to:

CO 1 Understand various design specifications.

CO 2 Design controllers to satisfy the desired design specifications using simple controller structures (P, PI, PID, compensators).

CO 3 Design controllers using the state space approach.

CO 4-Understand various design Adaptive control sysem

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO
CO1	1	3	3	2	1							2	3	2
CO2	3	3	3	2	1							2	3	2
CO3	3	3	3	2	2							2	3	2
CO4	3	3	3	2	2							2	3	2

1	PEC-EE	PEC-EE-306b	**Smart grid technology**

UNIT	**CONTENT**

Course Outcomes :

At the end of this course, students will demonstrate the ability to:

CO 1 Understand technologies for smart grid.

CO 2 Appreciate the smart transmission as well distributionsystems.

CO 3 Realize the distribution generation and smart consumption.

CO 4 Know the regulations and market models for smart grid.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO
CO1	1	3	3	2	1							2	3	2
CO2	3	3	3	2	1							2	3	2
CO3	3	3	3	2	2							2	3	2
CO4	3	3	3	2	2							2	3	2

1	PEC-EE	PEC-EE-306c	**Artificial intelligence techniques**

UNIT	**CONTENT**

Course Outcomes:

At the end of this course, students will demonstrate the ability to:

CO 1 Demonstrate knowledge of the building blocks of AI as presented in terms of intelligent agents.

CO 2 Develop intelligent algorithms for constraint satisfaction problems and also design intelligent systems for Game Playing

CO 3 Attain the capability to represent various real life problem domains using logic based techniques and use this to perform inference or planning.

CO4 Classify different learning paradigms and its application in Neural Network

CO5 Explain concepts of Natural Language processing and discuss Expert System

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO
CO1	1	3	3	2	1							2	3	2
CO2	3	3	3	2	1							2	3	2
CO3	3	3	3	2	2							2	3	2
CO4	3	3	3	2	2							2	3	2
CO5	3	3	3	2	2							2	3	2

2	OEC-EE	OEC-EE-405b	**Power System Engineering**

course Outcomes

CO1: Understand power stability problems and the basic concepts of modeling and analysis of dynamical systems.
CO2: Analyze the behavior of Steady State, Dynamic and transient stability on power systems.
CO3: Analyze stability of single machine and multi-machine systems.
CO4: Analyze the stability of power system by Modified Euler's and Runge – Kutta method.
CO5: Comprehend various factors affecting steady state and transient stabilities.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	1	3	3	2	1							2	3	2
CO2	3	3	3	2	1							2	3	2
CO3	3	3	3	2	2							2	3	2
CO4	3	3	3	2	2							2	3	2
CO5	3	3	3	2	2							2	3	2

2	OEC-EE	OEC-EE-405a	Testing & Commissioning of Electrical Equipments

Course Outcomes:
At the end of this course, students will demonstrate the ability to:
CO1-Describe the method procurement process and state of the art global practices in maintenance of electrical equipment .
CO2- Analyze and explaining of the requirement common to all equipment
CO3- Analyze and explaining the installation of synchronous machines
CO4-understand the specification and testing of transformer

2	OEC-EE	OEC-EE-405c	**Power System Planning**

Course Outcomes:

After completion of this course, students will be able to:

CO1: Gain information about basic building blocks of Power System planning.

CO2: Understand the basic concept of Power system reliability at generation, transmission and distribution level.

CO3: Analyze the effect of various parameters involved in Generation, Transmission and Distribution systems.

CO4: Understand the impact of demand side planning in deregulated market environment

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	1	3	3	2	1							2	3	2
CO2	3	3	3	2	1							2	3	2
CO3	3	3	3	2	2							2	3	2
CO4	3	3	3	2	2							2	3	2

3	OEC-EE	OEC-EE-406a	**Computer Aided Power System Analysis**

UNIT	**CONTENT**

Course Outcomes:

At the end of this course, students will demonstrate the ability to:

CO 1 To introduce computer applications in the analysis of power systems.

CO 2 To understand the solution methods and techniques used in power system studies.

CO 3 To solve numerically the complex IEEE bus networks and the energy flow

Co4- **CO3:** Elaborate the concept of digital protection and signal conditioning

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PS
CO1	1	3	3	2	1							2	3	2
CO2	3	3	3	2	1							2	3	2
CO3	3	3	3	2	2							2	3	2
CO4	3	3	3	2	2							2	3	2

3	OEC-EE	OEC-EE-406b	**Advanced Power Electronics**

UNIT	**CONTENT**

Course Outcomes:

At the end of this course, students will demonstrate the ability to:

CO 1 Understand the operation of power electronic converters and their control strategies.

CO 2 Understand the vector control strategies for ac motor drives

CO 3 Understand the implementation of the control strategies using digital signal processors.

CO4: Acquire knowledge about different AC voltage controllers and their control.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PS
CO1	1	3	3	2	1							2	3	2
CO2	3	3	3	2	1							2	3	2
CO3	3	3	3	2	2							2	3	2
CO4	3	3	3	2	2							2	3	2

3	OEC-EE	OEC-EE-406c	**Power System Transients**

CO1- To explain the sources and effects of lightning, switching and temporary over voltages.

CO2 -To model and estimate the over voltages in power system

CO3- To develop travelling wave equation and to analyze travelling wave.

CO4- To analyze the insulation coordination of power system and protective devices.
CO5- To develop the modeling of power system for transient over voltages using Electromagnetic Transient Program (EMTP)

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	1	3	3	2	1							2	3	2
CO2	3	3	3	2	1							2	3	2
CO3	3	3	3	2	2							2	3	2
CO4	3	3	3	2	2							2	3	2
CO5	3	3	3	2	2							2	3	2

4	Project Stage-II		Credit
No of Practical	PROJ-EE	PROJ-EE-02	Max. Marks: 600 (IA:360, TE:240) (0L+0T+2P 1)

Course Outcomes:
At the end of this course, students will demonstrate the ability to:
(i) Apply and verify basic scientific principals and technologies.
(ii) Identify the scope of interdisciplinary knowledge
(iii) Make and design a prototype which is preferably a working model

Guidelines
1) A group of 3-4 students under the mentorship of a teacher to make a minor project. Interdisciplinary projects to be encouraged.
2) The project title and scope to be decided and presented in first 2nd/3rd weeks of the semester.
3) The progress of the project to be evaluated (internal) in 8th/9th week of the semester.
4) A draft of the project report to be prepared and the project to be evaluated (internal) 12th/13th week of the semester.
5) The project report and the project to be submitted in the department at the time of external evaluation.

SCHOOL OF ENGINEERING & TECHNOLOGY (SOET)

RAFFELS UNIVERSITY,

NEEMRANA

MCA (2 Years Degree Program)

Programme Educational Objective (PEO)

Programme Outcomes (POs)

Programme Specific Outcomes (PSOs)

Course Outcomes (COs)

Raffles University Neemrana

RAFFLES
UNIVERSITY

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Vision

To be a centre of excellence by producing high calibre, competent and self-reliant computer Science engineers, who possess scientific temperament and would engage in activities relevant to industries with ethical values and flair to research.

Mission

- To provide efficient engineers for global requirements by imparting quality education.
- To explore, create and develop innovations in various aspects of engineering through industries and institutions.
- To emphasize on practical skills and socially relevant technology

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEO-1: To train students with practical skills and experimental practices related to core and applied areas of Computer Science & Engineering to expand their knowledge horizon beyond books.

PEO-2: Graduate will establish himself/herself as effective professionals by solving real world problems using investigative and analytical skills along with the knowledge acquired in the field of Computer Science and Engineering.

PEO-3: To improve team building, team working and leadership skills of the students with high regard for ethical values and social responsibilities.

PEO- 4: Graduate will embrace professional code of ethics in the profession while deliberately being part of projects which contributes to the society at large without disturbing the ecological balance.

PROGRAMME OUTCOMES (POS)

On successful completion of Graduate Program, Graduating Students/ Graduates will be able to

PO 1	Engineering Knowledge: Apply knowledge of mathematics, science, engineering fundamentals, and computer science & engineering to the solution of engineering problems.
PO 2	Problem Analysis: Identify, formulate, research literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.
PO 3	Design /Development of Solutions: Design solutions for complex engineering problems and design system components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal and environmental considerations.
PO 4	Conduct Investigations of Complex Problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of information to provide valid conclusions.
PO 5	Modern Tool Usage: Create, select and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO 6	The Engineer and Society: Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice.
PO 7	Environment and Sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge and need for sustainable development.
PO 8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO 9	Individual and Team Work: Function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings.
PO 10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear instructions.
PO 11	Project Management and Finance: Demonstrate knowledge and understanding of engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments
PO 12	Life - Long Learning: Recognize the need for and have the preparation and ability to Engage in independent and life- long learning in the broadest context of technological Change

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO 1	To collect requirements, analyze, design, implement and test software Systems.
PSO 2	To analyze the errors and debug them within minimal time.

MCA 1ST YEAR

Scheme for MCA (2 Years Course) (2022-24)

Department of Computer Science & Engineering

1st Semester

S. No.	Subject Code	Subject	Teaching Hours			IA	ETE	Total	Credit
			L	T	P				
1	MCA-101	Computer Architecture	3	0	0	40	60	100	3
2	MCA-103	Object Oriented Programming with C++	3	0	0	40	60	100	3
3	MCA-105	Database Systems	3	0	0	40	60	100	3
4	MCA-107	Operating System	3	0	0	40	60	100	3
5	MCA-109	Discrete Mathematics	3	0	0	40	60	100	3
6	MCA-111	Web Technologies	3	0	0	40	60	100	3
7	MCA-P-101	Database Systems Lab	0	0	2	60	40	100	1
8	MCA-P-103	Object-Oriented Programming Lab	0	0	2	60	40	100	1
9	MCA-P-111	Web Technologies Lab	0	0	2	60	40	100	1
Grand Total			18	0	6	420	480	900	21

SUBJECT NAME:-COMPUTER ARCHITECTURE

SUBJECT CODE:-MCA 101

Course Outcomes:

CO1.Demonstrate concepts of parallelism in hardware/software.

CO2.Discuss memory organization and mapping techniques.

CO3.Describe architectural features of advanced processors.

CO4.Interpret performance of different pipelined processors.

CO5.Explain data flow in arithmetic algorithms.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	3	3	3		2				3		2	3	3	3
CO2	3	3	3		2				3		2	3	3	3
CO3	3	3	2		2				3		2	3	3	3
CO4	3	3	3		2				3		2	3	3	3
CO5	3	3	3		2				3		2	3	3	3

SUBJECT NAME:-OBJECT ORIENTED PROGRAMMING IN C++

SUBJECT CODE:-MCA 103

Course Outcomes:

CO1. Able to develop programs with reusability.

CO2. Develop programs for file handling.

CO3. Handle exceptions in programming.

CO4. Develop applications for a range of problems using OOP techniques

CO5. Demonstrate the use of various OOPs concepts with the help of programs.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	3	3	2	3	2			2			2	3	3	3
CO2	3	3	2		2			2			2	3	3	3
CO3	3	3	2		2			2			2	3	3	3
CO4	3	3	3	3	2			2			2	3	3	3
CO5	3	2	3	3	2			2	3		2	3	3	3

SUBJECT NAME:-DATABASE MANAGEMENT

SUBJECT CODE:-MCA 105

Course Outcomes:

CO 1. Describe the fundamental elements of relational database management systems.

CO 2. Explain the basic concepts of relational data model, entity-relationship model, relational database design, relational algebra and SQL.

CO 3. Design ER-models to represent simple database application scenarios

CO 4. Convert the ER-model to relational tables, populate relational database and formulate SQL queries on data.

CO 5. Improve the database design by normalization.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1	3	2	2		1			3				3	3	3	3
CO2	3	2	1		1			3	2			3	3	3	2
CO3	3	2	2		1		2	3	1		3	3	3	3	2
CO4	3	2	1		1		2	3	2			3	3	3	2
CO5	3	2	3		1			3	2		3	3	3	3	3

SUBJECT NAME:-OPEARTING SYSTEM

SUBJECT CODE: -MCA 107

Course Outcomes:

CO 1. Identify the role of Operating System. To understand the design of control unit.

CO 2. Understanding CPU Scheduling, Synchronization, Deadlock Handling and Comparing CPU Scheduling Algorithms. Solve Deadlock Detection Problems.

CO 3. Describe the role of paging, segmentation and virtual memory in operating systems.

CO 4. Description of protection and security and also the Comparison of UNIX and Windows based OS.

CO 5. Defining I/O systems, Device Management Policies and Secondary Storage Structure.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	3		3	2	2				2			3	3	3
CO2	3	3	3	2	2				3			3	3	3
CO3	3	3	3	2	2				2			3	3	3

CO4	3		3	2	2				3			3	3	3
CO5	3		3	2	2				2			3	3	3

SUBJECT NAME:-DISCRETE MATHMETICS

SUBJECT CODE: -MCA - 109

Course Outcomes:

CO 1. Able to use analogy and abstraction.

CO 2. Able to use set, types of set and relation and function.

CO 3. Able to solve problems using permutation, combination, sequence, series and lattice.

CO 4. Able to use Eulerian graph and Hamiltonian graphs.

CO 5. Able to use normal subgroup and homomorphism of group.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	3		3	2	2				2			3	3	3
CO2	3	3	3	2	2				3			3	3	3
CO3	3	3	3	2	2				2			3	3	3
CO4	3		3	2	2				3			3	3	3
CO5	3		3	2	2				2			3	3	3

SUBJECT NAME:-WEB TECHNOLOGY

UBJECT CODE: -MCA - 111

Course Outcomes:

CO 1. Students will be familiar with Internet.

CO 2. Students will be familiar with different protocols of internet.

CO 3. Students will learn different services of internet.

CO 4. Analyze a web page and identify its elements and attributes.

CO 5. Students will learn HTML, CSS, JAVA Scripts for web designing.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	3					2			1			3	3	
CO2	3		2	2					3			3	3	3

CO3	3		2	2		1			3			3	3	3
CO4	3	3			2				3			3	3	2
CO5	3	3	3	2	2				3			3	3	3

SUBJECT NAME:- OBJECT ORIENTED PROGRAMMING IN C++

SUBJECT CODE: -MCA -P -103

Course Outcomes:

CO 1. Create and explain Basic C++ Program using i/o variables and structures.

CO 2. Apply object oriented programming concepts using class and objects

CO 3. Design and assess the classes for code reuse

CO 4. Analyse and apply the generic classes concepts in programming problem

CO 5. Illustrate and evaluate the file Input Output mechanisms

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	3					2			1			3	3	
CO2	3		2	2					3			3	3	3
CO3	3		2	2		1			3			3	3	3
CO4	3	3			2				3			3	3	2
CO5	3	3	3	2	2				3			3	3	3

MCA 1ST YEAR

School of Engineering and Technology

Scheme for MCA (2 Years Course) (2022-24)

Department of Computer Science & Engineering

2nd Semester

S.No.	Subject Code	Subject	Teaching Hours			IA	ETE	Total	Credit
			L	T	P				
1	MCA-102	Java Technologies	3	0	0	40	60	100	3
2	MCA-104	Computer Networks	3	0	0	40	60	100	3
3	MCA-106	Data Structures	3	0	0	40	60	100	3
4	MCA-108	Software Engineering	3	0	0	40	60	100	3
5	MCA-110	Python Programming	3	0	0	40	60	100	3
6	MCA-112	Business Informatics	3	0	0	40	60	100	3
7	MCA-P-102	Java Technologies Lab	0	0	2	60	40	100	1
8	MCA-P-106	Data Structures Lab	0	0	2	60	40	100	1
9	MCA-P-110	Python Programming Lab	0	0	2	60	40	100	1
Grand Total			18	0	6	420	480	900	21

SUBJECT NAME:-JAVA PROGRAMMING

SUBJECT CODE: -MCA 102

Course Outcomes:

CO 1. Learn to apply object oriented programming features and concepts for solving given problem.

CO2. Learn to use java standard API library to write complex programs

CO 3. Learn implementation of object oriented programming concepts using java

CO 4. Able to develop interactive programs using applets and swings.

CO 5. Develop advanced skills for programming in Java

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	3	3	3						3			3	3	
CO2	3	2	3	2	2				3			3	3	3
CO3	3	1	3	2	2				3			3	3	3
CO4	3	1	3	2	2				3			3	3	3
CO5	3	3	3	2	2				3			3	3	3

SUBJECT NAME:-COMPUTER NETWORK

SUBJECT CODE: -MCA 104

Course Outcomes:

CO 1. Students will be aware about computer networking.

CO 2. Students will know about various layers of OSI Model.

CO 3. Students will learn about wired & wireless technologies.

CO 4. Students will learn about the services of different layers.

CO 5. Explain the different Transport Layer function i.e. Port addressing, Connection Management, Error control and Flow control mechanism.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	3				3	1			3			3	3	3
CO2	3	2	3		3				3			3	3	3
CO3	3	2	3		3	2			3			3	3	3
CO4	3	2			3				3			3	3	3
CO5	3	2	3	3	3				3			3	3	3

SUBJECT NAME:-DATA STRUCTURE

SUBJECT CODE:-MCA 106

Course Outcomes:

CO1. Ability to analyse algorithms and algorithm correctness.

CO2. Ability to summarize searching and sorting techniques

CO3. Ability to describe stack, queue and linked list operation.

CO4. Ability to have knowledge of tree and graphs concepts

CO5. Apply Algorithm for solving problems like sorting, searching, insertion and deletion of data

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	3	3	2	2	2				2			3	3	3
CO2	3	2	2	2	2				1			3	3	3
CO3	3	2	2	2	1				1			3	3	3
CO4	3	2	2	2	1				2			3	3	3
CO5	3	2	2	2	1				3			3	3	3

SUBJECT NAME:-SOFTWARE ENGINEERING

SUBJECT CODE: -MCA 108

Course Outcomes:

CO 1. How to apply the software engineering lifecycle by demonstrating competence in communication, planning, analysis, design, construction, and deployment.

CO 2. An ability to work in one or more significant application domains.

CO 3. Work as an individual and as part of a multidisciplinary team to develop and deliver quality software.

CO 4. Demonstrate an understanding of and apply current theories, models, and techniques that provide a basis for the software lifecycle.

CO 5. Demonstrate an ability to use the techniques and tools necessary for engineering practice.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	3	1	3	1								3	3	3
CO2	3								2			3	3	3
CO3	3								2			3	3	3
CO4	3	3	2	1								3	3	3
CO5	3	2	2	3								3	3	3

SUBJECT NAME: - PYTHON PROGRAMMING

SUBJECT CODE: -MCA 110

Course Outcomes:

CO1 Create your first program in Python IDLE.

CO2 Implement OOPs concepts in your programming.

CO3 Use Arrays, and Data structures.

CO4 Create an application with the support of graphics in Python.

CO5 Implement error handling.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	3		2	1	3				1			3	3	3
CO2	3	1	2	1					1			3	3	3
CO3	3		3	1					1			3	3	3
CO4	3	2	2	3	2				3			3	3	3
CO5	3	3	2	3	2				3			3	3	3

SUBJECT NAME:-BUSINESS INFORMATICS

SUBJECT CODE: -MCA 112

Course Outcomes:

CO 1. Demonstrate knowledge and skills in the logical foundations of informatics, data representation, models, structures and informatics centric management.

CO 2. Document experience of their participation in professional organizations that promote responsible computing and service to society.

CO 3. Demonstrate a personal learning strategy for continuing education and lifelong learning that is independent of employer sponsorship.

CO 4. Define terms and explain basic principles, concepts and theories from another domain or discipline in which IT resources will be deployed.

CO 5. Evaluate how legal and ethical technology issues impact business activities including such areas as data access, privacy, confidentiality, security, and intellectual property standards and policies..

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	3	2										3	3	3
CO2	3							2			2	3	3	3
CO3	3	2						2				3	3	3
CO4	3										2	3	3	3
CO5	3	2						1				3	3	3

MCA 2ND YEAR

School of Engineering and Technology

Scheme for MCA (2 Years Course)(2022-24)

Department of Computer Science & Engineering

3rd Semester

S. No.	Subject Code	Subject	Teaching Hours			IA	ETE	Total	Credit
			L	T	P				
1	MCA-201	Computer Graphics	3	0	0	40	60	100	3
2	MCA-203	Theory of Computation	3	0	0	40	60	100	3
3	MCA-205	Advanced Database System	3	0	0	40	60	100	3
4	MCA-207	Cyber Security and Cryptography	3	0	0	40	60	100	3
5	MCA-209	Mobile Application Development	3	0	0	40	60	100	3
6	MCA-211	Elective 1	3	0	0	40	60	100	3
7	MCA-P-201	Computer Graphics Lab	0	0	2	60	40	100	1
8	MCA-P-209	Mobile Application Development Lab	0	0	2	60	40	100	1
9	MCA-213	Summer Industrial Training Presentation	0	0	4	60	40	100	2
Grand Total			18	0	8	420	480	900	22

Elective I

Code	Title
MCA-211 (a)	Data Mining and Warehousing
MCA-211 (b)	Information Protection and Security

MCA-211 (c)	Soft Computing

SUBJECT NAME: - COMPUTER GRAPHICS

SUBJECT CODE: -MCA-201

Course Outcomes:

CO 1. Understand the basics of computer graphics, different graphics systems and applications of computer graphics.

CO 2. Discuss various algorithms for scan conversion and filling of basic objects and their comparative analysis.

CO 3. Use of geometric transformations on graphics objects and their application in composite form.

CO 4. Extract scene with different clipping methods and its transformation to graphics display device.CO 5. Explore projections and visible surface detection techniques for display of 3D scene on 2D screen.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	2		2		2				2			3	3	3
CO2	2	3	1		2				2			3	3	3
CO3	2		2		2				2			3	3	3
CO4	2	2	1		2				2			3	3	3
CO5	2	1	3		2				2			3	3	3

SUBJECT NAME: - THEORY OF COMPUTATION

SUBJECT CODE: -MCA-203

Course Outcomes:

CO 1. Will apply knowledge of computing and mathematics appropriate to the discipline.

CO 2. Learn about Automata theory and its application in Language Design.

CO 3. Learn about Turing Machines and Pushdown Automata and understand Linear Bound Automata and its Applications.

CO 4. Discuss key notions of computation, such as algorithm, computability, decidability, reducibility, and complexity, through problem solving.

CO 5. Solve computational problems regarding their computability and complexity and prove the basic results of the theory of computation.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	3		3	2					1			3	3	3
CO2	3		3	2	2				1			3	3	3
CO3	3		3	2	2				1			3	3	3
CO4	3	2	3	2					1			3	3	3
CO5	3	3	3	2					1			3	3	3

SUBJECT NAME: - ADVANCED DATABASE SYSTEM

SUBJECT CODE: -MCA-205

Course Outcomes:

CO 1. Understand the basic principles of database management systems.

CO 2. Draw Entity-Relationship diagrams to represent simple database application scenarios

CO 3. write SQL queries for a given context in relational database.

CO 4. Discuss normalization techniques with simple examples.

CO 5. Describe transaction processing and concurrency control concepts.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	3	1	3						3			3	3	
CO2	3	1	3	2	2				3			3	3	3
CO3	3	1	3	2	2				3			3	3	2
CO4	3	1	3	2	2				3			3	3	2
CO5	3	1	3	2	3				3			3	3	3

SUBJECT NAME: - CYBER SECURITY AND CRYPTOGRAPHY

SUBJECT CODE: -MCA-207

Course Outcomes:

CO 1**.** Understand cryptography basics, algorithms and mathematical background for cryptography.

CO 2. Analyze the important cryptographic algorithms.CO 3. Understand key management issues and algorithms.CO 4. Understand security issues in Wireless LAN and web.CO 5. Understand cyber security and need of cyber-Laws.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	3	1	3						3			3	3	
CO2	3	1	3	2	2				3			3	3	3
CO3	3	1	3	2	2				3			3	3	2
CO4	3	1	3	2	2				3			3	3	2
CO5	3	1	3	2	3				3			3	3	3

SUBJECT NAME: - MOBILE APPLICATION DEVELOPMENT

SUBJECT CODE: -MCA-207

Course Outcomes:

CO 1**.** Identify various concepts of mobile programming that make it unique from programming for other platforms.

CO 2. Critique mobile applications on their design pros and cons.

CO 3. Utilize rapid prototyping techniques to design and develop sophisticated mobile interfaces.

CO 4. Program mobile applications for the Android operating system that use basic and advanced phone features.

CO 5. Deploy applications to the Android marketplace for distribution.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	3	1	3						3			3	3	
CO2	3	1	3	2	2				3			3	3	3
CO3	3	1	3	2	2				3			3	3	2
CO4	3	1	3	2	2				3			3	3	2
CO5	3	1	3	2	3				3			3	3	3

SUBJECT NAME: - DATA MINING AND WAREHOUSING

SUBJECT CODE: -MCA-211 (a)

Course Outcomes:

CO 1**.** Understand what Is Data Mining, what kinds of data can be mined, what kinds of patterns can be mined, and what kinds of applications are targeted.CO 2. Explain major Issues in data mining.

CO 3. Apply machine learning, pattern recognition, statistics, visualization, algorithm, database technology and high-performance computing in data mining applications.

CO 4. Identify what kinds of technologies are used for different application.

CO 5. Manipulate data preprocessing, data Warehouse and OLAP technology, data cube technology; mining frequent patterns and association, classification, clustering, and outlier detection.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	3	3	2		3				3			3	3	2
CO2	3	3	3	2	3				3			3	3	3
CO3	3	3	2	2	3				3			3	3	2
CO4	3	3	2	2	3				3			3	3	2
CO5	3	3	3	2	3				3		3	3	3	3

MCA 2ND YEAR

School of Engineering and Technology

Scheme for MCA (2 Years Course)(2022-24)

Department of Computer Science & Engineering

4th Semester

S. No.	Subject Code	Subject	Teaching Hours			IA	ETE	Total	Credit
			L	T	P				
1	MCA-202	Software Project Management	3	1	0	40	60	100	4
2	MCA-204	Elective II	3	1	0	40	60	100	4
3	MCA-P-202	Seminar -I/ Group Discussion	0	0	4	40	60	100	4
4	MCA-P-206	Major Project and Dissertation	0	0	8	400	200	600	4
Grand Total			6	2	10	520	380	900	16

Elective II

Code	Title
MCA-204 (a)	Principles of Management and Information System
MCA-204 (b)	Machine Learning
MCA-204 (c)	Data Science with R

SUBJECT NAME: - SOFTWARE PROJECT MANAGEMENT

SUBJECT CODE: -MCA-202

Course Outcomes:

CO 1**.** Apply project management concepts and techniques to an IT project.

CO 2. Identify issues that could lead to IT project success or failure.CO 3. Explain project management in terms of the software development process.

CO 4. Describe the responsibilities of IT project managers.

CO 5. Apply project management concepts through working in a group as team leader.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	3	3	2		3						2	3	3	2
CO2	3	3	3	2	3				3		1	3	3	3
CO3	3	3	2	2	3				3		2	3	3	2
CO4	3	3	2	2	3						1	3	3	2
CO5	3	3	3	2	3				3		3	3	3	3

SUBJECT NAME: MACHINE LEARNING

SUBJECT CODE: -MCA-204 (b)

Course Outcomes:

CO 1**.** Learn the basics of learning problems with hypothesis and version spaces.

CO 2. Understand the features of machine learning to apply on real world problems.CO 3. Characterize the machine learning algorithms as supervised learning and unsupervised learning and apply and analyze the various algorithms of supervised and unsupervised learning.

CO 4. Analyze the concept of neural networks for learning linear and non-linear activation functions. CO 5. Learn the concepts in Bayesian analysis from probability models and methods.

CO-PO Mapping

Course Outcomes	Program Outcomes												PSO	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	3		2	2								3	3	
CO2	3	3		3								3	3	3
CO3	3	3										3	3	2
CO4	3	3	3	1					3			3	3	2
CO5	3	3	3	2	3				3			3	3	3

SYLLABUS

Semester I

COMPUTER ARCHITECTURE

Paper Code: MCA-101

Unit 1 Combinational Circuit

Combinational Digital Circuits: Gates, Boolean Functions and Expressions, Designing Gate Networks, Useful Combinational Parts, Programmable Combinational Parts, Timing and Control

Latches, Flip- Flops and Registers, Sequential Circuits, Useful Sequential Parts, Programmable Sequential Parts, Clocks and Timing of Events.

Unit 2 I/O Peripheral Device

Computer System Technology: Components to Applications, Computer Systems and their Parts, Generations, Processor and Memory Technologies, Peripherals I/O and Communications, Software Systems and Applications. Instruction and addressing, instruction formats, types, addressing modes.

Unit 3 Assembly Language

Assembly Language Programs, Assembler Directives, Pseudo Instructions, Macroinstructions, Linking and Loading, 8085 Instruction Set. Arithmetic/Logic Unit: Number Representation, Arithmetic Operations, Floating-Point Arithmetic.

Unit 4 Memory System

Memory System Design: Main Memory Concepts, Cache Memory Organization, Mass Memory Concepts, Virtual Memory and Paging. Input/Output and Interfacing,

Unit 5 Input/Output Device

Input/Output Devices, Input/Output Programming, Interrupts. Vector And Array Processing, Shared-Memory, Multiprocessing, Distributed Multi Computing. Programming in 8085 Microprocessor.

Suggested readings –

1.	Computer System Architecture	Mano	Pearson
2.	Digital logic & Computer Design	Mano	Pearson

Object Oriented Programming with C++

Paper Code: MCA-103

Unit 1 OOP Paradigm:

Characteristics of OOP, Comparison between functional programming and OOP approach, characteristics of object-oriented language - objects, classes, inheritance,reusability user-defined data types, polymorphism, overloading

Unit 2 Introduction to C++:

Identifier and keywords, constants, C++ operators, type conversion, Variable declaration, statements, expressions, input and output, conditional expression loop statements, break control statements, Classes, member functions, objects, arrays of class objects, pointers and classes, nested classes, constructors, destructors Inline member functions, static class member, friend functions, and dynamic memory allocation.

Unit 3 Polymorphism and Inheritance:

Function overloading, operator overloading, polymorphism, early binding, polymorphism with pointers, virtual functions, late binding, pure virtual functions.Single inheritance, types of inheritance, types of base classes, types of derivations, multiple inheritances, container classes, member access control

Unit 4 Exception & Templates

Exception Syntax, Multiple Exceptions, Function Templates, Function Templates with multiple argument, templates

Unit 5 File Handling in C++:

C++ Streams, Console Stream Classes, Formatted And Unformatted Console I/OOperations, manipulators, File Streams, Classes File Modes, File Pointers and
Manipulations File I/O

Text Books:

1. K.R. Venugopal, Raj Kumar Buyya, “Mastering C++", McGraw-Hill, 2017.
2. Rajaram R, Object Oriented Programming and C++”, 2nd Edition, New Age International, 2013.
3. E Balagurusamy, "Object Oriented Programming with C++", Tata McGraw Hill, 2006

Yahwant Kanetkar, ”C++ Programming”, BPB Publication

DATABASE MANAGEMENT SYSTEM

Paper Code: MCA-105

Unit 1:Introduction

Overview of DBMS, Basic DBMS terminology, data base system v/s file system, data independence. Architecture of a DBMS Introduction to data 0models: entity relationship model, hierarchal model: from network to hierarchical, relational model, comparison of network, hierarchal and relational models.

Unit 2 Data Modelling

Data modeling using the Entity Relationship Model: ER model concepts, notation for ER diagram, mapping constraints, keys, Concepts of Super Key, candidate key, primary key, Generalization, aggregation, reduction of an ER diagrams to , extended ER model,relationships of higher degree. Relational model: storage organizations for relations, relational algebra, and relational calculus.

Unit 3 Normalization

Normalization Functional dependencies, normal forms, first, second, third normal forms, BCNF, inclusion dependencies, loss less join decompositions, normalization using FD, MVD and JDs, alternative approaches to database design.

Unit 4 SQL

Introduction to SQL: Characteristics of SQL, Advantages of SQL, SQL data types and literals, Types of SQL commands, SQL operators and their
procedure, ,

Unit 5 Views & Indexes

Views and indexes, Queries and sub queries, Aggregate functions, insert, update and delete operations, Joins, Unions, Intersection,
Minus in SQL

Suggested readings –

1.	Database System Concepts	Korth, Sudarshan	TMH
2.	Database Concepts	Elmasri, Nawathe	Pearson

3. Database Management Systems Raghuramakrishan

4. SQL, PL/SQL, Bayross BPB The Programming language Oracle

5. Introduction to Kahate Pearson Database Management Systems

Operating System

Paper Code: MCA-107

Unit 1 Introduction

Introduction: Definition and types of operating systems, Batch Systems, multi programming, timesharing parallel, distributed and real-time systems, Operating system structure, Operating system components and services, System calls, system programs, Virtual machines.

Unit 2 Process Management

Process Management: Process concept, Process scheduling, Cooperating processes, Threads, Inter-process communication, CPU scheduling criteria, Scheduling algorithms, Multiple processor scheduling, Real-time scheduling and Algorithm evaluation.

Unit 3 Deadlocks

Process Synchronization and Deadlocks: The Critical- Section problem, synchronization hardware, Semaphores, Classical problems of synchronization, Critical regions, Monitors, Deadlocks-System model, Characterization, Deadlock prevention, Avoidance and Detection, Recovery from deadlock, Combined approach to deadlock handling.

Unit 4 Storage Management

Storage management: Memory Management-Logical and Physical Address Space, Swapping, Contiguous Allocation, Paging, Segmentation with paging, Virtual Memory, Demand paging and its performance, Page replacement algorithms, Allocation of frames, Thrashing, Page Size and other considerations, Demand segmentation,

File systems, secondary Storage Structure, File concept, access methods, directory implementation, Efficiency and performance, recovery, Disk structure

Unit 5 Disk Scheduling

Disk scheduling methods, Disk management, Recovery, Disk structure, disk scheduling methods, Disk management, Swap-Space management, Disk reliability. Protection and Security-Goals of protection, Domain of protection, Access matrix, Implementation of access Matrix, Revocation of Access Rights, language based protection, The Security problem, Authentication, One Time passwords, Program threats, System threats, Threat Monitoring, Encryption.

Case study : Windows NT-Design principles, System components, Environmental subsystems, File system, Networking and program interface.

Suggested readings –

1.	Operating System Principles	Galvin,Gagne	John Willey & sons
2.	Modern Operating Systems	Tanenbaum	Pearson
3.	Operating Systems	Dhamdhere	MGH
4.	Operating System concepts	Manish k. Sah	Ashirwad, Jaipur

DISCRETE MATHEMATICS

Paper Code: MCA-109

Unit 1 Introduction

Introduction to Discrete Mathematical Structures, Formal Methods: Introduction and Analogy,Abstraction. Fundamentals: Sets & Relations- Sets, Types of Sets, Multi Sets, Operations on Sets.

Unit 2 Relations

Relations and Properties of Relations, Representation of Relations, Equivalence Relation, Closers of Relations, Methods of Proof-Direct Proofs, Indirect Proofs, Mathematical Induction, Method of Contradiction.

Unit 3 Permutation and Combinations

Combinatory: Permutations and Combinations, Pigeon Hole Principle, Principle of Inclusion and Exclusion, Sequence and Series, Generating Functions. Mathematical Logic, Posets and Lattices: Partial Order Set, Bounding Elements, Well-Ordered Set, Topological Sorting, Lattices, Principle of

Duality, Bounded, Distributed, and Complemented Lattices, Proposition and Prepositional Calculus.

Unit 4 Graph Theory

Graphs and Group Theory: Basic Introduction of Graphs- Types of Graphs, Path and Circuits, Eulerian Path and Circuits, Hamiltonian Path and Circuits, Shortest Path Algorithms, Group, Definitions and Properties, Coset & Subgroup, Normal subgroup, Homomorphism of groups, Cyclic Group, Permutation Group.

Unit 5 Grammer

Finite State Machines and Languages: Grammar and Languages- Phrase structure Grammar, Types of Grammars and Languages, Finite State Machines and Languages, Minimization of Finite State Machines.

Suggested readings –

1. Discrete Mathematical Structures Kolman, Busby, Ross PHI
2. Discrete Mathematical Structures Chourasiya, Srivastava Genius Publication, Jaipur
3. Discrete Mathematics Olympia Nicodemi CBS, Delhi
4. Discrete Mathematics Akerkar Pearson/PHI

WEB TECHNOLOGIES

Paper Code: MCA-111

Unit 1 Introduction to HTML

The internet: history of the World Wide Web, hardware and software trend, objecttechnology – java script object, scripting for the web-browser portability.

Introduction of HTML: introduction, markup language, editing HTML : common tags, headers, text styles, linking, images, formatting text, horizontal rules and moreline breaks, unordered lists, nested and ordered lists, basic HTML tables : intermediate HTML tables and formatting : basic HTML forms, more complex HTML forms, HTML5: Input Types & Attributes, internal linking, creating and using image maps

Unit 2 Java Script

Introduction to scripting: introduction- memory concepts- arithmetic- decision making. Java script control structures, Java script functions: introduction – program Units in java script - function definitions, duration of identifiers, scope rules, recursion, java script global functions.
Java script arrays: introduction, array-declaring and allocating arrays, references
and reference parameters – passing arrays to functions, multiple subscripted arrays. Java script objects: introduction, math, string, date, Boolean and number objects

Unit 3 Dynamic HTML

CSS: introduction – inline styles, creating style sheets with the style element, conflicting styles, linking external style sheets, positioning elements, backgrounds, element dimensions, text flow and the CSS box model, user style sheets, Filter andTransitions, HTML DOM, Browser BOM
Event model : introduction, event ON CLICK, event ON LOAD – error handlingwith ON ERROR, tracking the mouse with event, more DHTML events

Unit 4 Introduction to PHP &Web Server Architecture

Overview of PHP Capabilities, PHP HTML embedding tags & syntax, Simple script examples, PHP & HTTP Environment variables. PHP Language Core- Variables, Constants, Data Types, PHP: Operators, Flow Control & Loops, Arrays,String, Functions Include & require statements, Simple File & Directory Access Operations

Unit 5 Error handling

Error handling, Processing HTML form using GET, POST, REQUEST, SESSION, COOKIE variables, Sending E-mail, Database Operations with PHP, Connecting to My-SQL (or any other database), Selecting a db, building & Sending Query, retrieving, updating & inserting data, CMS: Wordpress. Note: XAMMP is used for PHP

Text Books:

1. Jennifer Robbins , “Learning Web Design: A Beginner's Guide to HTML, CSS, JavaScript, and Webgraphics”,O’reilly, 2018
2. Adrian W. West ,” Practical Web Design for Absolute Beginners”, 2016
3. Harvey M. Dietel, Paul Dietel& Tem R. Nieto, “, Internet& World Wide Web How to Program”, Pearson,
2011

4. Ivan Bayross. “Web enabled commercial application development using HTML, DHTML, JavaScript,
PERL-CGI”, BPB Publications, 2010

Database Management System Lab

Paper Code: MCA-P-101

Student can use My Sql (preferred open source DBMS) or any other Commercial DBMS tool (MS-Access / ORACLE) at backend and C++ (preferred) VB/JAVA at front end.

1. (a) Write a C++ program to store students records (roll no, name, father name) of a class using file handling. (Using C++ and File handling).

(b) Re-write program 1, using any DBMS and any compatible language.(C++/MySQL) (VB and MS-Access)

2. Database creation/ deletion, table creation/ deletion.

Write a program to take a string as input from user. Create a database of same name. Now ask user to input two more string, create two tables of these names in above database.

Write a program, which ask user to enter database name and table name to delete. If database exist and table exist then delete that table.

3. Write a program, which ask user to enter a valid SQL query and display the result of that query.

4. Write a program in C++ to parse the user entered query and check the validity of query. (Only SELECT query with WHERE clause)

5 - 6. Create a database db1, having two tables t1 (id, name, age) and t2 (id, subject, marks).

(a) Write a query to display name and age of given id (id should be asked as input).

(b) Write a query to display average age of all students.

(c) Write a query to display mark-sheet of any student (whose id is given as input).

(d) Display list of all students sorted by the total marks in all subjects.

7 - 8. Design a Loan Approval and Repayment System to handle Customer's Application for Loan and handle loan repayments by depositing installments and reducing balances.

9 -10. Design a Video Library Management System for managing issue and return of Video tapes/CD and manage customer's queries.

Programming In C Lab

Paper Code: MCA-P-103

1. Write a program to calculate simple and compound interest.

2. Write a program to swap values of two variables with and without using third variable.

3. Write a program to display the size of every data type using "sizeof" operator.

4. Write a program to illustrate the use of unary prefix and postfix increment and decrement operators.

5. Write a program to input two numbers and display the maximum number.

6. Write a program to find the largest of three numbers using ternary operators.

7. Write a program to find the roots of quadratic equation.

8. Write a program to input name, marks of 5 subjects of a student and display the name of the student, the total marks scored, percentage scored and the class of result.

Web Technologies Lab
Paper Code: MCA-P-111

HTML:
- Basics Elements & Attributes, HTML Formatting tags, Links,
- Images, Tables, Forms Elements
- HTML5 Audio and Video, HTML5 Input Types & Attributes
- CSS Syntax, CSS Attribute Selectors
- CSS properties: Fonts, Background, Colors, Links, Lists,
- CSS Box Model, Display, Opacity, Float, Clear
- CSS Layout, CSS Navigation Bar,
  CSS Rounded Corners, CSS Border Images, CSS Animations

JavaScript:
- Displaying Output, Declaring Variables, Operators, Arithmetic, Data Types, Assignment
- JavaScript Functions, Booleans, Comparisons, Conditional ,
- JavaScript Switch, Loops, Break, Type,
- JavaScript Objects, Scope,
- Strings and String Methods
- Numbers and Number Methods, Math, JavaScript Dates: Formats and Methods
- JavaScript Events, JavaScript, JavaScript Forms (API and Validation), Objects,

JavaScript Functions, JavaScript DOM, JavaScript Validation, Browser BOM

PHP:
- Installing XAMMP
- Variables, Data Types, Constants, Operators, Programming Loops,
- PHP Functions,
- Arrays
- Strings Functions
- PHP Form Handling, Require & Include PHP with MySQL

Semester II

JAVA TECHNOLOGIES

Paper Code: MCA-102

Unit 1 Introduction to Java Enterprise

Introduction to Java Enterprise APIs, JDBC fundamentals, Multitier architecture, Web Applications in JEE. Introduction to RMI, EJB's and JavaFx.

Unit 2 Servlets

Servlets fundamentals, architecture, life cycle of a servlet, initialization, threads, servlets and HTML, retrieving data in servlet, servicing the GET and POST requests, servlet sessions session tracking, cookies. Inter servlet communication and servlet security.

JDBC and Inter servlet

JDBC and Inter servlet communications JDBC, Driver types, JDBC servlet, JDBC connection pooling. Introduction to Java Frameworks-Hibernate and Struts.

JSP

JSP fundamentals, architecture, implicit objects, standard actions, JSP errors. Differentpackages of JSP and servlets. Java Mail using JSP.

Introduction to Spring

Introduction to Spring Web MVC, The Dispatcher Servlet , A Simple View Page, Adding a View Resolver, Adding a message bundle, Using JDBC with Spring.

Text Books:

1. "Advanced Java 2 Platform HOW TO PROGRAM" by H. M.Deitel, P. J. Deitel, S. E.Santry, Prentice Hall, 2001
2. "Beginning Java™ EE 6 Platform with GlassFish 3 From Novice to Professional" by Antonio Goncalves – Apress publication, 2009
3. "Beginning Spring" by Mert Caliskan, Kenan Sevindik, Wrox Publication, 2015

References:

1. Perroud, Thierry, Inversini, Reto , "Enterprise Architecture Patterns :Practical Solutions for Recurring IT-Architecture Problems", Springer, 2013

2. Dustine R Callway , "Inside Servlets:Server Side Programming for Java ", Addison-Wesley, 1999

3. Kogent Solutions Inc., "Java 6 Programming Black Book", Dreamtech Press, 2007

4. David Flangan, "Java in a Nutshell", Oreilly Publications, 2005

COMPUTER NETWORK

Paper Code: MCA-104

Networking Fundamentals

Introduction, Data & Information, Data Communication-Characteristics of Data Communication, Components of Data Communication, Data Representation, DataFlow- Simplex, Half Duplex, Full Duplex, Computer Network- Categories of a network, Protocol- Elements of a Protocol, Networking Standards, Reference Models- OSI Model, TCP/IP Model, Comparison of OSI and TCP/IP Model

The Physical Layer

Transmission Media- Guided & Unguided, PSTN: Structure of the Telephone System, Data & Signals Data types, Signal types- Analog & Digital, Modulation Techniques, Modem, Cable Modem, Protocols: DSL, ISDN.

The Data Link Layer Design Issues

Framing, Error Control-Error Detection and Correction, Flow Control, Protocols:FDDI, CDDI, Frame Relay, ATM, 802.11, PPP, HDLC.

The Network Layer

Design Issues, Routing Algorithms: Link State Routing, Distance Vector Routing, Flooding, Routing Protocols: RIP, IGRP, EIGRP, OSPF, Internetworking: Tunneling, Fragmentation, IPV4, IPV6 Basics, BGP. The Transport Layer
Protocols: UDP, TCP, Headers

The Application Layer

DNS: The DNS Name Space, Name Servers-Mail: SMTP, POP3, HTTP, FTP, Telnet, Network Management: SNMP.

Network Security

Cryptography: Encryption, Decryption, Private/Public Key, Digital Signatures, SSL, Firewalls, PGP, S/MIME.

Text Books:

1. Andrew S.Tanenbaum, "Computer Networks", Prentice Hall, 5th Edition, January, 2013.
2. A. BehrouzForouzan, "Data Comm. & Netw.5e Global Ed (English)" , McGraw Hill Education (India) Private Limited, 5thEdition, 2013.

DATA STRUCTURE

Paper Code: MCA-106

DATA STRUCTURE: Basic data structures such as arrays, stack and queues and their Applications, linked and sequential representation. Linked list, representation of linked list, multi linked structures. Trees: definitions and basic concepts, linked tree representation, representations in contiguous storage, binary trees, binary tree traversal, searching insertion and deletion in binary trees, heap tree and heap sort algorithm, AVL trees. Graphs and their application, sequential and linked representation of graph adjacency matrix, operations on graph, traversing a graph, Dijkstra's algorithm for shortest distance, DFS and BFS, Hashing. Searching and sorting, use of various data structures for searching and sorting, Linear and Binary search, Insertion sort, Selection sort, Merge sort, Radix sort, Bubble sort, Quick sort, Heap Sort.

Suggested readings –

1. Data Structures Lipschutz Schaum's Outline, TMH
2. Data Structure & program design Kruse Pearson/PHI
3. Data Structures & Algorithms Trivedi, Gupta Ashirwad, Jaipur
4. Data Structures & Algorithms Khanna, Tulli, Chaturvedi Genius, Jaipur using C

Software engineering

Paper Code: MCA-108

Unit 1

Software Engineering Fundamentals Software Engineering - A layered Technology, The importance of software, software myths, software engineering paradigms, Software Process Models: Linear Sequential Model, Prototyping Model, RAD Model Evolutionary Software Process Models: Incremental Model, Spiral Model Component Assembly Model, Formal Methods, Fourth-Generation Techniques

Unit 2

Analysis Concepts and Principles Analysis Concepts and Principles, the Elements of the Analysis Model Data Modifying, Functional Modeling and Information Flow and Behavior Modeling, Mechanics of Structured Analysis, Data Dictionary. Requirement analysis, tasks, analyst, software prototyping, specification principles, representation and the software requirements specification.

Unit 3.

Software Project Planning Software Project Planning, Size Estimation, Cost Estimation, Models, Static, single variable models, Static, Multivariable Models, COCOMO, The Putnam Resource Allocation Model, Risk Identification and Projection: RMMM, Project scheduling and Tracking. Software Design Process, Design Principles, and Design Concepts: Effective ModularDesign, Design Heuristics, Design Documentation, Design Methods: Data Design, Architectural Design, Interface Design, Human Computer Interface Design, Procedural Design. Case Study for Design of any Application Project.

Unit 4

Software Testing S/W Testing Fundamentals, White Box Testing, Black Box Testing, software testing strategies, verification and Validation, System Testing, Unit testing, Integration testing and Debugging. Software Maintenance Maintainability – maintenance Tasks, Characteristics of a good quality software. Case Study for Testing Techniques

Reference Books:

1. Grady Booch, James Rumbaugh, IvarJacobson.," The Unified Modeling Language User Guide", 2nd Edition, 2017.

2. James Rumbaugh. MichealBlaha "Object oriented Modeling and Design with UML", 2011.

3. Ali Behforooz, Hudson, "Software Engineering Fundamentals", Oxford, 2009. 4. Charles

Ritcher, “Designing

PYTHON PROGRAMMING

Paper Code: MCA-110

Introduction and Overview

Introduction, What is Python, Origin, Comparison, Comments, Variables and Assignment, Identifiers, Basic Style Guidelines, Python Objects, Standard Types, Other Built-in Types, Internal Types, Operators, Built-in Functions, Numbers and Strings. Introduction to Numbers, Integers, Floating Point Real Numbers, Complex Numbers, Sequences: Strings, Sequences, Strings, String-only Operators, Built-in Functions, String Built-in Methods, Special Features of Strings, Memory Management, Python Application Examples.

Lists and Dictionaries

Built-in Functions, List type built in Methods, Special Features of Lists, Tuples, Tuple Operators and Built-in Functions, Special Features of Tuples, Introduction to Dictionaries, Built-in Functions, Built-in Methods, Dictionary Keys, Conditionals

and Loops: if statement, else Statement, elif Statement, while Statement, for Statement, break Statement, continue Statement, pass Statement, else Statement

Object, Classes and Files

Classes in Python, Principles of Object Orientation, Creating Classes, Instance Methods, Class variables, Inheritance, Polymorphism, Type Identification, File Objects, File Built-in Function, File Built-in Methods, File Built-in Attributes, Standard Files, Command-line Arguments, File System, File Execution, PersistentStorage Units

Regular Expression and Exception Handling

Regular Expression: Introduction/Motivation, Special Symbols and Characters for REs, REs and Python. What Are Exceptions? Exceptions in Python, Detecting and Handling Exceptions, Exceptions as Strings, Raising Exceptions, Assertions, Standard Exceptions

Database Interaction

SQL Database Connection using Python, Creating and Searching Tables, Reading and storing config information on database, Programming using database connections, Python Multithreading: Understanding threads, Forking threads, synchronizing the threads, Programming using multithreading

Text Books:

1. R. NageswaraRao, “Core Python Programming”, Dreamtech Press, 2nd Edition, 2018
2. Dr. M. Suresh Anand, Dr. R. Jothikumar, Dr. N. Vadivelan, “Python Programming” , Notion Press, 1stEdition, 2020

Martin C. Brown, "The Complete Reference Python", McGraw Hill Education, 4thEdition, 2018

Business Informatics

Paper Code: MCA-112

Business Environment and Dependence on IT

Introduction to Business Informatics, Organizational Structure and Design, Dependence on Technology, Integrating Technology with Business Environment, IT and Corporate Strategy, Sustaining a Competitive Edge through application of ITin Management Functions.

E-Commerce

Definition, Objectives, Components, Advantages and disadvantages, Scope, E- Commerce Models, E-Commerce Opportunities for Industries, Growth of E- Commerce, e-Commerce Applications- E-Marketing, E-Customer Relationship Management, E-Supply Chain Management, E-Governance, E-Buying, E-Selling,E-Banking, E-Retailing.

E-Payments and Security issues in E-Commerce

Introductions, Special features, Types of E-Payment Systems (EFT, E-Cash, E-Cheque, Credit/Debit Card, Smart Card, Digital Tokens and Electronic Purses/

Wallets), Security risk of E-Commerce, Types of threats, Security Tools, CyberLaws, Business Ethics

ERP

Introduction, Needs and Evolution of ERP Systems, ERP Domain, ERP Benefits, ERP and Related Technologies, Relevance to Data Warehousing and Data Mining, ERP Drivers, Evaluation Criterion for ERP product, ERP Life Cycle: Adoption decision, Acquisition, Implementation, Use & Maintenance, Evolution and Retirement Phases, ERP Units, ERP Success & Failure Factors

Information Systems

Introduction, Categories of System: Open, Closed, Physical, Abstract, Dynamic, Static etc., Types of Information Systems: TPS, MIS, DSS, OLAP, OLTP, Expert

System, Internet Based Systems, Learning Management Systems, Business Process Re-Engineering.

Text Books:

1. Ravi Kalakota, "Electronic Commerce: A Manager's Guide", Addison-Wesley Professional, Edition
2012.
2. Henry C. Lucas, Information Technology for Management, McGraw Hill, International Edition, July 2001.
3. Kenneth C. Laudon& Jane P. Laudon, Management Information System, Global Edition, Pearson Education, 2009.

ERP: A Managerial Perspective Book Description, Sadagopan S, Tata McGraw Hill, 2013

Java Technologies Lab

Paper Code: MCA-P-102

1. Simple java applications for understanding references to an instant of a class
2. Handling strings in JAVA
3. Package creation
4. Developing user defined packages in java
5. Use of Interfaces
6. Threads, Multithreading
7. Exception Handling
8. Dynamic HTML using Servlet
9. Use of get() and Post() methods
10. Cookies in Servlet
11. Session tracking and Management
12. JDBC
13. JSP Actions elements
14. Directives elements in JSP
15. JSP Tags
16. Implement JDBC with JSP
17. Implement JDBC with Servlet

Applications using Spring Web MVC

Data Structures Lab

Paper Code: MCA-P-106

Lab Experiments

1. Array implementation of Stack and Queue
2. Linked list implementation of List, Stack Queue
3. Array implementation of QUEUE
4. Applications of List, Stack and Queue ADTs
5. Implementation of Binary Trees and operations of Binary Trees
6. Implementation of Binary Search Trees
7. Implementation of AVL Trees
8. Implementation of Heaps using Priority Queues.
9. Graph representation and Traversal algorithms
10. Applications of Graphs

Implementation of searching and sorting algorithms

PYTHON PROGRAMMING Lab

Paper Code: MCA-P-110

Lab Experiments

1. Implement a sequential search
2. Create a calculator program
3. Explore String Functions
4. Implement Selection Sort
5. Implement Stack
6. Read and Write into a file
7. Demonstrate usage of basic regular expression
8. Demonstrate use of advanced regular expressions for data validation
9. Demonstrate use of List
10. Demonstrate use of Dictionaries
11. Create Comma separate files(CSV), Load CSV files into internal data structure

Write script to work like a SQL SELECT statement for internal data structure

III Semester

COMPUTER GRAPHICS

Paper Code: MCA-201

Introduction

Elements of graphics workstation. Video Display Devices.Raster Scan Systems. Random Scan systems. Input devices. Graphics Software Coordinate Representations, Fundamental Problems in Geometry.

Algorithms

Line drawing algorithms- DDA Algorithm. Bresenham's Line Algorithm. Frame buffers. Circle and Eclipse generating algorithms. Midpoint Circle Algorithm. Sean-line polygon fill algorithm. Inside-Outside tests. Sean- Line fill of curved Boundary Areas. Boundary fill Algorithm. Flood fill Algorithm. Character generation. Attributes of lines, curves, filling, characters. etc.

Graphics Primitives

Primitive Operations, The display file interpreter-Normalized Device Coordinates. Display- File structure. Display – file algorithm. Display control and Polygons- polygon representation.

Attributes of output primitives

Line attributes - Line type. Line width. Pen and Brush options. Line Color. Color and gray scale levels. Color-tables. Gray scale. Area- Fill Attributes- Fill styles. Pattern fill. Soft fill. Character Attributes. Text attributes

Geometric Transformations

Matrices. Scaling Transformations. Sin and Cos Rotation. Homogeneous Co-ordinates and Translation. Co-ordinate Translations. Rotation about an arbitrary point. Inverse Transformations, Transformations Routines.

2-D Viewing

The viewing pipeline. Viewing co-ordinate, Reference Frame. Windows to view ports . co- ordinate transformation 2-D Viewing functions. Clipping operations point clipping. Line clipping. Cohen-Sutherland. Line Clipping. Polygon clipping. Sutherland Hodge man clipping.

3-D concepts

Three dimensional Display Methods Parallel projection. Perspective projection. Visible line and surface identification. Surface rendering. Three Dimensional Object representations. Bezier curves

and surfaces. B-Spline curves and surfaces. Visibility, Image and object precision Z- buffer algorithm. Floating horizons.

Computer Animation

Design of Animation Sequences. General Computer Animation Functions-Raster Animations. Key Frame Systems. Morphing Simulating Accelerations. Motion Specifications. Kinematicsand Dynamics.

Text Books:

1. Donald Hearn & M. Pauline Baker, “Computer Graphics”, Pearson , 2008
2. James D. Foley, Andries van Dam, Steven K. Feiner & John F. Hughes, “ Computer Graphics: Principles and Practice”, 1997

References:

1. Jeffrey J. McConnell, “Computer Graphics: Theory and Practice”, Jones and Bartlett Publishers, 2006
2. John DiMarco, “Computer Graphics and Multimedia Applications, Problems and Solutions”, Idea Group Publishing, 2004

Theory of Computation

Paper Code: MCA-203

Review of basic concepts

Graphs, Trees, Strings, Mathematical Induction, finite State Machine, types of languages and Grammars. Overview of Theoretical Computer Science (including computationally intractable problems) , Introduction to System software including various phases / Modules inthe design of a typical compiler , Chomsky Classification.

Finite Automata

Finite Automata, Deterministic Finite Automata (DFA), Non-Deterministic Finite Automata (NFA),statement of Kleen's Theorem, Regular Expressions, Equivalence of DFAs, NFAs and Regular Expressions, Closure properties of Regular Language, Non-Regular Languages, Pumping Lemma. Myhill Nerode Theorem, Use of Regular expressions in the Design of scanner (lexical analyzer). Introduction to JFLAP Simulation.

Context Free Languages

Context Free Grammar (CFG), Parse Trees, Push Down Automata (deterministic and nondeterministic) (PDA), Equivalence of CFGs and PDAs, Closure properties of CFLs,Pumping Lemma, Parsing (including LL(1) , SLR and LR(1) Parsing Method).

Turing Machines and Computability Theory

Definition of Turing Machine, Extensions of Turing machines, Non – deterministic Turing machines, Equivalence of various Turing Machine Formalisms, Church – Turing Thesis, Decidability, Halting Problem, Reducibility, Recursion Theorem.

Complexity Theory

Time and Space measures, Hierarchy theorems, Complexity classes P, NP, space complexity ,Savich theorem , L, NL, PSPACE complexity , Post correspondence problem, Probabilistic computation.

Text Books:

1. John C. Martin, “Introduction to Languages and the Theory of Computation”, McGraw-Hill, 2003

Michael Sipser, “Introduction to the Theory of Computation”, Cengage Publication, 2003

2. Wayne Goddard, “Introducing the Theory of Computation”, Jones & Bartlett India Pvt.Ltd, 2009.

Advanced Database System

Paper Code: MCA-205

Object Oriented Database Management System

Introduction, Object-Oriented Data Model, Object Oriented Languages, Persistent Programming Languages. Object-Relational Databases: Nested Relations, Complex Types, Inheritance, Reference Types, Querying with Complex Types, Functions and Procedures Storage for Object Databases.

Distributed Databases

Introduction, Advantages, Architecture, Homogeneous & Heterogeneous DDBMS, Distributed Data Storage (Fragmentation & Replication), Distributed Transactions, Commit protocol, Concurrency Control in Distributed Databases, Availability, Distributed Query Processing

Parallel Databases

Introduction,Architecture, I/O Parallelism and Skew, Interquery Parallelism, IntraqueryParallelism, Intraoperation Parallelism (Parallel Sort, Parallel Join), Interoperation Parallelism, Design of Parallel Systems

PL/SQL

PL/SQL basics, blocks, architecture, variables, constants, attributes, character set, PL/SQL control structure, data types, precompiler, conditional and sequential control statements, cursors, exceptions, triggers, procedures and packages.

Introduction to Advanced Database Concepts

Spatial Data Management, Web Based Systems, Multimedia databases, Mobile Database, Deductive Database and Recursive Queries, Information Retrieval and Indexing for Text Search, XML Database, XML Data Model, Xquery, Efficient Evaluation of XML Queries

Text Books:

1. Raghu Ramkrishnan, Johannes Gehrke , “Database Management Systems”, McGraw Hill International, 2007
2. Abraham Silberschatz, Henry Korth, S, Sudarshan,, “Database System Concepts”, McGraw Hill International, 2005
3. C.J.Date, Longman, “An Introduction to Database System”, Pearson Education, 2003

References:

2. Elmasri R and Navathe SB, “Fundamentals of Database Systems”, Addison Wesley, 2000.
3. Thomas Connolly, Carolyan Begg,, “Database Systems,: A Practical Approach to Design, Implementation and Management, Addison Wesley, 2014

Cyber Security and Cryptography

Paper Code: MCA-207

Cyber Security Program at Post Graduate Level			
Module	**Module Name**	**Module Contents**	**Learning Outcome**
Practical	1. Platforms for reporting cyber crimes. 2. Checklist for reporting cyber crimes online.		
Module-III	Cyber Law	Cyber crime and legal landscape around the world, IT Act,2000 and its amendments. Limitations of IT Act, 2000. Cyber crime and punishments, Cyber Laws and Legal and ethical aspects related to new technologies- AI/ML, IoT, Blockchain, Darknet and Social media, Cyber Laws of other countries, Case Studies.	Students after completing this module will be able to understand the legal framework that exist in India for cyber crimes and penalties and punishments for such crimes, It will also expose students to limitations of existing IT Act,2000 legal framework that is followed in other countries and legal and ethical aspects related to new technologies.
Module IV	Data Privacy and Data Security	Defining data, meta-data, big data, non- personal data. Data protection, Dataprivacy and data security, Personal Data Protection Bill and its compliance, Data protection principles, Big data security issues and challenges, Data protection regulations of other countries- General Data Protection Regulations(GDPR),2016 Personal Information Protection and Electronic Documents Act (PIPEDA)., Social media- data privacy and security issues.	After completing this module, students will understand the aspects related to personal data privacy and security. They will also get insight into the Data Protection Bill,2019 and data privacy and

			security issues related to Social media platforms.
Practical	1. Setting privacy settings on social media platforms. 2. Do's and Don'ts for posting content on Social media platforms. 3. Registering complaints on a Social media platform.		

Level			
Module	**Module Name**	**Module Contents**	**Learning Outcome**
Module V	Cyber security Management, Compliance and Governance	Cyber security Plan- cyber security policy, cyber crises management plan., Business continuity, Risk assessment, Types of security controls and their goals, Cyber security audit and compliance, National cyber security policy and strategy.	Students after completing this module will understand the main components of cyber security plan. They will also get insights into risk- based assessment, requirement of security controls and need for cyber security audit and compliance.
Practical	1. Prepare password policy for computer and mobile device. 2. List out security controls for computer and implement technical security controls inthe personal computer. 3. List out security controls for mobile phone and implement technical security controlsin the personal mobile phone. 4. Log into computer system as an administrator and check the security policies in thesystem.		
References	1. Cyber Security Understanding Cyber Crimes, Computer Forensics and Legal Perspectives by Sumit Belapure and Nina Godbole, Wiley India Pvt. Ltd. 2. Information Warfare and Security by Dorothy F. Denning, Addison Wesley. 3. Security in the Digital Age: Social Media Security Threats and Vulnerabilities byHenry A. Oliver, Create Space Independent Publishing Platform. 4. Data Privacy Principles and Practice by Natraj Venkataramanan and Ashwin Shriram,CRC Press. 5. Information Security Governance, Guidance for Information Security Managers by W. KragBrothy, 1st Edition, Wiley Publication. 6. Auditing IT Infrastructures for Compliance By Martin Weiss, Michael G. Solomon,2nd Edition, Jones Bartlett Learning.		

Mobile Application on Development

Paper Code: MCA-209

INTRODUCTION

Introduction to mobile applications – Embedded systems - Market and business drivers for mobile applications – Publishing and delivery of mobile applications – Requirements gathering and validation for mobile applications, Basics of embedded systems design – Embedded OS - Design constraints for mobile applications, both hardware and software related – Architecting mobile applications – User interfaces for mobile applications – touch events and gestures.

ADVANCED DESIGN

Designing applications with multimedia and web access capabilities Integration with GPS and social media networking applications – Accessing applications hosted in a cloud computing environment – Design patterns for mobile applications – Achieving quality constraints – performance, usability, security, availability and modifiability.

TECHNOLOGY I ANDROID

Establishing the development environment, Android architecture, Android Application structure, Emulator- Android virtual device, UI design, Fragments, Activity, Services, broadcast Receiver, Intents/Filters, Content provider- SQlite Programming , SQlite Open Helper, SQlite Database, Interaction with server side applications.

Advanced ANDROID

Using Google Maps, GPS and Wi-Fi Integration, Android Notification, Audio manager, Bluetooth ,Camera and Sensor integration, Sending SMS, Phone Calls. Publishing Android Application.

TECHNOLOGY II IOS

Introduction to Objective C, iOS features UI implementation Touch frameworks Data persistence using Core Data and SQLite, Action and Outlets, Delegates, Storyboard, Location aware applications using Core Location and Map Kit , Integrating calendar and address book with social media application Using Wifi iPhone marketplace.

Text Books:

1. Jeff McWherter and Scott Gowell, "Professional Mobile Application Development", Wrox, 2012
2. Charlie Collins, Michael Galpin and Matthias Kappler, “Android in Practice”,DreamTech, 2012

References:

1. David Mark, Jack Nutting, Jeff LaMarche and Frederic Olsson, “Beginning iOS 6 Development: Exploring the iOS SDK”, Apress, 2013.
James Dovey and Ash Furrow, “Beginning Objective C”, Apress, 2012
2. Paul Deitel ,Harvey Deitel, Abbey Deitel and Michael Morgano “Android for ProgrammersAn App- Driven Approach” ,Pearson, 2013

Data Mining and Warehousing (elective paper)

Paper Code: MCA-211A

Data Warehousing: Introduction, Definition, Multidimensional data transformation, OLAP operations, Ware house schema, Ware house Server, Other features. Data Mining: Introduction, Definition, KDD vs. DM, DBMS vs. DM, DM Techniques, Issues and Challenges in DM, DM Applications. Association Rules: A Prior Algorithm, Partition, Pincer search, Incremental, Border, FP-tree growth algorithms, Generalized association rule.

Classification: Parametric and non-parametric technology: Bayesian classification, two class and generalized class classification, classification error, Decision boundary, Discriminate functions, Non-parametric methods for classification.

Clustering: Hierarchical and non-hierarchical techniques, K-MEDOID Algorithm, Partitioning, Clara, Clarans. Advanced Hierarchical algorithms

Decision Trees: Decision tree induction, Tree pruning, Extracting classification rules from decision trees, Decision tree construction algorithms, Decision tree construction withpresorting.

Techniques for Data mining: Introduction, Learning, Neural Networks, Data mining using neural networks, Genetic algorithms. Web Mining: Web mining, Text mining, Content mining, Web structure mining. Searching Techniques: Optimal, non-optimal, Min-max, α –β pruning.

Text Books:

1. Alex Berson, Stephen J. Smith, Data Warehousing, Data Mining and OLAP,McGrawHill, 2004
2. D. Hand, H. Mannila, and P. Smyth, Principles of Data Mining, MIT Press, 2011
3. Jiawei Han, MichelineKamber, Data Mining: Concepts and Techniques, HarcourtIndia Pvt., 2011

References:

1. W. H. Innmon, Building the Data Warehouse, Wiley Computer Publishing, 2005

Information Protection and Security (elective Paper)

Paper Code: MCA-211B

Introduction

Introduction to Cryptography: Introduction To Security: Attacks, Services & Mechanisms, Security, Attacks, Security Services. Conventional Encryption: Classical Techniques, Conventional Encryption Model, and Stenography, Classical Encryption Techniques.

Modern Techniques:

Simplified DES, Block Cipher Principles, DES Standard, DES Strength, Differential & Linear Cryptanalysis, Block Cipher Design Principles, Block Cipher Modes of Operation

Conventional Encryption Algorithms

Triples DES, Blowfish, International Data Encryption Algorithm, RCS, CAST-128, RC2 Placement & Encryption Function, Key Distribution, Random Number Generation, Placement Of Encryption Function. Public Key Encryption: Public-Key Cryptography: Principles of Public-Key Cryptosystems, RSA Algorithm, Key Management, Fermat's & Euler's Theorem, Primality, The Chinese Remainder Theorem.

Hash Functions

Message Authentication & Hash Functions: Authentication Requirements, Authentication Functions, Message Authentication Codes, Hash Functions, Birthday Attacks, Security Of Hash Function & MACS, MD5 Message Digest Algorithm, Secure Hash Algorithm (SHA), Digital Signatures: Digital Signatures, Authentication Protocol, Digital Signature Standard (DSS), Proof Of Digital Signature Algorithm.

Network & System Security

Authentication Applications: Kerberos X.509, Directory Authentication Service, Electronic Mail Security, Pretty Good Privacy (PGP), S / Mime, Security: Architecture, Authentication Header, Encapsulating Security Payloads, Combining Security Associations, Key Management, Web Security: Secure Socket Layer & Transport Layer Security, Secure Electronic Transaction (Set), System Security: Intruders, Viruses, Firewall Design Principles,Trusted Systems.

Text Books:

1. Kaufman, c., Perlman, R., and Speciner, M., Network Security, PrivateCommunication in a public world, 2nd ed., Prentice Hall, 2002
2. Stallings, W., Cryptography and Network Security: Principles and Practice, 3rd ed., Prentice Hall PTR, 2002

References:

1. Pieprzyk Josef and et.al; Fundamentals of Computer Security, Springer-Verlag, 2008.
2. Trappe & Washington, Introduction to Cryptography, 2nd Ed. Pearson.,2006

Soft Computing (Elective Paper)

Paper Code: MCA-211

Overview of Crisp sets and fuzzy sets : Basic concepts of crisp sets and fuzzy sets, Basic types of fuzzy sets, Fuzzy sets verses crisp sets, Representation and extension principle for fuzzy sets, Operations on Fuzzy sets

Fuzzy Relations and Fuzzy Logic: Crisp versus Fuzzy relations, Binary relations on fuzzy sets, Equivalence, compatibility and ordering relations, Morphisms and compositions of relations, Fuzzy relations equations, Fuzzy measures and possibility theory, Classical logic and multivalued logics, Fuzzy propositions and approximate reasoning

Fuzzy systems and neuro fuzzy systems : Relevance of integration between fuzzy sets and neural networks – pros and cons, Fuzzy neurons, Fuzzy neural networks, Neuro fuzzy systems, Fuzzy associative memories

Introduction to Genetic Algorithms : What are genetic algorithms?, Robustness of traditional optimisation and search methods, The Goals of optimisation, How are genetic algorithms different from traditional methods?, A simple genetic algorithm, Genetic algorithms at work – a Simulation by hand, Grist for the Search Mill – Important Similarities, Similarity Templates (Schemata), Learning the Lingo.

Genetic Algorithms Revisited : Mathematical Foundations, Who shall live and who shall die? The fundamental Theorem, Schema processing at work: An example by hand revisited. The two-armed and k-armed bandit problem, How many schemata are processed usefully?, The building block hypothesis, Another perspective: The minimal deceptive problem, Schemata revisited: similarity templates as hyper planes.

Computer Implementation of A Genetic Algorithm : Data Structures, Reproduction, Crossover, and mutation, A Time to reproduce, a time to cross, Get with the main program, How well does it work?, Mapping objective functions to fitness form, Fitness scaling, Codings, A multiparameter, Mapped, Fixed-Point coding, Discretization, Constraints

Introduction To Genetic-Based Machine Learning : Genetics-Based machine learning: whence it came, What is a classifier system?, Rule and message system, Apportionment of credit: The bucket brigade, Genetic algorithm, A simple classifier system in Pascal, Results using the simple classifier system

Text Books:

1. G. Klir and B. Yuan “Fuzzy Sets and Fuzzy Logic: Theory and Applications”, Prentice Hall of India, 1997.
2. B. Kosko “Neural Networks and Fuzzy Systems” A Dynamical Systems Approach

Computer Graphics Lab

Paper Code: MCA-P- 201

Objectives of the Laboratory

- The objective of this course is to get hands-on experience with graphics programming andimplementing the techniques learnt in the theory course.
- Students acquire knowledge about the basic concepts of 2D and 3D graphic functions. Theyalso learn various transformation and clipping techniques.

List of Experiments

1. Implementation of algorithms on line (DDA,Bresenham), circle (Mid-point)
2. Two Dimensional transformations- Translation, Rotation, Scaling, Reflection
3. Composite 2D Transformation
4. 2D Line Clipping- Cohen Sutherland
5. 3D Transformation- Translation, Rotation, Scaling
6. Color Fill Algorithms – Flood Fill, Boundary Fill
7. Drawing 2D & 3D objects
8. Generating images
9. Implementation of programs using following functions. Instructors will instruct students touse different given graphics functions in making graphics programs:
   circle, cleardevice, closegraph, drawpoly, fillpoly, imagesize, line, lineto, linerel, moveto, moverel, outtext, outtextxy, putimage, putpixel, rectangle, sector, setbkcolor, setcolor, setfillstyle, setlinestyle, getarccords, getbkcolor, getcolor, getdrivername, getimage, getmaxcolor, getmaxx, getmaxy, getpixel.

Mobile Application Development Lab

Paper Code: MCA-P- 209

LIST OF EXPERIMENTS

1. Develop an application that uses GUI components, Font and Colours
2. Develop an application that uses Layout Managers and event listeners.
3. Write an application that draws basic graphical primitives on the screen.
4. Develop an application that makes use of databases.
5. Develop an application that makes use of Notification Manager
6. Implement an application that uses Multi-threading
7. Develop a native application that uses GPS location information
8. Implement an application that writes data to the SD card.
9. Implement an application that creates an alert upon receiving a message
10. Write a mobile application that makes use of RSS feed
11. Develop a mobile application to send an email.
12. Develop a Mobile application for simple needs (Mini Project)

IV Semester

Software Project Management
Paper Code-MCA -202

1. Introduction
a. What is project?
b. What is project Management

c. The role of project Manager
d. The project Management Profession
e. Project life cycle
2. Technology Context
a. A system view of project management
b. Understanding organizations
c. Stakeholder management
d. Project phases and the project life cycle
e. The context of information technology projects
3. Introduction
a. Developing the project schedule
b. Project management software tools
c. Developing the project budget
d. Finalizing the project schedule and budget
e. Monitoring and controlling the project
f. The project communications plan
g. Project metrics
h. Reporting performance and progress
i. Information distribution
4. The importance of project risk management
a. Risk management planning
b. Common sources of risk on information technology projects
c. Risk identification
d. Qualitative risk analysis
e. Quantitative risk analysis
f. Risk response planning
g. Risk monitoring and control
h. Using software to assist in project risk management
5. The importance of project procurement management
a. Planning purchase and acquisitions
b. Planning contracting
c. Requesting seller responses
d. Selecting sellers
e. Administering the contract
f. Closing the contract
g. Using software to assist in project management
h. Outsourcing
6. Change management

a. The nature of change
b. The change management plan
c. Dealing with resistance and conflict
7. Leadership & Ethics in Projects
a. Project leadership
b. Ethics in projects
c. Multicultural projects
8. Introduction
a. Project implementation
b. Administrative closure
c. Project evaluation

References:

1. Information Technology Project Management: Kathy Schwalbe Thomson Publication.
2. Information Technology Project Management providing measurable organizational value Jack Marchewka Wiley India.
3. Applied software project management Stellman & Greene SPD.
4. Software Engineering Project Management by Richard Thayer, Edward Yourdon WILEY INDIA

Elective paper

Principles of management and information system
Paper Code-MCA -204(a)

Block 1: Management Systems

Unit 1: Organisational Overview

Oraganisation Types

- Service, Business, Government, Social

- Industry Types

Organisational Structure

Organisational Characteristics

- Size
- Location
- Others

Organisation functions

Life cycle of organisation

Vertical and horizontal organisations

Unit 2: Management Functions and Business Processes

Overview of management Levels

Business Processes

- Sale and orders
- Finance
- Human resource
- Production
- Marketing

Information systems requirements

Requirement analysis

Tools and methods for requirement analysis

Unit 3: Management Systems

Management Systems Types

Management Systems Requirements

Levels of management activities

Strategic level

Management level

Middle Management Level

Unit 4: Business values of Information System

Impact of Information Systems

Empirical studies

Cost Value Performance

Total cost of ownership

Culture for Information Systems

Decision management with Information Systems

Block 2: Information Systems

Unit 5: Portfolio Management and IT applications

What is portfolio management

Portfolio management methods

Design and implementation of portfolio management

Risk Management

Disaster Management

Portfolio management issues and challenges

Tools and techniques

Emerging technologies

Unit 6: Enterprise Information Systems

Evolution of enterprise information Systems

Enterprise Resource Planning
Resource planning management

ERP Market

Supply Chain Management

Customer Relationship Management

E-CRM Systems

Emerging technologies

Unit 7: Intelligence Information Systems

Knowledge Management in organization

Creating, developing & sharing Knowledge

Artificial intelligence in business

Business Analytics

Business Intelligence

Role of Business Intelligence

- Sale and orders
- Finance
- Human resource
- Marketing

Business Intelligence Tools

Business Intelligence reports

Unit 8: Social, Ethical and Legal Aspects

Society in information age

Moral dimensions and information age

Technology trends and ethical issues

Ethical principal and dilemma

Responsibility, accountability and liability

Information right and acts

Machine Learning (Elective Paper)

Paper Code-MCA -204(b)

Unit-I:

Introduction-Towards Intelligent Machines, Well posed Problems, Example of

Applications in diverse fields, Data Representation, Domain Knowledge for Productive use of Machine Learning, Diversity of Data: Structured / Unstructured, Forms of Learning, Machine Learning and Data Mining, Basic Linear Algebra in Machine Learning Techniques.

Unit-II:

Supervised Learning- Rationale and Basics: Learning from Observations, Bias and

Why Learning Works: Computational Learning Theory, Occam's Razor Principle and Over fitting Avoidance Heuristic Search in inductive Learning, Estimating Generalization Errors, Metrics for assessing regression, Metris for assessing classification.

Unit-III:

Statistical Learning- Machine Learning and Inferential Statistical Analysis,

Descriptive Statistics in learning techniques, Bayesian Reasoning: A probabilistic approach to inference, K-Nearest Neighbor Classifier. Discriminant functions and regression functions, Linear Regression with Least Square Error Criterion, Logistic Regression for Classification Tasks, Fisher's Linear Discriminant and Thresholding for Classification, Minimum Description Length Principle.

Unit-IV:

Support Vector Machines (SVM)- Introduction, Linear Discriminant Functions for

Binary Classification, Perceptron Algorithm, Large Margin Classifier for linearly seperable data,Linear Soft Margin Classifier for Overlapping Classes, Kernel Induced Feature Spaces, Nonlinear Classifier, Regression by Support vector Machines.

Learning with Neural Networks: Towards Cognitive Machine, Neuron Models, Network

Architectures, Perceptrons, Linear neuron and the Widrow-Hoff Learning Rule, The error

DATA SCIENCE WITH R (Elective Paper)

Paper Code-MCA -204(c)

Unit Details

1. Introduction to R Environment

History and development of R Statistical computing programming language.

Installing R and R studio.

Getting started with R.

Creating new working directory.

Changing existing working directory.

Installing the available packages.

Calling the installed packages,

Variable definition in R.

Simple functions, vector definition and logical expressions

Matrix calculation and manipulation using matrix data types.

2.Data Structures and Control Statements

Introduction to different data types, vectors, atomic vectors, types and tests, coercion, lists, list indexing,

Function applying on the lists, adding and deleting the elements of lists, attributes, name and factors, matrices and arrays,

Matrix indexing, filtering on matrix, generating a covariance matrix.

lapply( ) and sapply( ) on data frames,

Control statements.

3.I/O operations and String Manipulations Introduction to I/O functions in R • Using of scan( ), readline ( ) function,

Comparison and usage of scan and readline function, • Reading different format files into R: text file, CSV file • Statistical package files, xls and xlsx files. • Converting from one format to another using in built function, • Writing different file format in to the local machine directory, • Basics of string manipulations – grep ( ), nchar ( ), paste( ), sprintf( ), substr( ), regexpr( ), strsplit( ), • Testing of file name with given suffix

4. R for Summary Statistics and Parametric Tests

Descriptive statistics – summary statistics for vectors, making contingency tables, creating contingency tables from vectors. • Testing tables and flat table objects, cross tables, testing cross tabulation, recreating

original data from contingency tables, switching class, mean (arithmetic, geometric and harmonic), • Median, mode for raw and grouped data, measure of dispersion – range, standard deviation, variance, coefficient of variation, testing of hypothesis – small sample test, large sample test – for comparing mean, proportion, variance (dependent and independent samples

5. Testing of Hypothesis: Non - Parametric Test

Introduction to graphs,

Box-Whisker Plot, Scatter plots, pairs plots, line chart, Pie Chart,

Bar Charts

Non-parametric test: The Wilcoxon U-Test (Mann-Whitney): One and Two-Sample U-Test, Tests for

association: Chi Square Tests,

Yates Correction for 2X2 Tables, single category goodness of fit tests,

Analysis of Variance for one-way variation and two variation

RECOMMENDED STUDY MATERIAL:

Sr. No Book Author Publication

1. Beginning R: The statistical

Programming Language Dr. Mark Gardener John Wiley & Sons, Inc.

2. The art of R programming Norman Matloff no starch Press, San Francisco

3. Introduction to Probability and

Statistics for Engineers and Scientists

Owen Jones, Robert

Maillardet and

Andrew Robinson

CRC Press

4. The R Book Hadley Wickham CRC Press

5. Advanced R Ken Black Sixth Edition, John Wiley & Sons, Inc.

Paper Code-MCA -P-202

Seminar Presentation-I

Objective: To get in depth knowledge of the upcoming trends in the field of Computer Science. The objective of the seminar is to prepare the student for a systematic and independent study of the state of the art topics in a broad area of his / her specialization.

Term Paper Presentation:

- Research work / Technical Learning must be done individually.
- Final Evaluation will be done by evaluating the electronic Presentation and the printed report
- The semester end assessment of Seminar Presentation shall be on the basis of Presentation/Seminar Report and Viva Voice.

General Instructions for Preparation of Seminar Presentation Report

The Report should broadly include the following heads / subheads

1. Introduction

1.1 Cover Page
1.2 Title Page
1.3 Certificate
1.4 Acknowledgement
1.5 Table of Contents

2. Research / Technology Description

2.1 Overview/ Introduction
2.2 Objective & Scope of the study
2.3 Description of the Technology

3. Drawbacks and Limitations
4. Proposed Enhancements
5. Conclusion
6. Bibliography

Graduates will be able to:

1) Knowledge: Apply knowledge of mathematics, science, fundamentals and computer application to the solution of engineering problems.

2) Problem Analysis: Identify, formulate, research literature and analyse complex problems reaching substantiated conclusions using first principles of mathematics, natural sciences.

3) Design /Development of Solutions: Design solutions for complex problems and design system components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal and environmental considerations.

4) Conduct Investigations of Complex Problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of information to provide valid conclusions.

5) Modern Tool Usage: Create, select and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modeling to complex activities with an understanding of the limitations.

6) Society: Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional practice.

7) Environment and Sustainability: Understand the impact of the professional computer application solutions in societal and environmental contexts, and demonstrate the knowledge and need for sustainable development.

8) Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the computer application practice.

9) Individual and Team Work: Function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings.

10) Communication: Communicate effectively on complex computer application activities with the community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear instructions.

11) Project Management and Finance: Demonstrate knowledge and understanding of computer application and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12) Life - Long Learning: Recognize the need for and have the preparation and ability to Engage in independent and life- long learning in the broadest context of technological Change.

Program Specific Objective

1) To collect requirements, analyze, design, implement and test software Systems.

2) To analyze the errors and debug them within minimal time.

SUBJECT NAME: -Basics of Mathematics

SUBJECT CODE: -BCA-101

Syllabus: -

BCA - 101

Basics of Mathematics

Unit-I

Matrices: Basic Definitions, matrix operations- addition, multiplication, transpose, Adjoint and inverse. Determination of a square matrix (up to 3X3 matrix)

Unit-II

Statements (Propositions), Logical Operations, Truth Table, Tautologies, Contradiction, Logical Equivalence, Algebra of Propositions, Conditional and bi-conditional Statement, Argument, Logical Implication, Propositional Functions, Quantifiers, Negation of Quantifiers Statements, Normal.

Unit-III

Integers: Properties of integers, order and inequalities, Absolute value, Mathematical Induction, Division Algorithm, Divisibility, Primes, Greatest Common Divisor(GCD),Euclidean Algorithm, Fundamental Theorem of Arithmetic, congruence Relation.

Unit-IV

Sets: Introduction, Sets and their representations, empty set, Finite & infinite sets, equal sets, subsets, power sets, universal sets, complements of a set. Cartesian products of sets.

Unit-V

Relations: Types of relations, reflective, symmetric, transitive and equivalence relations. Functions: one to one and onto functions, composite functions, inverse of a function, Binary operations, recursively defined functions.

Suggested Readings:

1. Mathematics Volume I By R.D. Sharma (Dhanpat Rai Publication)
2. Mathematics Volume II By R.D. Sharma (Dhanpat Rai Publication)
3. Engineering Mathematics Volume I By S.S. sastry (Prentice-Hall of India)
4. Discrete mathematics Schaum's Series By Seymour LipSchutz, Marc Lipson (Tata McGraw Hill)
5. Discrete mathematics By Vinay Kumar (BPB)

Raffles University,

CO-1: Use the fundamental knowledge of matrix and determinants.

CO-2: Use logical operation and algebra of proposition.

CO-3: Develop knowledge of the fundamental theorem of Arithmetic.

CO-4: Understand how to determine the natural of set and its types.

CO-5: Understand how to determine the nature of use relation and function.

Course Outcome	Program Outcome												PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO-1	3	3	2	3	1	2	1		2	2	1	2	3	3
CO-2	3	3	3	3	2	2	1		1	1	1	1	3	3
CO-3	3	3	3	3	3	2	2		2	2	2	2	3	3
CO-4	3	3	3	3	3	2	2		2	1	1	1	3	2
CO-5	3	2	1	1	3	3	2		1	1	1	2	3	2

SUBJECT NAME: - COMPUTER FUNDAMENTALS

SUBJECT CODE: -BCA-103

Syllabus:

BCA - 103
Computer Fundamentals

Unit I
Basics: Block Diagram, characteristics, generations of computers, classification of computers; Binary number system, Limitations of Computers, Primary and secondarymemory, Input and output devices; Computer languages: Machine language, assembly language, higher level language, 4GL. Introduction to Compiler, Interpreter, Assembler, System Softwares, Application Softwares.

Unit II
Operating System: Features of Windows, Linux, Macintosh, Android. Open source softwares: concept and examples.
Word Processing software: different formats for saving a word document, creating, editing documents and related operations, formatting features and related operations, spelling and grammar checker, headers and footers, creating and managing tables; printing, macros, mail merge, equation editor.

Unit III
Spreadsheet Software: Workbook, worksheets, data types, operators, cell formats, freeze panes, editing features, formatting features, creating formulas, using formulas, cellreferences.
Presentation Graphics Software: Templates, views, formatting slide, slides with graphs, animation, using special features, presenting slide shows.

Unit IV
Overview of LaTeX; Google docs- usage and creating a document, Google sheets- usage and creating a sheet, Google slides- usage and creating slides, Google forms- usage and creating a form, Google sites- usage and creating a simple site.

Unit V
Computer Problem Solving: Algorithms, Efficiency and analysis of algorithms, Writing algorithms for simple problems like factorial computation, generation of Fibonacci sequence and checking for prime number; Examples of unsolved problems in Computer Science.

Suggested Readings:

1. P.K Sinha, “Computer Fundamentals”, 2004
2. Rajaraman, Fundamentals of Computers, Fourth edition, Prentice Hall India Pvt. Limited, 2006
3. Peter Norton, “Introduction to Computers”,4th Edition, TMH Ltd, New Delhi, 2017.
4. R.G. Dromey,”How to solve it by Computers”, Pearson Publishers, New Delhi, 2007.

CO 1. Understanding the concept of input and output devices of Computers

CO 2. Learn the functional units and classify types of computers, how they process information and how individual computers interact with other computing systems and devices.

CO 3. Understand an operating system and its working, and solve common problems related to operating systems.

CO 4. Learn basic word processing, Spreadsheet and Presentation Graphics Software skills.

CO 5. Study to use the Internet safely, legally, and responsibly.

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	P1 0	P1 1	P1 2	PSO 1	PSO 2
CO 1	2	1		3	1							2	3	2
CO 2	3	2	1	3	3					2	2	3	3	3
CO 3	3	3	2	2	3					2	3	3	2	3
CO 4	3	3		3	3				2	1	2	3	3	3
CO 5	2	2	3	2	3	3	1	3		2	2	3	3	2

SUBJECT NAME: - Programming with C

SUBJECT CODE: -BCA-105

Syllabus:

BCA - 103

Computer Fundamentals

Unit I

Basics: Block Diagram, characteristics, generations of computers, classification of computers; Binary number system, Limitations of Computers, Primary and secondarymemory, Input and output devices; Computer languages: Machine language, assembly language, higher level

language, 4GL. Introduction to Compiler, Interpreter, Assembler, System Softwares, Application Softwares

Unit II

Operating System: Features of Windows, Linux, Macintosh, Android. Open source softwares: concept and examples.

Word Processing software: different formats for saving a word document, creating, editing documents and related operations, formatting features and related operations, spelling and grammar checker, headers and footers, creating and managing tables; printing, macros, mail merge, equation editor.

Unit III

Spreadsheet Software: Workbook, worksheets, data types, operators, cell formats, freeze panes, editing features, formatting features, creating formulas, using formulas, cellreferences.

Presentation Graphics Software: Templates, views, formatting slide, slides with graphs, animation, using special features, presenting slide shows.

Unit IV

Overview of LaTeX; Google docs- usage and creating a document, Google sheets- usage and creating a sheet, Google slides- usage and creating slides, Google forms- usage and creating a form, Google sites- usage and creating a simple site.

Unit V

Computer Problem Solving: Algorithms, Efficiency and analysis of algorithms, Writing algorithms for simple problems like factorial computation, generation of Fibonacci sequence and checking for prime number; Examples of unsolved problems in Computer Science.

Suggested Readings:

1. P.K Sinha, “Computer Fundamentals”, 2004
2. Rajaraman, Fundamentals of Computers, Fourth edition, Prentice Hall India Pvt. Limited, 2006
3. Peter Norton, “Introduction to Computers”,4th Edition, TMH Ltd, New Delhi, 2017.
4. R.G. Dromey,”How to solve it by Computers”, Pearson Publishers, New Delhi, 2007.

CO1. Demonstrate knowledge on C Programming constructs learn to develop simple applications in C using basic constructs.

CO2. Design and implement applications using arrays and string.

CO3. Develop and implement modular applications in C using functions.

CO4. Develop applications in C using structures and pointers.

CO5.Design applications using sequential and random-access file processing.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	3	3	3	2	2					2	3	3	3	3

CO2	2	3	2	3	3	2				1	3	3	2	3
CO3	3	2	3	2	3	2	2		1	3	3	3	3	3
CO4	3	3	3	2	3	3				2	3	3	3	2
CO5	2	3	3	3	3	2					3	2	3	3

SUBJECT NAME: - Communicative English

SUBJECT CODE: - BCA-107

Syllabus:

BCA-107
Communicative English

English Grammar: Use of Articles, Prepositions & Tenses.
Communication: Oral Communication, Conversions, Business Letter, Pronunciation & Transcription of Words.
Presentation Skills: Precise Writing, Essay Writing, Presentations skills related to Seminars & Conferences.

Suggested Books:
Wrien, P.C & Martin. H. "English Grammar & Composition". S. Chand.
T.Seth, Agrawal " The Art of English Grammer & Composition", Ratan Prakashan, Agra. Sinha, K.K, Business Communication", Galgotia. W.E. Allien, "Living English Structure" "Business Communication", Irwin McGraw Hill.

Course Outcomes	Program Outcomes												PSO		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2	PSO3
CO1								3		3		3			2
CO2								3	2	3		3			2
CO3								3	2	3		3			2
CO4								3		3		3			2
CO5								3		3		3			2

SUBJECT NAME: - DATA STRUCTURE

SUBJECT CODE: - BCA-102

BCA 102 Data Structure

Module – I Introduction to data structures: storage structure for arrays, sparse matrices, Stacks and Queues: representation and application. Linked lists: Single linked lists, linked list representation of stacks and Queues. Operations on polynomials, Double linked list, circular list.
Module – II Dynamic storage management-garbage collection and compaction, infix to post fix conversion, postfix expression evaluation. Trees: Tree terminology, Binary tree, Binary search tree, General tree, B+ tree, AVL Tree, Complete Binary Tree representation, Tree traversals, operation on Binary tree-expression Manipulation.
Module –III Graphs: Graph terminology, Representation of graphs, path matrix, BFS (breadth first search), DFS (depth first search), topological sorting, Warshall's algorithm (shortest path algorithm.) Sorting and Searching techniques – Bubble sort, selection sort, Insertion sort, Quick sort, merge sort, Heap sort, Radix sort. Linear and binary search methods, Hashing techniques and hash functions.
Text Books: 1. Gilberg and Forouzan: "Data Structure- A Pseudo code approach with C" by Thomson publication 2. "Data structure in C" by Tanenbaum, PHI publication / Pearson publication. 3. Pai: "Data Structures & Algorithms; Concepts, Techniques & Algorithms "Tata McGraw Hill.
Reference Books: 1. "Fundamentals of data structure in C" Horowitz, Sahani & Freed, Computer Science Press. 2. "Fundamental of Data Structure" (Schaums Series) Tata-McGraw-Hil

Course Outcomes:

CO1: Ability to analyse algorithms and algorithm correctness.

CO2: Ability to summarize searching and sorting techniques.

CO3: Ability to describe stack, queue and linked list operation.

CO4: Ability to have knowledge of tree and graphs concepts.

Course Outcome	**Program Outcome**												**PSO**	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	3	3	2	1		2					2	3	2
CO2	3	3	3	2	1		2					2	3	2
CO3	3	3	3	2	2		2					2	3	2
CO4	3	3	3	2	2							2	3	2
CO5	3	3	3	2	2							2	3	

SUBJECT NAME: - COMPUTER NETWORK

SUBJECT CODE: - BCA-104

BCA 104- Computer Network

1. Basics of Computer Network

Define computer network, identifying basic networking elements and describing roles of Clients, Server, Peers, and Transmission Media & Protocols Network Services: File, print, Message, Database Application Identifying Differences bet. Centralized & distributed network architecture Identifying appropriate transmission media to meet a business need .Cable Media & Wireless Media, Network Connectivity devices, Modern repeaters, Hubs Bridges, Multiplexes and routers

2. OSI Layers

Identifying 7 Layers of OSI Physical Layer: Connection types used in Computer Network, Common Physical technologies used in computer
Network: BUS, Ring, Star, Cellular, Analog & Digital Signals, bandwidth
Data link Layer: Purpose of data link Layer, Switching Methods, Routing, Network layer connection
services, Bridging
Transport Layer: Purpose of transport layer, Address name resolution, Flow control, Error control
Session Layer: Purpose of Session Layer, Session Administration, Dialog control methods
Presentation Layer: Purpose of Presentation Layer, Application Layer: Purpose of Application Layer

3. TCP/IP Fundamentals

Identifying Network Classes, obtain register IP address, Domains, how Host name, host table and DNS work. Windows Internet naming services (WINS), Subnets, Subnets mask Assigning and managing IP subnets.

4. Network Operating System

Introduction to Windows XP /Vista and Windows 7 as desktop operating systems and
Sharing files and folders in Windows Network, Printing in Windows Network.
Introduction to Windows 2003 and windows 2008 as Network operating system ,Working with NDS Basics, Creating Users and Login scripts

Reference Books
Computer Networks Tanenbum
Local area Networks Keiser / D. Comer

TEXT BOOK:
T1. Behrouz A. Forouzan, Data Communication and Networking, TMH REFERENCE BOOK:
R1. Andrew Tanenbaum, Computer Networks, Pearson R2. Behrouz A .Forouzan, TCP/IP

Protocol Suite, TMH

Course Outcomes:

CO1: Students will be aware about computer networking.

CO2: Students will know about various layers of OSI Model.

CO3: Students will learn about wired & wireless technologies.

CO4: Students will learn about the services of different layers.

Course Outcomes	Program Outcomes												PSO	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	P1 0	P1 1	P1 2	PSO 1	PSO 2
CO1	3				3	1			3			3	3	3
CO2	3	2	3		3				3			3	3	3
CO3	3	2	3		3	2			3			3	3	3
CO4	3	2			3				3			3	3	3
CO5	3	2	3	3	3				3			3	3	3

SUBJECT NAME: - OOPs through C++

SUBJECT CODE: - BCA-106

Syllabus:

Unit-I: Principles of Object Oriented Programming

Differences between C and C++.A look at procedure Oriented programming, object oriented programming paradigm, basic concepts of OOP, Benefits of OOP, OO languages, A sample program, structure of C++ program. Introduction to OOPS: The origins of C++, What is Object Oriented Programming?, Some C++ fundamentals, Headers & Name Spaces, Introducing C++ Classes, Function overloading, Operator overloading, Inheritance, Constructors & Destructors, Function & Operator Overloading:

Unit-II: Overloading

constructor functions, Localizing variables, Function overloading & Ambiguity, Finding the address of an overloaded function, this Pointer, Operator overloading, References, Using reference to overload a unary operator, Overloading, overriding, Applying operator overloading.

Unit-III: Inheritance, Virtual Functions and polymorphism

Inheritance and the access specifies, Constructors and Destructors in derived classes, Multiple Inheritance, Passing parameters to a basic class, Pointers and references to derived types, Virtual Functions, Why virtual functions?, Pure virtual functions and abstract types, Early Vs Late binding.

Unit-IV: Static & Dynamic memory allocation

Static & Dynamic allocation using new and delete, static class members, Virtual base classes, const member functions and mutable, volatile member functions, Using the as keyword, linkage specification, The .* and ->* operators, Creating conversion functions, Copy constructors, Granting access, namespaces, Explicit constructors, type name and export.

Unit-V: Templates

Class templates, class templates with multiple parameters, function templates, function templates with multiple parameters.

Unit-VI: Exceptions Handling

Exception Handling, fundamentals, options the uncaught exception ( ), Applying exception Handling, and RTTI, casting operators, Recent trends in Object Oriented Programming in C++ , Advanced topics & its Application.

Course Outcomes:

CO1: Able to develop programs with reusability.

CO2: Develop programs for file handling.

CO3: Handle exceptions in programming.

CO4: Develop applications for a range of problems using OOP techniques.

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	P1 0	P1 1	P1 2	PSO 1	PSO 2
CO 1	3	2	2									3		2
CO 2	3	2	2									3		2
CO 3	3	3	2									2		3

CO 4	3	3	3	2	2	1			2		2	3	2	2
CO 5	3											2		2

SUBJECT NAME: - Basic Physics

SUBJECT CODE: - BCA-108

Syllabus:

1. Units and Dimensions 1.1 Need of Measurement in engineering and science, unit of a physical quantities - fundamental and derived units, systems of units (FPS, CGS and SI units)

1.2 Dimensions and dimensional formulae of physical quantities.

1.3 Principle of homogeneity of dimensions

1.4 Dimensional equations and their applications, conversion of numerical values of physical quantities from one system of units into another, checking the correctness of physical equations and deriving relations among various physical quantities

1.5 Limitations of dimensional analysis

1.6 Error in measurement, accuracy and precision of instruments, random and systematic errors, absolute error, relative error, and percentage error, Estimation of probable errors in the results of measurement (combination of errors in addition, subtraction, multiplication, division and powers), rules for representing significant figures in calculation.

2. Force and Motion 2.1 Scalar and vector quantities – examples, representation of vector, types of vectors

2.2 Addition and Subtraction of Vectors, Triangle and Parallelogram law (Statement only), Scalar and Vector Product.

2.3 Resolution of Vectors and its application to lawn roller.

2.4 Force, Momentum, Statement and Derivation of Conservation of linear momentum, its applications such as recoil of gun.

2.5 Impulse and its Applications

1.1 Circular motion (Uniform and Non-uniform), definition of angular displacement, angular velocity, angular acceleration, frequency, time period.

1.2 Relation between linear and angular velocity, linear acceleration and angular acceleration (related numerical)

1.3 Central force, Expression and Applications of Centripetal and centrifugal forces with examples such as banking of roads and bending of cyclist, Principle of centrifuge.

1.4 Application of various forces in lifts, cranes, large steam engines and turbines

2. Work, Power and Energy 2.1 Work: and its units, examples of zero work, positive work and negative work, conservative and non-conservative force,

2.2 Friction: modern concept, types, laws of limiting friction, Coefficient of friction and its Engineering Applications.

2.3 Work done in moving an object on horizontal and inclined plane for rough and plane surfaces with its applications

2.4 Energy and its units: Kinetic energy and potential energy with examples and their derivation, work energy theorem.

2.5 Principle of conservation of mechanical energy for freely falling bodies, examples of transformation of energy.

2.6 Power and its units, calculation of power in numerical problems

2.7 Application of Friction in brake system of moving vehicles, bicycle, scooter, car trains etc.

4 Rotational Motion 4.1 Concept of translatory and rotatory motions with examples

4.2 Definition of torque with examples Angular momentum, Conservation of angular momentum (quantitative) and its examples

4.3 Moment of inertia and its physical significance, radius of gyration for rigid body, Theorems of parallel and perpendicular axes (statements only), Moment of inertia of rod, disc, ring and sphere (hollow and solid) (Formulae only). Concept of Fly wheel.

4.4 Rotational kinetic energy, Rolling of sphere on the slant plane,

4.5 Comparison of linear motion and rotational motion.

4.6 Application of rotational motions in transport vehicles, and machines

5 Motion of planets and satellites 5.1 Gravitational force, Kepler’s law of planetary motion,

5.2 Acceleration due gravity and its variation,

5.3 Gravitational Potential and Gravitational potential energy,

5.4 Motion of satellite, orbital velocity and time period of satellite, Total energy and Binding energy of a satellite, Escape energy and escape velocity,

5.5 Types of satellites, Geo-stationary satellite, semi-synchronous, polar satellite (concept only) and their uses in science and technology,

5.6 Concept of Black Holes,

6. Properties of Matter 6.1 Elasticity: definition of stress and strain, different types of modulii of elasticity, Hooke's law, significance of stress strain curve

6.2 Pressure: definition, its units, atmospheric pressure, gauge pressure, absolute pressure, Fortin's Barometer and its applications

7.1 Surface tension: concept, its units, angle of contact, Capillary action and determination of surface tension from capillary rise method, applications of surface tension, effect of temperature and impurity on surface tension

7.2 Viscosity and coefficient of viscosity: Terminal velocity, Stoke's law and effect of temperature on viscosity, application in hydraulic systems.

7.3 Concept of fluid motion, stream line and turbulent flow, Reynold's number Equation of continuity, Bernoulli's Theorem and their

Course Outcomes:

CO1: Understand and apply Maxwell's equations, which describe the fundamental laws of electromagnetism, including Gauss's law for electricity, Gauss's law for magnetism, Faraday's law of electromagnetic induction, and Ampère's law with Maxwell's addition.

CO2: Understand, apply, and manipulate Maxwell's equations to describe and analyze electromagnetic phenomena in both static and dynamic situations.

CO3: Understand and describe the impact of solid-state device capabilities and limitation on electronic circuit performance.

CO4: Understand the concepts of X-Rays and Ultrasonics.

CO5: Understand the basic concepts such as Nuclear Detectors, Characteristics of gas filled detectors and properties of Ionization chamber, proportional counter, G. M. Counter and Scintillation Counter.

Course Outcomes	Program Outcomes												PSO	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	3	2	2		1			3				3	3	3
CO2	3	2	1		1			3	2			3	3	3

CO3	3	2	2		1		2	3	1		3	3	3	3
CO4	3	2	1		1		2	3	2			3	3	3
CO5	3	2	3		1			3	2		3	3	3	3

SUBJECT NAME: - Operating System

SUBJECT CODE: - BCA-201

Syllabus:

Unit-I: Introduction

Evolution of OS, Types of OS, Basic h/w support necessary for modern operating systems, services provided by OS, system programs and system calls, system design and implementation.

Unit-II: File Systems

File systems: File concept, Access methods, Disk space management and space allocation strategies, directory structures, Recovery, Log-structured File System, disk arm scheduling strategies.

Unit-III: Process And Its Scheduling

Process concept, process control block, Types of scheduler, context switch, threads, multithreading model, goals of scheduling and different scheduling algorithms.

Unit-IV: Memory Management

Contiguous allocation, Relocation, Paging, Segmentation, Segmentation with paging, demand paging , Virtual Memory Concepts, page faults and instruction restart , page replacement algorithms , working sets ,Locality of reference, Thrashing, Garbage Collection.

Unit-V: Process management and synchronization

Concurrency conditions, Critical section problem, software and hardware solution, semaphores, conditional critical regions and monitors, classical inter process communication problems

Unit-VI: Deadlocks detection & avoidance

Deadlock definitions, Prevention, Avoidance, detection and Recovery, Goals of Protection, access matrix, Deadlock implementation.

Text Books:

1. Operating System concepts – Silberchatz & Galvin, Addison Wesley, 6th Edn.

2. Modern Operating Systems – Tanenbaum, Pearson Edn. 2ndedn.

Course Outcomes:

CO1. Identify the role of Operating System. To understand the design of control unit.

CO2. Understanding CPU Scheduling, Synchronization, Deadlock Handling and Comparing CPU Scheduling Algorithms. Solve Deadlock Detection Problems.

CO3. Describe the role of paging, segmentation and virtual memory in operating systems.

CO4. Description of protection and security and also the Comparison of UNIX and Windows based OS.

CO5. Defining I/O systems, Device Management Policies and Secondary Storage Structure and Evaluation of various Disk Scheduling Algorithms.

Course Outcome	Program Outcome												PSO			
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4
CO1	3	3	2	3	1	2	1		2	2	1	2	3	3	2	2
CO2	3	3	3	3	2	2	1		1	1	1	1	3	3	2	2
CO3	3	3	3	3	3	2	2		2	2	2	2	3	3	2	2
CO4	3	3	3	3	3	2	2		2	1	1	1	3	2	2	1
CO5	3	2	1	1	3	3	2		1	1	1	2	3	2	3	2

SUBJECT NAME: - Software Engineering

SUBJECT CODE: - BCA-203

Syllabus:

UNIT – I

Introduction to Software Engineering: Definitions - Size Factors - Quality and Productivity Factors – Managerial Issues - Planning a software project : Defining the problem - Developing a Solution Strategy - Planning the
Development Process - Planning an Organization structure - Other Planning Activities.

UNIT – II

Software Cost Estimation: Software cost factors - Software Cost Estimation Techniques – Staffing level Estimation- Estimating Software Maintenance Costs - The Software Requirements, Specification - Formal Specification Techniques - Languages and Processors for Requirements Specification.

UNIT – III

Software design: Fundamental Design Concepts - Modules and Modularization Criteria – Design Notations -Design Techniques - Detailed Design Considerations - Real-Time and Distributed System Design - Test Plans - Milestones, walkthroughs, and Inspections.

UNIT – IV

Implementation issues: Structured Coding Techniques - Coding Style - Standards and Guidelines – documentation guidelines -Type Checking - Scoping Rules - Concurrency Mechanisms.

UNIT – V

Quality Assurance - Walkthroughs and Inspections - Static Analysis - Symbolic Execution – Unit Testing and debugging - System Testing - Formal Verification: Enhancing Maintainability during Development – Managerial Aspects of Software Maintenance - Source Code Metrics – Other Maintenance Tools and Techniques.

Text / Reference Books:

1. R.Fairley, Software Engineering Concepts, Tata McGraw-Hill, 1997.
2. R.S. Pressman, Software Engineering, Fourth Ed., McGraw Hill, 1997.
3. Software Engineering, H. Sommervill Ian , Addition Wesley Pub. Co.
4. Software Engineering: An object Oriented Perspective by Braude, E.J., Willey, 2001

Course Outcomes:

CO 1. How to apply the software engineering lifecycle by demonstrating competence in communication, planning, analysis, design, construction, and deployment.

CO 2. An ability to work in one or more significant application domains.

CO 3. Work as an individual and as part of a multidisciplinary team to develop and deliver quality software.

CO 4. Demonstrate an understanding of and apply current theories, models, and techniques that provide a basis for the software lifecycle.

CO 5. Demonstrate an ability to use the techniques and tools necessary for engineering practice.

Course Outcomes	Program Outcomes												PSO	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	P10	P11	P12	PSO 1	PSO 2
CO1	3	1	3	1								3	3	3
CO2	3								2			3	3	3
CO3	3								2			3	3	3
CO4	3	3	2	1								3	3	3
CO5	3	2	2	3								3	3	3

SUBJECT NAME: - Management Information System

SUBJECT CODE: - BCA-205

Syllabus:

Management Information System
Unit -I

Introduction to MIS, Function of MIS, Problems with MIS, Knowledge requirements for MIS(7 areas), Introduction to Information, Data Information & management, Information Classifications Definition: Data and Information, Data Characteristics.

Unit-II

What is Information? Functions performed by the information
Characteristics of information. Communication System, Information in an organization. System Concepts - Structure and elements, Objectives & types.

Unit-III

Planning and Planning terms, Objectives, Policies, Levels of Planning, and Planning Problems. Type and Sources of Planning Information tools of planning, Decision Making, Programmed and Non-Programmed decisions, Levels of Decision Making

Unit-IV

Concept of control in management, Control cycle, Different Feedback loops, Control in Organizations, Multiple control factors, Scope of management Control, Total Quality Control (TQC)
Total Quality Management (TQM)

Basic Text & Reference Books:-

1. Management Information Systems, T. Lucey, BPB Publication
2. Management Information Systems, WS Jawadekar
3. Management Information Systems, Kenneth C. Laudon, Jane P. Laudon
4. Management Information Systems, James A. O' Brien, George M. Markas
5. Management Information Systems, Ramesh Behl

Course Outcomes:

1. Understand basic concept and technologies used in the field of Management Information System.
2. Have the knowledge about the Information. And its role in the organization.
3. Have the knowledge of system, and its elements, objective and type.
4. Understand the importance of planning and decision making in an organization.

	Program Outcome	**PSO**

Course Outcome	1	2	3	4	5	6	7	8	9	10	11	12	1	2
CO1	3	1	1	1	3	2	2		1	2	1	2	3	2
CO2	3	1				2			3	1	2	3		
CO3	3	1	1				2			1		2		
CO4	2	3	3	2	3	2	2		2	3	2	3	3	2
CO5	3	2	2	2	3	3	3	2	3	2	3	3	3	3

SUBJECT NAME: - DIGITAL ELECTRONICS

SUBJECT CODE: - BCA-207

Syllabus:

Unit –I

Overview of electronics: Electronic Components-Resistor, capacitor and Inductors, Semiconductor devices: Diodes, transistors (BJT and FET). Integrated circuits, Popular IC packages, Analog vs digital electronics, Transistor as a switch.
Boolean algebra: Representation of values and complements, De'Morgans theorem-simplifying expressions.

Unit –II

Logic gates: AND, OR, NOT, XOR, XNOR, NAND, NOR gates and their truth tables, combining logic circuits for expressions using NAND and NOR gates, Logic circuit families and characteristics, SSI, MSI, LSI and VLSI circuits. Combinational and sequential circuits: (Simple block diagrams, truth tables and IC packages only required).
Adders, decoders, multiplexers, encoder circuits , Flip-flops: RS, clocked RS, JK, D and T flip flops, Master-slave flip flops, edge and level triggering, Multivibrators - A stable, Bistable, Monostable, counters-ripple and decade. Registers, latches and Tristate buffers.

Unit –III

Building blocks of a computer system: Basic building blocks-I/O, memory, ALU, Control and their interconnections, Control unit and its functions- Instruction-word, Instruction execution cycle, organizational sequence of operation of control registers; controlling of arithmetic operations; branch, skip, jump and shift instructions, ALU-its components.

Unit –IV

Addressing techniques and registers: Addressing Techniques-Direct, immediate addressing; paging, relative, Indirect and indexed addressing. Memory buffer register; accumulators; Registers-Indexed, General purpose, Special purpose; overflow, carry, shift, scratch registers; stack pointers; floating point; status information and buffer registers.

Unit –V

Memory: Main, RAM, static and Dynamic, ROM, EPROM, EAROM, EEPROM, Cache and Virtual memory.
Interconnecting System components: Buses, Interfacing buses, Bus formats-address, data and control, Interfacing keyboard, display, auxiliary storage devices, and printers. I/O cards in personal computers. Development of Indian Super Computer 'PARAM': History, Characteristics, Strengths, Weakness and basic Architecture.

Course Outcomes:

CO1: Identify and enumerate different electronic components.

CO2: Illustrate reduction of logical expressions using boolean algebra and implement the functions using logic gates. Design and analyse synchronous and asynchronous sequential circuits using flip-flops.

CO3: Design different types of with and without memory element digital electronic circuits for particular operation, within the realm of economic, performance, efficiency, user friendly and environmental constraints.

CO4: Assess the nomenclature and technology in the area of memory devices and apply the memory devices in different types of digital circuits for real world application.

CO5: Apply the fundamental knowledge of analog and digital electronics to get different types analog to digitalized signal and vice-versa converters in real world with different changing circumstances**.**

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	P1 0	P1 1	P1 2	PSO 1	PSO 2
CO 1	2											2		
CO 2	2	3		2	2		3		1	1	1	1		
CO 3	1	2	2	2	2	2		3		2		2		
CO 4		2		2		2		2			1			
CO 5	2		1	1	1		2	1	1	1	1	1		2

SUBJECT NAME: - Unix & Shell Programming

SUBJECT CODE: BCA-202

Syllabus:

Unit - I

Introduction: History, salient features, Unix system architecture, Unix command format, Unix internal and external commands, Directory commands, File related commands, Disk related commands, general utilities. Unix File System: Boot inode, super and data block, in-core structure, Directories, conversion of pathname to inode, inode to a new file, Disk block allocation. Process Management: Process state and data structures of a Process, User vs, kernel node, context of a Process, background processes, Process scheduling commands, Process terminating and examining commands.

Unit - II

Secondary Storage Management: Formatting, making file system, checking disk space, mountable file system, disk partitioning, file compression. Special Tools and Utilities: Filters, Stream editor SED and AWK, Unix system calls and library functions, Processes, signals and Interrupts, storage and compression facilities.

Unit - III

Shell Programming: vi editor, shell types, shell command line processing, shell script features, executing a shell script, system and user-defined variables, expr command, shell screen interface, read and Eco statement, command substitution, escape sequence characters, shell script arguments, positional parameters, test command, file test, string test, numeric test

Unit – IV

Conditional Control Structures-if statement, case statement Looping Control Structure-while, until, for, statements. Jumping Control Structures – break, continue, exit. Shell Programs covering the above concepts.

Unit – V

Unix System Communication: Introduction, write, read, wall commands, sending and handling mails. System Administration: Roles of a System Administrator, File System Maintenance, System Startup and Shutdown, User Management, Backup and Restore, Doemons, Domain Name System DNS, Distributed File System.

Course Outcomes:

CO 1. Documentation will demonstrate good organization and readability.

CO 2. File processing projects will require data organization, problem solving and research.

CO 3. Scripts and programs will demonstrate simple effective user interfaces.

CO 4. Scripts and programs will demonstrate effective use of structured programming.

CO 5. Scripts and programs will be accompanied by printed output demonstrating completion of a test

plan.

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	P1 0	P1 1	P1 2	PSO 1	PSO 2
CO 1	3	2	1									1		2
CO 2	3	2	1									1		2
CO 3	3	1	1									1		2
CO 4	3	1			1							1		2
CO 5	3		1									1		2

SUBJECT NAME: -Database Management System

SUBJECT CODE: - BCA-204

Syllabus:

Unit – I

Introduction to Databases and Transactions.What is database system, purpose of database system, view of data, relational databases, database architecture, transaction management.

Unit- II

Data Models The importance of data models, Basic building blocks, Business rules, The evolution of data models, Degrees of data abstraction.

Unit-III

Database Design ,ER-Diagram and Unified Modeling Language Database design and ER Model: overview, ER-Model, Constraints, ER-Diagrams, ERD
Issues, weak entity sets, Codd's rules, Relational Schemas, Introduction to UML
Relational database model: Logical view of data, keys, integrity rules.
Relational Database design: features of good relational database design, atomic domain and Normalization (1NF, 2NF, 3NF, BCNF).

Unit- IV

Relational Algebra and Calculus Relational algebra: introduction, Selection and projection, set operations, renaming, Joins, Division, syntax, semantics. Operators, grouping and ungrouping, relational comparison. Calculus: Tuple relational calculus, Domain relational Calculus, calculus vs algebra, computational capabilities.

Unit- V

Constraints, Views and SQL .What is constraints, types of constrains, Integrity constraints, Views: Introduction to views, data independence, security, updates on views, comparison between tables and views SQL: data definition, aggregate function, Null Values, nested sub queries, Joined relations. Triggers.

Unit-VI

Transaction management and Concurrency control
Transaction management: ACID properties, serializability and concurrency control, Lock based concurrency control (2PL, Deadlocks),Time stamping methods, optimistic methods, database recovery management

Course Outcomes:

CO 1. Describe the fundamental elements of relational database management systems.

CO 2. Explain the basic concepts of relational data model, entity-relationship model, relational database design, relational algebra and SQL.

CO 3. Design ER-models to represent simple database application scenarios

CO 4. Convert the ER-model to relational tables, populate relational database and formulate SQL queries on data.

CO 5. Improve the database design by normalization.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12	PSO1	PSO2
CO1	3										1	2		
CO2	3	2	3								2	2	3	3
CO3	3	3	3	2	2	1	1		2	1	2	2	2	2
CO4	3	2		1								1		
CO5	3		2									2	1	

SUBJECT NAME: - Data Communication

SUBJECT CODE: - BCA-206

Syllabus:

Introduction to data communication and networking: Why study data communication?, Data Communication, Networks,Protocols and Standards, Standards Organizations. Line Configuration, Topology, Transmission Modes, Categories of Networks Internet works

Study of OSI and TCP/IP protocol suite: The Model,Functions of the layers,TCP/IP Protocol Suites
Study of Signals: Analog and Digital, Periodic and A periodic Signals, Analog Signals, Time and Frequency Domains ,Composite Signals , Digital Signals
Study of Digital transmission: Digital to Digital Conversion, Analog to Digital Conversion
Study of Analog transmission: Digital to Analog Conversion, Analog to Analog Conversion
Study of Multiplexing: Many to one/one to Many, Frequency division Multiplexing, Wage division Multiplexing, Time division Multiplexing, Multiplexing applications
Types of transmission media: Guided Media, Unguided Media,
Transmission Impairments, Performance Wavelength , Shannon Capacity , Media Comparison, PSTN ,Switching Error Detection and Correction: Types of Errors, Detection, Parity Check, Vertical Redundancy Check Longitudinal Redundancy Check, Cyclic Redundancy Check, Checksum, Error Correction Study of DTE-DCE in brief: Digital data transmission, DTE-DCE Interface, Modems, 56K Modems , Cable Modems
Introduction to networks and devices: Network classes,Repeaters, Hub, Bridges , Switches,

Routers, Gateways Brouters Routing Algorithms, Distance Vector Routing , Link State Routing

Course Outcomes:

CO1: Understand the basics of data communication, networking, internet and their importance

CO2: Analyse the services and features of various protocol layers in data networks.

CO3: Differentiate wired and wireless computer networks

CO4: Analyse TCP/IP and their protocols.

CO5: Recognize the different internet devices and their functions.

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	P1 0	P1 1	P1 2	PSO 1	PSO 2
CO 1	3											2		
CO 2	3	2	3	2								3	2	2
CO 3	3	2	3	2								2	2	2
CO 4	2	3	3	3								2	2	1
CO 5	2											1		

SUBJECT NAME: - Programming in Python

SUBJECT CODE: - BCA-208

Syllabus:

Programming in Python

Unit I

Basics: Python Interpreter, writing code in Jupyter Notebook, Indentation, comments, importing a module, binary operators, standard scalar data types, type casting, if-else statements, loops(while, for), pass, range, ternary expressions.

Unit II

Data Structures and Sequences: Tuples, Lists and slicing, Built-in Sequence functions, Dictionary, Sets; List, Set, and Dict Comprehensions. Functions: Namespaces, Scope, and Local Functions; Returning Multiple Values.

Unit III

Functions: Anonymous (Lambda) Functions, Partial Argument Application, Generators. Objects and Methods in Python. NumPy: creating N-dimensional arrays, arithmetic with NumPy arrays, basic indexing and slicing, Pseudorandom number generation.

Unit IV

Pandas: Overview of Series and DataFrames, reading data from csv file, Data Frame operations-working with data using functions like head, tail t, info, shape, reshape, columns, isnull, dropna, mean, sum, describe, value_counts, corr, loc, iloc, apply.

Unit V

Matplotlib- plotting basic figures, subplots, line plots, bar plots, histograms, scatter plots. Overview of Scikit-learn, SciPy, networkx. Basic Errors and Exception handling. Basic File Handling. Applications of python.

Suggested Readings:

Course Outcomes:

CO1: Create your first program in Python IDLE

CO2: Implement OOPs concepts in your programming.

CO3: Use Arrays, and Data structures

CO4: Create an application with the support of graphics in Python.

CO5: Implement error handling.

Course Outcomes	Program Outcomes												PSO	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	P1 0	P1 1	P1 2	PSO 1	PSO 2
CO1	3	3	2	3	2			2			2	3	3	3

CO2	3	3	2		2			2			2	3	3	3
CO3	3	3	2		2			2			2	3	3	3
CO4	3	3	3	3	2			2			2	3	3	3
CO5	3	2	3	3	2			2	3		2	3	3	3

SUBJECT NAME: - Design & Analysis of Algorithm

SUBJECT CODE: BCA-301

Syllabus:

UNIT I

Introduction, Definition of Algorithm, Algorithm design techniques, Algorithm Analysis, performance analysis - space complexity, time complexity, Best, Worst, And average case complexity

UNIT I I

Divide and Conquer General method, Binary search, finding the maximum and minimum, merge sort, quick sort, performance measurement of quick sort, Selection, Strassen's matrix multiplication.

UNIT I I I

Greedy Algorithm General Characteristics of greedy algorithms, Problem solving using Greedy Algorithm - Knapsack problem, Minimum Spanning trees (Kruskal's algorithm, Prim's algorithm).

UNIT I V

Dynamic programming The general method, multistage graphs, all-pairs shortest path, Single source shortest path, 0/1 Knapsack problem, Traveling Sales person problem.

UNIT V

Basic traversal and search techniques - BFS and traversal, DFS and traversal, Bi-connected components and DFS, Backtracking General method, 8-queens problem, Sum of subsets problem, Graph coloring, Hamiltonian cycles

Book of study: 1. Ellis Horowitz, Sartaj Sahni, Sanguthevar Rajasekharan, Computer algorithms/C++,Second Edition, Universities Press.

References: 1. Anany Levitin- Introduction to design and analysis of algorithms, Third Edition, Addison Wesley Low price edition. 2. Richard Neapolitan & Kumarss Naimipour, Foundation of Algorithms using C++ Pseudocode, Third edition, Jones And Bartlett Publishers.

Course Outcomes:

CO1.Students will be introduced with algorithm.

CO2.Students will learn to design algorithms.

CO3.Students will learn to implement algorithm for coding.

CO4. Argue the correctness of algorithms using inductive proofs and invariants.

CO5. Analyze worst-case running times of algorithms using asymptotic analysis.

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	P1 0	P1 1	P1 2	PSO 1	PSO 2
CO 1	2	2	2	1	1							1	3	1
CO 2	2	1	1	1	1							1	1	1
CO 3	2	2	2	1	1							1	3	1
CO 4	2	2	2	1	1							1	3	1
CO 5	2	1	1	1	1							1	1	2

SUBJECT NAME: - Data warehousing &Mining

SUBJECT CODE: - BCA-303(b)ssa-I

Data warehouse: Introduction to Data warehouse, Difference between operational database systems and data warehouses, Data warehouse Characteristics, Data warehouse Architecture and its Components, Extraction-Transformation-Loading, Logical(Multi-Dimensional), Data Modeling, Schema Design, Star and Snow-Flake Schema, Fact Constellation, Fact Table, Fully Addictive, Semi-Addictive, Non Addictive Measures; Fact-Less-Facts, Dimension Table Characteristics; OLAP Cube, OLAP Operations, OLAP Server Architecture-ROLAP, MOLAP and HOLAP.

UNIT-II

Introduction: Fundamentals of data mining, Data Mining Functionalities, Classification of Data Mining systems, Data Mining Task Primitives, Integration of a Data Mining System with a Database or Data Warehouse System, Major issues in Data Mining. Data Preprocessing: Need for Preprocessing the Data, Data Cleaning, Data Integration &Transformation, Data Reduction, Discretization and Concept Hierarchy Generation.

UNIT-III

Association Rules: Problem Definition, Frequent Item Set Generation, The APRIORI Principle, Support and Confidence Measures, Association Rule Generation; APRIOIRI Algorithm, The Partition Algorithms, FP-Growth Algorithms, Compact Representation of Frequent Item Set-Maximal Frequent Item Set, Closed Frequent Item Set.

UNIT-IV

Classification: Problem Definition, General Approaches to solving a classification problem, Evaluation of Classifiers , Classification techniques, Decision Trees-Decision tree Construction, Methods for Expressing attribute test conditions, Measures for Selecting the Best Split, Algorithm for Decision tree Induction ; Naive-Bayes Classifier, Bayesian Belief Networks; K- Nearest neighbor classification-Algorithm and Characteristics.Prediction: Accuracy and Error measures, Evaluating the accuracy of classifier or a predictor, Ensemble Methods

UNIT-V

Clustering: Clustering Overview, A Categorization of Major Clustering Methods, Partitioning Methods, Hierarchical Methods, , Partitioning Clustering-K-Means Algorithm, PAM Algorithm; Hierarchical Clustering-Agglomerative Methods and divisive methods, Basic Agglomerative Hierarchical Clustering
Algorithm, Key Issues in Hierarchical Clustering, Strengths and Weakness, Outlier Detection.

TEXT BOOKS:

1) Data Mining- Concepts and -1.chniques- Jiawei Han, Micheline Kamber, Morgan Kaufmann Publishers, Elsevier, 2 Edition, 2006.
2) Introduction to Data Mining, Psng-Ning Tan, Vipin Kumar, Michael Steinbanch, Pearson Educatior.

REFERENCE BOOKS:

1) Data Mining Techniques, Arun KPujari, 3rd Edition, Universities Press.
2) Data Warehousing Fundament's, Pualraj Ponnaiah, Wiley Student Edition.

Course Outcomes:

CO 1 Understand the functionality of the various data mining and data warehousing component.

CO 2. Appreciate the strengths and limitations of various data mining and data warehousing models.

CO 3. Explain the analyzing techniques of various data.

CO 4. Describe different methodologies used in data mining and data ware housing.

CO 5. Compare different approaches of data ware housing and data mining with various technologies.

Course Outcomes	Program Outcomes												PSO	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	P1 0	P1 1	P1 2	PSO 1	PSO 2
CO1	3	3	2		3				3			3	3	2
CO2	3	3	3	2	3				3			3	3	3
CO3	3	3	2	2	3				3			3	3	2
CO4	3	3	2	2	3				3			3	3	2
CO5	3	3	3	2	3				3		3	3	3	3

SUBJECT NAME: - Java Programming

SUBJECT CODE: -BCA-305

Syllabus:

Unit I

Introduction to java: evolution, features, comparison with C and C++; Java program structure; tokens, keywords, constants, variables, data types, type casting, statements, Operators and Expression; Conditional Statements and Loop Statements.

Unit II

Class: syntax, instance variable, class variables, methods, constructors, overloading of constructors and methods. Arrays, Strings and Vectors.

Unit - III

Inheritance: types of inheritance, use of super, method overriding, final class, abstract class, wrapper classes. Interface, Packages and visibility controls.

Unit - IV
Errors and Exceptions: Types of errors, Exception classes, Exception handling in java, use of try, catch, finally, throw and throws. Taking user input, Command line arguments.
Multithreaded Programming: Creating Threads, Life cycle of thread, Thread priority, Thread synchronization, Inter-thread communication, Implementing the Runable Interface;

Unit - V
Swings : Classes, Working With JFrame Windows, Working With Graphics, Working With Colour, Adding And Removing Controls, Responding To Controls, Labels, Buttons, Checkbox, Checkbox Group, Choice Control, Lists, Text Field, Text Area. Menus, Dialog Box, Handling Events.

Course Outcomes:

CO 1. Learn to apply object-oriented programming features and concepts for solving given

problem.

CO2. Learn to use java standard API library to write complex programs.

CO 3. Learn implementation of object-oriented programming concepts using java

CO 4. Able to develop interactive programs using applets and swings.

CO 5. Develop advanced skills for programming in Java.

Course Outcomes	Program Outcomes												PSO	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	P1 0	P1 1	P1 2	PSO 1	PSO 2
CO1	3	3	3						3			3	3	
CO2	3	2	3	2	2				3			3	3	3
CO3	3	1	3	2	2				3			3	3	3
CO4	3	1	3	2	2				3			3	3	3
CO5	3	3	3	2	2				3			3	3	3

SUBJECT NAME: - Organizational Behaviour

SUBJECT CODE: -BCA-307

Course Outcomes:

CO 1. Demonstrate knowledge and skills in the logical foundations of informatics, data representation, models, structures and informatics-centric management.

CO 2. Document experience of their participation in professional organizations that promote responsible computing and service to society.

CO 3. Demonstrate a personal learning strategy for continuing education and lifelong learning that is independent of employer sponsorship.

CO 4. Define terms and explain basic principles, concepts and theories from another domain or discipline in which IT resources will be deployed.

CO 5. Evaluate how legal and ethical technology issues impact business activities including such areas as data access, privacy, confidentiality, security, and intellectual property standards and policies..

Course Outcomes	Program Outcomes												PSO	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	P1 0	P1 1	P1 2	PSO 1	PSO 2
CO1	3	2										3	3	3

CO2	3							2			2	3	3	3
CO3	3	2						2				3	3	3
CO4	3										2	3	3	3
CO5	3	2						1				3	3	3

SUBJECT NAME: - Machine Learning

SUBJECT CODE: -BCA-302

Syllabus:

UNIT I

INTRODUCTION TO MACHINE LEARNING: Machine Learning basic concepts, Perspectives and Issues in Machine Learning, Types of Machine Learning, supervised – unsupervised – reinforcement, Data Representations: Data representation, Numerical representation, Graph representation, Applications of Machine Learning.

UNIT II

SUPERVISED LEARNING: Nearest-Neighbours, Decision Trees, Naïve Bayes, Linear classification, univariate linear regression, multivariate linear regression, regularized regression, Logistic regression, Support Vector Machines, Nonlinearity and Kernel Methods.

UNIT III

UNSUPERVISED LEARNING: Clustering: K-means, Kernel K-means, Cluster analysis, Vector Quantization, Self-Organizing Feature Map, Association Rule Mining: Apriority algorithms

UNIT IV

TECHNIQUES AND APPLICATIONS: Scalable Machine Learning, Introduction to Bayesian Learning and Inference, Recent trends in various learning techniques of machine learning and classification methods.

Text Books/Reference Books

1. Kevin Murphy," Machine Learning: A Probabilistic Perspective", MIT Press, 2012
2. Trevor Hastie, Robert Tibshirani, Jerome Friedman, "The Elements of Statistical Learning", Springer 2009 (freely available online)
3.Ethem Alpaydin, ―Introduction to Machine Learning 3e (Adaptive Computation and Machine Learning Series)‖, Third Edition, MIT Press, 2014
4.Tom M Mitchell, ―Machine Learning‖, First Edition, McGraw Hil Education

Course Outcomes:

CO1. Develop mathematical thinking and problem-solving skills associated with research and writing proofs.

CO2 Get exposure to a wide variety of mathematical concepts used in computer science discipline like probability.

CO3 Use Graph Theory for solving problems.

CO4 Acquire basic knowledge of sampling and estimation.

CO5 Understand basic concepts of hypothesis.

Course Outcomes	Program Outcomes												PSO	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	P1 0	P1 1	P1 2	PSO 1	PSO 2
CO1	3		2	2								3	3	
CO2	3	3		3								3	3	3
CO3	3	3										3	3	2
CO4	3	3	3	1					3			3	3	2
CO5	3	3	3	2	3				3			3	3	3

SUBJECT NAME: - (WEB & INTERNET TECHNOLOGY (Elective Paper)

SUBJECT CODE: -BCA-304(a)

Syllabus:

Unit-I: Introduction to Internet

Internet, Growth of Internet, Owners of the Internet, Anatomy of Internet, ARPANET and Internet history of the World Wide Web, basic Internet Terminology, Net etiquette. Internet Applications – Commerce on the Internet, Governance on the Internet, Impact of Internet on Society – Crime on/through the Internet.

Unit-II: TCP/IP – Internet Technology and Protocol

Packet switching technology, Internet Protocols: TCP/IP, Router, Internet Addressing Scheme: Machine Addressing (IP address), E-mail Addresses, Resources Addresses

Unit-III: Internet Connectivity

Connectivity types: level one, level two and level three connectivity, Setting up a connection: hardware requirement, selection of a modem, software requirement, modem configuration, Internet accounts by ISP: Telephone line options, Protocol options, Service options, Telephone

line options – Dialup connections through the telephone system, dedicated connections through the telephone system, ISDN, Protocol options – Shell, SLIP, PPP, Service options – E-mail, WWW, News Firewall etc.

Unit-IV: Internet Network and Services

Network definition, Common terminologies: LAN, WAN, Node, Host, Workstation, bandwidth, Interoperability, Network administrator, network security, Network Components: Severs, Clients, Communication Media, Types of network: Peer to Peer, Clients Server, Addressing in Internet: DNS, Domain Name and their organization, understanding the Internet Protocol Address. Network topologies: Bust, star and ring, Ethernet, FDDI, ATM and Intranet.

Unit-V:

Electronic Mail, Web Publishing and Browsing

Email Networks and Servers, Email protocols –SMTP, POP3, IMAp4, MIME6, Structure of an Email – Email Address, Email Header, Body and Attachments, Email Clients: Netscape mail Clients, Outlook Express, Web based E-mail. Email encryption- Address Book, Signature File. Search and Meta Search Engines, WWW, Browser, HTTP, Publishing Tools

Course Outcomes:

CO 1. Students will be familiar with Internet.

CO 2. Students will be familiar with different protocols of internet.

CO 3. Students will learn different services of internet.

CO 4. Analyze a web page and identify its elements and attributes.

CO 5. Students will learn HTML, CSS, JAVA Scripts for web designing.

Course Outcomes	Program Outcomes												PSO	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	P10	P11	P12	PSO 1	PSO 2
CO1	3					2			1			3	3	
CO2	3		2	2					3			3	3	3
CO3	3		2	2		1			3			3	3	3
CO4	3	3			2				3			3	3	2
CO5	3	3	3	2	2				3			3	3	3

SUBJECT NAME: - Artificial Intelligence

SUBJECT CODE: - BCA-306(a)

Syllabus:

Unit-I: Introduction

Introduction: Aim and objective of AI, AI problems, AI technique, Production system Characteristics, Basics of problem solving: problem representation paradigms defining problem as a state space representation. Intelligent Agents, Performance Measure, Rationality, Structure of Agents, Problem solving agents, Problem Formulation.

Unit-II: Search Techniques

Search Techniques: Uninformed Search Strategies Problem size, complexity, approximation and search; depth, breadth and best search; Informed Heuristic Based Search: Informed (Heuristic) Search and Exploration, Greedy best first search, Memory bounded heuristic search, Heuristic functions, inventing admissible heuristic functions, Hill climbing, best-first search, branch and bound And OR Graph: A* algorithm and AO* Algorithm. Simulated Annealing, Online search.

Unit-III: A.I Problems

Constraint Satisfaction Problems, Backtracking Search, variable and value ordering, constraint propagation, intelligent backtracking, local search for CSPs, Adversarial Search, Games, The minimax algorithm, Alpha-Beta pruning, Imperfect Real-Time Decisions, Games that include an Element of Chance

Unit-IV Structured Knowledge Representation

Structured Knowledge Representation: Semantic Nets, Frames, and Scripts. Learning: Block architecture of learning system, Types of learning, performance Measures First order logic, Unification, and Resolution in Predicate Logic Uncertainty Treatment: formal and empirical approaches including Exact and Approximate inference in Bayesian Networks, Bayesian theory, belief functions, certainty factors

Unit-V: Inference Techniques

Inference Techniques: Types of reasoning deductive, inductive, abductive, analogical, common-sense and non-monotonic, types of inference forward and backward chaining, inference using full joint distributions, fuzzy logic.Recent advances in Artificial Intelligence, Algorithms for artificial intelligence, Genetic algorithms. Tools for development of Artificial Intelligence: Open Neural network library. Applications of artificial Intelligence.

Course Outcomes:

CO 1. Design user interfaces to improve human–AI interaction and real-time decision-making.

CO 2. Evaluate the advantages, disadvantages, challenges, and ramifications of human–AI augmentation.

CO 3. Design and develop symbiotic human–AI systems that balance the information processing power of computational systems with human intelligence and decision making.

CO 4. Explain the benefits, limitations, and tradeoffs of designing engaging and ethical conversational user interactions, including those supported by chatbots, smart speakers, and other AI-driven, voice- based technologies.

CO 5. Design and evaluate conversational interfaces for different users and contexts of use.

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	P10	P11	P12	PSO	PSO	PSO
CO 1	3	2	3	2	2						3	2	2	3	1
CO 2	2	3	2												
CO 3	3		3	2	3	1					2	2	3	3	3
CO 4		3												3	2
CO 5			3	2	3									2	3

Alabbar School of Management

Program: Masters of Business Administration (Two Years Course)

2021-23

Programme Educational Objective (PEO)

Programme Outcomes (POs)

Programme Specific Outcomes (PSOs)

Course Outcomes (COs)



RAFFLES UNIVERSITY,
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7.2	CO - PO Mapping	
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MASTERS OF BUSINESS ADMINISTRATION (M.B.A)- 2 Years

1. Vision

To educate and inspire capable and competent leaders with a futuristic business acumen & entrepreneurial spirit.

2. Mission

To equip the students of school of commerce & management with the ability to explore, examine, think critically and develop professional skills to become responsible global leaders who can contribute meaningfully to the industry and society through excellence in learning and practice-oriented research.

3. Program Educational Objectives

PEO1: To acquire the contemporary knowledge of the Business Concepts and their application in problem solving.

PEO2: To develop and apply different tools for decision making required for solving complex managerial problems with a passion to innovate.

PEO3: To develop the leaders who are able to adapt to the needs of the domestic and global Business requirements.

4. Programme Outcomes (POs)

After completing the program students will be able to

PO1: Exhibit memory of previously learned management knowledge by recalling facts, terms, basic concepts and answers.

PO2: Demonstrate understanding of management facts and ideas by organizing, comparing, translating, interpreting, giving descriptions and stating main ideas.

PO3: Explain contemporary management issues and their implications in real life situations.

PO4: Identify solutions to the problems relating to new situations by applying acquired knowledge, facts, techniques and rules in a different way.

PO5: Apply effective strategies to solve future problems and constraints, and devise feasible solutions.

PO6: Utilize the knowledge of statistics, accounting, finance, marketing and HR for devising effective business models,

PO7: Analyze and break information into parts by identifying motives or causes. Make interfaces and find evidence to support generalizations.

PO8: Appraise techniques, skills and latest management tools to meet the competition,

PO9: Present and defend opinions clearly and effectively in the corporate and business world,

PO10: Develop the right social, ethical and legal knowledge and value systems to become responsible citizens of the country.

PO11: Create innovative strategies in their chosen field of specialization like Finance, HR, Operations and Marketing.

PO12: Engage in a lifelong learning process

5. Programme Specific Outcomes (PSOs):

After completing the program students will be able to:

- **PSO 1: Demonstrate** effective leadership skills and **build** the ability to face the challenges of corporate world.
- **PSO 2: Develop** judgements about information, validity of ideas, or quality of work based on a set of criteria,
- **PSO 3: Improve** their competency in working with and managing multi-disciplinary teams.

	FIRST SEMESTER							
SL NO	COURSE CODE	COURSE	CREDIT PATTERN L:T:P	TOTAL CREDITS	EXAMINATION MARKS			
					MT	IA	ETE	TOTAL
1	MGTM-101	Principles of Management	4:0:0	4	20	40	40	100
2	MGTM-102	Managerial Economics	4:0:0	4	20	40	40	100
3	MGTM-103	Accounting for Managers	4:0:0	4	20	40	40	100
4	MGTM-104	Business Communication	4:0:0	4	20	40	40	100
5	MGTM-105	Information Technology for Managers	3:0:2	4	20	40	40	100
6	MGTM-106	Quantitative Techniques for Managers	4:0:0	4	20	40	40	100
7	MGTM-107	Organizational Behaviour	4:0:0	4	20	40	40	100
TOTAL				28				700

MT- MID TERM
IA-INTERNAL ASSESSMENT
ETE- END TERM EXAM

L-Lecture, T-Tutorial, P-Practical

COURSE OUTCOMES (COs):

Course	Course outcomes: - After completion of these courses' students should be able to
Semester - I	
Principles of Management	**CO1:** Define the nature of management and the planning and decision making. **CO2:** Develop the knowledge and capacities related to management concepts **CO3:** Apply the concepts Organizing, Directing, Leadership, Co-ordination and Controlling in the different organizational situations. **CO4:** Analyze employee's behavior, from a corporate, Dynamism. **CO5:** Evaluate Directing, Leadership, Co-ordination and Controlling.
Managerial Economics	**CO1:** Understand the application of modern economic concepts, tools and techniques in valuating business decisions taken by a firm. **CO2:** Identify needs of businessman to locate various factors affecting demand and supply of his product and plan marketing & business strategies accordingly. **CO3:** Apply the concepts and economic theories for practical use in business decision making. **CO4:** Compare and contrast the causes of inflation and deflation; National Income, business cycle, fiscal and monetary policy and plan accordingly to overcome the challenges. **CO5:** Evaluate the principals of Economics in Managerial Decision Making.
Accounting for Managers	**CO1:** Describe the accounting principles and standards and rules. **CO2:** Interpret the business transactions for making the summery for final accounting purpose. **CO3:** Prepare the financial statement of an organization. **CO4:** Identify various costs and apply techniques of costing. **CO5:** Prepare cost sheet and cost accounts and apply the concept of standards costing.
Business Communication	**CO1:** Find how development of the students' ability to think critically, reason through a problem. **CO2:** Explain & develop a cogent argument or explanation for all types of daily communication. **CO3:** Identify & understand the need of effective communication & apply requires clarity of thought, ability to listen intentionally and deliver messages in the most optimal way. **CO4:** Categorise the communication skills for variety of communication activities like discussion, presentation, task – based activities, such as group work, task work. **CO5:** Evaluating the learnings of the students about how to communicate

	effectively.
Information Technology for Managers	**CO1:** Define the basic concepts of information technology and their applications to business processes. **CO2:** Explain the Basic Framework of Information Technology & its Security. **CO3:** Apply the Practical aspect of MS Excel usage. Using practical of MS Excel **CO4:** Make use of various Functions of information technology for reporting purpose. **CO5:** Prioritize the data and information required for decision making.
Quantitative Techniques for Managers	**CO1:** Define data and various data collection techniques, which will enable them to make evidence based decisions. **CO2**: Apply the various Statistical tools & techniques in field. **CO3:** Construct a research design. **CO4:** Analyse the primary and secondary data for arriving at a conclusive decision. **CO5:** Decide the use of suitable statistical tools and techniques to assist in managerial decision making.
Organizational Behavior	**CO1:** Define the various behavioural aspects when working in an organization at any level. **CO2**: Explain the implications of individual and group behaviour in organizational Context. **CO3:** Identify the components of individual and group behaviour at various work, situations and apply behavioral techniques. **CO4:** Analyse & implement the importance of attitude, values, beliefs, assumptions and Motivation & to make aware about dynamic nature of groups in the organisation. **CO5:** Apply and create good organization culture and manage cultural diversity.

Mapping: Semester – I

MGTM-101	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	-	2	2	3	3	1	2	3	-	1	3
CO2	3	2	3	3	3	1	2	3	1	2	3	3
CO3	2	3	1	2	-	3	3	3	3	3	2	3
CO4	3	3	3	1	2	2	2	-	2	3	3	3
CO5	-	1	-	2	3	1	1	3	-	3	2	-

MGTM-102	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	3	3	2	2	2	2	-	2	-	3
CO2	3	3	2	3	3	-	2	2	2	-	2	3
CO3	2	3	2	2	3	2	-	1	-	-	-	3
CO4	3	2	3	3	2	2	-	2	1	-	-	3
CO5	3	3	3	3	2	3	2	3	2	2	2	3

MGTM-103	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	3	2	2	1	2	2	-	2	2
CO2	2	2	2	-	2	3	2	2	2	-	-	3
CO3	2	2	3	3	3	2	2	-	-	-	2	2
CO4	3	3	1	2	1	2	2	-	-	2	2	3
CO5	3	3	2	3	3	2	3	2	3	-	2	3

MGTM-104	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		2	2		3		2	3				3
CO2	3	2		3			3	3	2			3
CO3	3	3		2		3			3	3	3	3
CO4	2	3	3		3			3	3	2	3	3
CO5	3	3	3	3			3			3		

MGTM-105	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	1	2		2		2	2	2	2	3
CO2	3	2	3	3	2	3	2		2	3	3	3
CO3	2		2	2		3	2	2	3	2	2	3
CO4	1	2	2	2	2	2		2	2		2	3
CO5	3	3	2	3	3	2	3	3	2		3	3

MGTM-106	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	1	2	-	2	1	3	2	3	2	1	3
CO2	3	3	1	2	1	3	3	3		3	2	3
CO3	2	2	3	3	2	3	1	3	3	-	3	3
CO4	2	2	3	2	2	-	3		2	3	3	3
CO5	3	3	3	3	3	3	3	3	3	3	3	3

MGTM-107	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		3	2	2		3	2		2	2	2	3
CO2	2		3		3	2		3		3	2	3
CO3	2	2		3	2		3	2	3	1		3
CO4		2	2	2		2	2		2		2	3
CO5	3	3	3	3	3	3	3	3	3	3	3	3

	SECOND SEMESTER							
SL NO	COURSE CODE	COURSE	CREDIT PATTERN L:T:P	TOTAL CREDITS	EXAMINATION MARKS			
					MT	IA	ETE	TOTAL
1	MGTM-201	Business Environment	4:0:0	4	20	40	40	100
2	MGTM-202	Research Methodology	3:0:2	4	20	40	40	100
3	MGTM-203	Human Resource Management	4:0:0	4	20	40	40	100
4	MGTM-204	Corporate Finance	4:0:0	4	20	40	40	100
5	MGTM-205	Marketing Management	4:0:0	4	20	40	40	100
6	MGTM-206	Operations Management	4:0:0	4	20	40	40	100
7	MGTM-207	International Business	4:0:0	4	20	40	40	100
TOTAL				28				700

MT- MID TERM
IA-INTERNAL ASSESSMENT
ETE- END TERM EXAM

L-Lecture, T-Tutorial, P-Practical

Course	Course outcomes: - After completion of these courses' students should be able to
Semester - II	
Business Environment	**CO1:** Define various laws & force, explain regulatory measures governing business operations in India. **CO2:** Identify the latest developments in business Environment. **CO3:** Examine Political and Legal environment, Social and Cultural Environment, Technological environment and Competitive Environment **CO4:** Determine International Environment, evaluate the complexities of business environment and their impact on business & to analyze the relationship between Government and business and understand the Political, Economic, legal and social policies of the country. **CO5:** Evaluate the student's cognizance about the concepts of business environment and its application practically.
Research Methodology	**CO1:** Understand the research process, tools and techniques in order to facilitate managerial decision-making. **CO2:** Explain the basic concepts of research methods and its usefulness in business situations. **CO3:** Apply research design, sample design and sampling methods & apply appropriate methods for data collection for research work by implementation of statistical tools for data analysis and interpretation for business decision making. **CO4:** Discover the analytical abilities and research skills with hands on experience and learning in Business Research. **CO5:** Interpret the various research methods and its usefulness in real business situations.
Human Resource Management	**CO1:** Define the concepts, methods and techniques and issues involved in managing human resource. **CO2:** Understand the concept of Managing Human Resources and work situations. **CO3:** Apply the effective Human Resources and working environment of the organizations, the importance of Management; Training, performance appraisal. **CO4:** Analyse the need of employing, maintaining and promoting a motivated force in an organization. **CO5:** Impart knowledge on Industrial Relations- Trade unions, Grievance Management, Contemporary Issues in HRM and Strategic Issues confronting IR.

Corporate Finance	**CO1:** Define the concepts, vital tools and techniques applicable for financial decision making by a business firm. **CO2:** Explain the functions of Finance in organization and methods in managing funds for business **CO3:** Apply the concepts of budgeting, working capital, cost of capital including the choice of source of funds. **CO4:** Analyse the practical problems relating to the financing of funds including pricing and dividend theories. **CO5:** Select the methods and techniques for analysing the data for financial decision making.
Marketing Management	**CO1:** Relate the concepts, philosophies, processes and techniques of Marketing Management to real operations of a firm. **CO2:** Interpret & relate the fundamental concepts & practices from business perspective in the organisation. **CO3:** Make use of various opportunities available in various sectors in the field of marketing management & apply the concepts related to market research. **CO4:** Analyse the consumer buying behavioural process & take part in the process of developing new product & market segmentation. **CO5:** Evaluate various marketing campaigns and could decide on effective strategies.
Operations Management	**CO1:** Define the basic concepts and theories of the production management & comprehend the operations management situations with greater confidence. **CO2:** Understand the strategic significance of Production & Operation management. **CO3:** Understand quality management and the evolution of practice; assess the relationship between quality and capability, and betweenquality and competitiveness; **CO4:** Apply Planning, Scheduling and Control of Production and Operations Management functions in both manufacturing and Services. **CO5:** Analyse the effectiveness of operations by job & work design, process design, layout design, design & control system.
International Business	**CO1:** Define the concepts of international business management. **CO2:** Explain the scope of international business creating awareness about international finance decisions and impact on operations. **CO3:** Identify basics of WTO, SRC& different investment theories from the perspective of a business manager. **CO4:** Analyse & inform the Modes of Entry in international market, Marketing mix, Factors affecting Decisions for International Business & define the Finance aspects of International Business, Capital Movement, Risk in international operations, international investment, Financing for foreign trade. **CO5:** Evaluate the learning of the students about the various aspects of the international business concepts.

Mapping: Semester – II

MGTM-201	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		2		2	3		2		2		3	3
CO2	3		2	2	3	2		2	3	2		3
CO3	2	3	1	1		3	2	2	3	2	2	3
CO4	2	2	2		3	3	2	2		3	3	3
CO5	2	3	3	3		1	3	3				

MGTM-202	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	1	-	3	2	3	2	2	1	2	2	2
CO2	2	2	3	1	1	-	-	-	2	-	2	2
CO3	3	3	2	3	3	2	-	3	-	-	2	3
CO4	2	2	1	1	2	2	2	-	-	2	-	3
CO5	3	3	2	2	3	3	2	3	3	3	3	3

MGTM-203	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	2		2	2	2		3	2	3
CO2	2	2	3	2	2	3	3	3	3	3	3	2
CO3	3	2	3	1	3	2	2		2	2	2	2
CO4	2			3	3	1	3	3	3	2	2	2
CO5		3	2	2	1	2		2	3	1		

MGTM-204	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	2	2	2	2	2			3	3
CO2	2	2	2	2	3		2	2	3	3	2	3
CO3	1		2	2	3	3	3		2		2	3
CO4			2	2	3	2		2			2	3
CO5	3	3	3	3	3	3	3	3	3	3	3	3

MGTM-205	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3	3	2	3	-	-	3	2	2	3
CO2	2	2	2	3	3	3	3	2	2	-	2	3
CO3	2	3	3	-	3	2	3	3	3	3	3	3
CO4	2	-	2	3	2	2	2	3	-	3	3	3
CO5	3	3	2	2	2	2	3	2	3	2	2	3

MGTM-206	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	2	-	2	2	2	-	3	2	3
CO2	-	2	3	2	2	3	3	3	3	3	3	2
CO3	3	2	3	1	3	2	2	-	2	2	2	2
CO4	2	-	-	3	3	1	3	3	3	2	2	2
CO5	3	2	1	3	3	1	2	3	3	3	2	2

MGTM-207	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	-	-	-	-	2	-	2	2	-	2
CO2	-	2	2	3	-	-	-	2	2	2	2	-
CO3	-	-	2	-	-	3	2	-	1	-	1	2
CO4	2	1	-	-	3	1	-	2	1	-	2	-
CO5	3	3	3	3	3	3	3	3	3	3	3	3

	THIRD SEMESTER							
SL NO	COURSE CODE	COURSE	CREDIT PATTERN L:T:P	TOTAL CREDITS	EXAMINATION MARKS			
					MT	IA	ETE	TOTAL
1	MGTM-301	Management Information System	4:0:0	4	20	40	40	100
2	MGTM-302	Legal Aspects of Business	4:0:0	4	20	40	40	100
3	MGTM-303	Business Strategy	1:0:2	4	20	40	40	100
4		Elective-I	4:0:0	4	20	40	40	100
5		Elective-II	4:0:0	4	20	40	40	100
6		Elective-III	4:0:0	4	20	40	40	100
7	MGTM-304	Summer Internship/ Project (PAP/PCP)		4			100	100
TOTAL				28				700

MT- MID TERM
IA-INTERNAL ASSESSMENT
ETE- END TERM EXAM

L-Lecture, T-Tutorial, P-Practical

Total credit = 114

Specialization electives for III semester:

Specialization Area	Elective	Specialization paper
Marketing	MGTM-301M	Retail Management
	MGTM-302M	Consumer Behaviour
	MGTM-303M	Marketing Research
Human Resource	MGTM-301H	Human Resource Planning & Development
	MGTM-302H	Compensation Management
	MGTM-303H	Management Training & Development
Finance	MGTM-301F	Security Analysis & Portfolio Management
	MGTM-302F	Financial Markets and Institutions
	MGTM-303F	Financial Services
Production & Operations	MGTM-301P	Production and Operation Management
	MGTM-302P	Procurement Management
	MGTM-303P	Material Management
International Business	MGTM-301I	International Economics
	MGTM-302I	International Business Laws
	MGTM-303I	International Marketing

Course	Course outcomes: - After completion of these courses' students should be able to
Semester – III	
Management Information System	**CO1:** Explain the Information Systems used in Business. **CO2:** Make use of design, development, and security of Management Information System & its utility. **CO3:** Classify the ethical and social issues in using information system. **CO4:** Compile the utility of Decision Support System. **CO5:** Prioritise the use and analysis of data and information for decision making.
Legal Aspects of Business	**CO1:** Relate the rights and liabilities of a person based on the contract under Indian contract Act, Companies Act, 2013, **CO2:** Explain the utility of negotiable instrument Act and Partnership Act with new concept of limited liability partnership. **CO3:** Develop with case law studies related to Business Laws, labor laws. **CO4:** Analyse and define the concept of business law, its application and source. Rights of customers and seller under Sale of Goods Act, different provisions. Negotiable instruments Act and Partnership Act etc. **CO5:** Evaluate the major law enactments in India.
Business Strategy	**CO1:** Define & understand of the Business Strategy process in a dynamic and Competitive global environment. **CO2:** Explain the growing importance of strategies in uncertain business Environment & learn the unique challenges faced by firms in competitive environment. **CO3:** Identify the applicability of various Strategies in varied situations & also in general and competitive business environments. **CO4:** Examine how to resolve cases through strategic decision making, & the use strategic management concepts and techniques. **CO5:** Evaluate the understanding of the students about the application of various strategic models through different business perspectives.

Retail Management	**CO1:** The student will be able to systematically approach personal selling and sales targets **CO2:** The student will be able to explain the basics of retail store management **CO3:** The student will be able to systematically choose a location and layout of the store **CO4:** The student will be able to explain the concepts related to merchandise management **CO5:** Relate store management and visual merchandising practices for effective retailing
Consumer Behaviour	**CO1:** Understand environmental variables affecting consumer behavior **CO2:** Explain the process of consumer behavior, the various external and internal factors that influence consumer behaviour and to apply this understanding to the development of marketing strategy. **CO3:** Utilize the knowledge of consumer decision making process and its applications in marketing function of firms & examine influence of social class, group dynamics on consumer behavior. **CO4:** Create consumer-oriented marketing strategies & correlate the impact ofpersonality, perception, learning, motivation and attitude to the choices consumers make. **CO5:** Create an ability to strategize and execute marketing strategies as per thepreferences of customers.
Security Analysis and Portfolio Management	**CO1:** Remember the basics of financial market of India, focused on the Stock Market (Capital Market), various theories of portfolio, risk-return concepts and behavioural finance. **CO2:** Understand the various investment & revenues & to understand the functions and importance of Indian security market. **CO3:** Apply the concepts of TVM (Time Value of Money) concepts and calculations; including future value of a present sum, present value, and present and future values of annuities to management decision making. **CO4:** Analyse and predict the trend of stock price movement & design portfolioof investment to reduce risk and earn profit & interpret the evidence relating to market efficiency. **CO5:** Formulate the portfolio and evaluate the performance with revision if required.
Summer Internship andReport	**CO1:** Understand the real-time working of organizations. **CO2:** Demonstrate professional knowledge, skills and attitude along with the experience needed to constitute a successful career. **CO3:** Analyse career opportunities in their areas of interest. **CO4:** Build aptitude for gaining supervised professional experiences. **CO5:** Create a clear understanding of industry trends and advancements.

Management Training & Development	**CO1:** Demonstrate their conceptual Skills in understanding benefits of training, training need assessment and compare training and development. **CO2:** Demonstrate conceptual Skills and application of designing training programme and apply the same to business situations. **CO3:** Demonstrate their conceptual Skills in various training techniques and methods and to analyze target audience to identify typical style and needs. **CO4:** Demonstrate conceptual understanding of evaluation of training. 5. **CO5:** Demonstrate the ability in applying the training and development concepts learnt to analyze a case let
Financial Services	**CO1:** The Student will be acquainted to various Banking and Non-Banking financial services in India. **CO2:** The Student will understand the activities of Merchant Banking and credit rating. **CO3:** The Student will be equipped to understand micro financing and other financial services in India. **CO4:** The Student will understand how to evaluate and compare leasing & hire purchase. **CO5:** The students will be able to understand the mutual funds functioning.

international marketing	**CO1:** The students aware about the challenges of positioning the same product or service indifferent cultural markets. **CO2:** The students will demonstrate their conceptual knowledge of Pricing decisions andproduct & services in international marketing. **CO3:** To demonstrate their conceptual skill of analyzing global marketing channels,distribution and logistics management. **CO4:** To anticipate problems and take proactive steps.
Material Management	**CO1:** Explain the scope of materials and spare parts management in an organization. **CO2:** Explain the key characteristics of the purchasing system. **CO3:** Apply the policies of Inventory Management and Develop overall materials requirement plan. **CO4**: Explain the ERP System for Materials management. **CO5:** Understand the importance of warehouse and supplier development in materials management.
Production and operation Management	**CO1** To identify the elements of operations management and various transformation processesto enhance productivity and competitiveness. Explain the techniques of location and facility planning. **CO2** To Analyze and Make use of various methods of work study, method study and work measurement. **CO3** To define and examine the materials management function starting from demand management through Inventory Management. **CO4** Apply various Statistical Quality Control tools including the analysis of various Quality costs and quality circles. Explain the concept of TQM.

International Economics	**CO1.** Identify the basics of international economics, difference between inter-regional and international trade, understand how international economics has helped countries to acquire goods at cheaper cost and explain it through the various international trade theories. **CO2.** Show the benefits of international trade in a way how nations with strong international trade have become prosperous and have the power to control world economy and how global trade can be one of the major contributors of reducing poverty. **CO3.** Explain how restrictions to international trade would limit a nation in the services and goods produced within its territories and at the same time explain that a rise in international trade is essential for the growth of globalization. **CO4.** Show the importance of maintaining equilibrium in the balance of payments and suggests suitable measures to correct disequilibrium as well. **CO5.** Be aware of trade policy and the changes in the composition as well as direction of foreign trade after international trade and know the causes and effects of deficits in the balance of payments, measures adopted to correct the deficits and identify the need for having trade reforms.

Human Resource Planning & Development	**CO1:** To understand the various concepts, principles, importance of Human Resource Management for an organization. **CO2:** To design a Human Resource Plan for an organization and construct its Selection Process **CO3:** To develop a job analysis and produce a job description and job specification for a given job profile. **CO4:** To evaluate/justify the applicability of various techniques of Training **CO5:** To identify the performance appraisal process, Job evaluation, Compensation factors and explain the utility of various methods involved in it.

Mapping: Semester – III

MGTM-301	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2		2		3	2	3	2	3
CO2	3	2	3	3	2	3	2		2	3	3	3
CO3	2		2	2		3	2	2	3	2	2	3
CO4	2	2	2	2	2	2		2	2		2	3
CO5	3		3	3		3			3	3	3	3

MGTM-302	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	3		2	2	2		3	2	3
CO2		3	3	2	2	3	3	3	3	3	3	2
CO3	3	3	3	2	3	3	2		3	2	2	2
CO4	2			3	3	1	3	3	3	2	2	2
CO5	1	2	1		2		1	1	2		2	2

MGTM-303	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2		2			2	1	2	2			
CO2		2	1	3	1				2	2		
CO3				2	2			2	1		2	2
CO4		2		1			2	2	1			2
CO5	3	3	3	3	3	3	3	3	3	3	3	3

MGTM-301M	PO1	PO2	PO3	PO4	PO5
CO1		3			
CO2	3				
CO3			3		
CO4				3	
CO5					2

MGTM-302M	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	3	3	2	3	2	2	3	3
CO2	1	-	2	-	-	1	-	2	3	3	2	2
CO3	-	2	2	2	3	-	3	2	-	3	-	-
CO4	-	2	2	2	-	3	2	-	3	-	3	-
CO5	-	2	2	2	-	3	2	-	3	-	3	3

MGTM-301F	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	-	2	-	2	-	2	1	-	1	1	3

CO2	-	1	3	-	2	2	2	2	2	-	3	3
CO3	2	2	3	2	-	-	-	3	2	2	-	3
CO4	2	2	1	3	3	-	3	2	-	1	2	3
CO5	3	3	2	3	2	3	3	2	3	2	3	3

MGTM-304	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	3	3	2	3	3	3	2	2	2	2
CO2	-	3	3	2	1	-	1	2	1	-	2	-
CO3	1	1	2	3	3	-	2	-	-	2	3	1
CO4	1	1	2	1	-	2	3	3	2	1	1	1
CO5	2	2	3	1	-	2	3	3	2	1	2	1

MGTM-303H	PO1	PO2	PO3	PO4	PO5
CO1	3				
CO2		3			
CO3		2		3	
CO4					
CO5					2

MGTM-303F	PO1	PO2	PO3	PO4	PO5
CO1	3	1			
CO2	3		2		3
CO3	3		2		3
CO4	3				3
CO5	3				3

MGTM-303I	PO1	PO2	PO3	PO4	PO5
CO1	3				
CO2		3			2
CO3			3		
CO4		3			

MGTM-303P	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3	3	3			3
CO2	3	3	3	2		3
CO3	3	3				3
CO4	3	3	3			3
CO5	3	3	3			3

MGTM-301P	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1					3				3		3	3
CO2	3		3	3	2	-			2	-		
CO3			2		3	-		-	-	2		3
CO4	3		2		-							
CO5	2			3	-							3

MGTM-303I	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	3	3	2	2	2	2	-	2	-	3
CO2	3	3	2	3	3	-	2	2	2	-	2	3
CO3	2	3	2	2	3	2	-	1	-	-	-	3
CO4	3	2	3	3	2	2	-	2	1	-	-	3
CO5	3	3	3	3	2	3	2	3	2	2	2	3

MGTM-301H	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	2		2	2	2		3	2	3
CO2	2	2	3	2	2	3	3	3	3	3	3	2
CO3	3	2	3	1	3	2	2		2	2	2	2
CO4	2			3	3	1	3	3	3	2	2	2
CO5		3	2	2	1	2		2	3	1		

	FOURTH SEMESTER							
SL NO	**COURSE CODE**	**COURSE**	**CREDIT PATTERN L:T:P**	**TOTAL CREDITS**	**EXAMINATION MARKS**			
					MT	**IA**	**ETE**	**TOTAL**
1	MGTM-401	Project Management	4:0:0	4	20	40	40	100
2	MGTM-402	Entrepreneurship	4:0:0	4	20	40	40	100
3	MGTM-403	Business Ethics	4:0:0	4	20	40	40	100
4		Elective-IV	4:0:0	4	20	40	40	100
5		Elective-V	4:0:0	4	20	40	40	100
6		Elective-VI	4:0:0	4	20	40	40	100
7	MGTM-404	Research Project		6			100	100
TOTAL				30				700

MT- MID TERM
IA-INTERNAL ASSESSMENT
ETE- END TERM EXAM

L-Lecture, T-Tutorial, P-Practical

Specialization electives for IV Semester:

Specialization Area	Elective	Specialization paper
Marketing	MGTM-404M	Sales & Distribution Management
	MGTM-405M	Brand Management
	MGTM-406M	Digital Marketing
Human Resource	MGTM-404H	Labour Law
	MGTM-405H	Industrial Relations
	MGTM-406H	Performance Appraisal and Evaluation
Finance	MGTM-404F	Financial Derivatives and Risk Management
	MGTM-405F	Corporate Tax Planning
	MGTM-406F	International Finance Management
Production & Operations	MGTM-404P	Total Quality Management & Six Sigma
	MGTM-405P	Process Management and Consultancy
	MGTM-406P	Enterprise Resource Planning
International Business	MGTM-404I	Global Brand Strategy
	MGTM-405I	International Business Operations and Logistics
	MGTM-406I	Export Import Procedures & Documentation

Course	Course outcomes: - After completion of these courses' students should be able to
Semester – IV	
Project Management	**CO1:** Demonstrate an understanding of various phases of Project Management i.e. planningas well as implementing **CO2:** Demonstrate the use of various tools available for Risk analysis in Capital budgeting to measure the financial feasibility of the project. **CO3:** Demonstrate an understanding of various means of project financing and their meritsand demerits **CO4:** Demonstrate a systematic project implementation and review
Entrepreneurship	**CO1:** Define how to search financing alternatives for specific new concepts /idea of being an entrepreneur. **CO2:** Develop Entrepreneurship Skills by explaining different stories of some leading entrepreneurs are and develop competences are needed to become an entrepreneur. **CO3:** Apply 3S Model: Stimulate Sustain and Support so that a spirit of Entrepreneurship & explain about Management of Small Family Business. **CO4:** Analyse management function of a company with special reference to SME sector, start–ups and Entrepreneurship along with government subsidies available to them & also understand the role of entrepreneurship in the economic development. **CO5:** Analyze the entrepreneurial skills within individual by correlating the concepts & models taught.
Business Ethics	**CO1:** Find about business ethics, emerging trends in good governance practicesand corporate social responsibility in the global and Indian context. **CO2:** Explain the significance of ethics and ethical practices in businesses which are indispensable for progress of a country & recite the applicability of ethics in functional areas of management. **CO3:** Identify the emerging need and growing importance of effective governance by the management of organizations. **CO4:** Analyse ethical issues related to business and suitable corporate governance necessary for long term survival of business by applying integrates contemporary Ethics in business. **CO5:** Evaluate the learning of various business ethics concepts that can be applied in the business models and decisions.

Sales and Distribution Management	**CO1:** Find the necessary skills and knowledge needed to manage sales force, distribution management. **CO2:** Relate the theoretical concepts of sales and distribution to real working infield. **CO3:** Apply sales forecasting methods, sales budgeting techniques and methodsto manage selling expenses. **CO4:** Analyse personal selling strategies and will be able to function as a team member in sales meetings & could build relationship with its team members. **CO5:** Choose appropriate selling strategies in professional life.
DigitalMarketing	**CO1:** Define the importance of the digital marketing for marketing success. **CO2:** Demonstrate customer relationships across all digital channels and buildbetter customer relationships. **CO3:** Identify a digital marketing plan, starting from the SWOT analysis anddefining a target group. **CO4:** Classify digital channels, their advantages and limitations, to perceivingways of their integration taking into consideration the available budget. **CO5:** Propose different ways of their integration taking into consideration theavailable budget.
Financial Derivatives and Risk Management	**CO1:** The students will understand the mechanism of forwards/futures, options, financialswaps, commodity derivative. **CO2:** The students will assess the application of derivative instruments using numericalproblems **CO3:** The students will suggest and make better decisions for their company in riskmanagement. **CO4:** The students will become more curious to research on the new developments that aretaking place in business environment
International Financial Management	**CO1:** The student will be able to demonstrate a better understanding of international trade. **CO2:** The students will be able to learn about current exchange rate regime, functioning offoreign exchange markets and various participants. **CO3:** The students will be able to demonstrate with managing firm's exposure to risk. **CO4:** The students will be able to demonstrate with currency trading and swaps.
Global Brand Strategy	**CO1:** Identify the steps in brand building **CO2:** Use techniques for brand positioning **CO3:** Measure and interpret brand performance **CO4:** Design and implement brand strategies **CO5:**Analyze and suggest solutions for brand problems

Performance appraisal & Evaluation	**CO1:** Define the of issues related to the performance evaluation or rewarding Human Resources in the Corporate Sector, public services and other forms of organizations. **CO2:** Understand the importance of performance appraisal and informed them of how organizations manage performance. **CO3:** Apply the skills for handling the issues relating to not only appraising staff but also managing their performance. **CO4:** Analyse the skills in designing, analyzing and restructuring compensationpackages related systems, policies and strategies. **CO5:** Evaluate the strategic role of HR in executing compensation packages for business excellence
Industrial Relation	**CO1:** Learners will recognize the concept of performance management in organizations. **CO2:** Learners will realize the Industrial Disputes and its related concepts. **CO3:** Learners will aspire about the Trade Union, Collective Bargaining and Worker's Participation in Management. **CO4**: Learners will comprehend Employee Discipline, Grievance Handling and also Industrial Related Laws in India.
International Business Operations and Logistics	**CO 1:** The students will be able to identify and define the Meaning, Nature, importance and types of International Business. **CO 2:** It will make the students able to understand the International business environment and the theories related to it. **CO 3:** It will make the students able to analyse the Modes of Entry in international market, Marketing Mix, Factors Affecting Decision For International Business. **CO 4:** The students will be able to evaluate the trends in International Trade and Documentation
Total Quality Management and Six Sigma	**CO1:** Evaluate the principles of quality management and to explain how these principles can be applied within quality management systems. **CO2:** Evaluate the performance measures using various quality and management tools **CO3:** Apply the Quality Function Deployment, Taguchi principles, Total Productive Maintenance and Failure Mode and Effect Analysis concepts to solve industrial problems. **CO4:** Practice the various quality system in industry.

Enterprise Resource Planning	**CO1:** Analyze concepts of Business Functions, Business Model and Business Processes. **CO2:** Evaluate various benefits and risks in the Implementation of ERP **CO3:** Asses the need for ERP applications in a business function and recommend a right package. **CO4**: Create implementation Methodology while identifying the resources for the implementation process.
Research Project	**CO1:** Understand the relevance of learned concepts and its applicability in real-life corporate environment. **CO2:** Apply his learning of subjects in writing the dissertation report on theproblem undertaken for study. **CO3:** Analyse & prepare tabulation for the data collected. **CO4:** formulate the analysis and interpretation of data & also know about itscorrect presentation to use in professional manner. **CO5:** Create the logical and critical skills for correctly analysing the industrialprogress.

Mapping: Semester – IV

MGTM-401	PO1	PO2	PO3	PO4	PO5
CO1	3				
CO2	3				2
CO3	3			3	
CO4	3				1
CO5	3				2

MGTM-402	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	2	3	2	1	3		1	1	2	2	2
CO2	1	3	2	3		3	3	2	2	3	3	2
CO3	3	2	3	1	3	2	3	3	2	2	2	3
CO4	2			3	3	1	3	3	2	2	2	2
CO5	3	1	1	3	3	1	3	2	3	2	2	2

MGTM-403	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	2	1		2	2					
CO2		2	2						3	2	2	2
CO3			2	2	3	2	2	3				
CO4					1		2	2	2	2		2
CO5	3	3	3	3	3	3	3	3	3	3	3	3

MGTM-404M	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	-	2	2	3	3	2	2	3	-	2	3
CO2	3	2	3	3	3	2	2	3	2	2	3	3
CO3	2	3	2	2	-	3	3	3	3	3	2	3
CO4	3	3	3	2	2	2	2	-	2	3	3	3
CO5	-	2	2	-	3	3	2	3	2	3	2	3

MGTM-406M	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	3		3			3	2	2		2
CO2	3		3	3		3	3	3	3		3	3
CO3		3		3		3			3	2	3	3
CO4	3	3	3	3				3	3	3	3	
CO5	2		2		3	3	3		3		3	3

MGTM-404F	PO1	PO2	PO3	PO4	PO5
CO1	3				
CO2			3	3	
CO3	2	3	2		
CO4	3		2		2

MGTM-406F	PO1	PO2	PO3	PO4	PO5
CO1	3				
CO2	3			3	
CO3	3				
CO4	3		1		
CO5		2	2		

MGTM-404I	PO1	PO2	PO3	PO4	PO5
CO1	3				
CO2		3			
CO3			3		
CO4				2	
CO5					1

MGTM-406H	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3		3		3		3	2	3	2		3
CO2		3		3	2	3	3	3		3	3	3
CO3	2	3	3	3		3		3	3		3	3
CO4	3	2	3	2	3	2	3		2	3	3	3
CO5	2	2	1	1	1	3		3	1	2	1	

MGTM-405H	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9
CO1	3		2		1				
CO2	2		2		2	1	1	1	2
CO3	2		3		1	1	1	2	2
CO4	2	2	2		1	2	2	2	1

MGTM-405I	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2	2	-	-	-	-	2	-	2	2	-	2
CO2	-	2	2	3	-	-	-	2	2	2	2	-
CO3	-	-	2	-	-	3	2	-	1	-	1	2
CO4	2	1	-	-	3	1	-	2	1	-	2	-
CO5	3	3	3	3	3	3	3	3	3	3	3	3

MGTM-404P	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	2					-					2
CO2	1	2				-	-			-		2
CO3	2	2	2			-						2
CO4	2	2	2	2	-	-	-					2

MGTM-406P	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	2		2	2	2		3	2	3
CO2	2	2	3	2	2	3	3	3	3	3	3	2
CO3	3	2	3	1	3	2	2		2	2	2	2
CO4	2			3	3	1	3	3	3	2	2	2

MGTM 404	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	1	3	-	2	2	2	2	2
CO2	-	2	-	2	2	-	-	2	2	-	2	-
CO3	2	-	1	3	2	-	3	3	-	2	3	2
CO4	2	3	2	-	-	-	-	-	2	2	2	3
CO5	3	3	3	3	3	3	3	3	3	3	3	3

MBA: Semester-I

Paper MGTM-101: PRINCIPLES OF MANAGEMENT

Duration: 3Hrs. **Marks: 100** **Credits: 4**

Objective

This module provides students with a wide-ranging introduction to management and understanding its key principles, concepts & theories and tools & techniques. The objective of this course is for each student to be able to know, comprehend, apply, analyze, synthesize and evaluate the basic principles of the fundamentals of managing organizations. Students will complete specific activities, as identified in the syllabus, related to each of the four functions of management: planning, organizing, leading and controlling.

Course Learning Outcomes

After completing the course, the student shall be able to:

CO1: Define the nature of management and the planning and decision making.

CO2: Develop the knowledge and capacities related to management concepts

CO3: Apply the concepts Organizing, Directing, Leadership, Co-ordination and Controlling in the different organizational situations.

CO4: Analyze employee's behavior, from a corporate, Dynamism.

CO5: Evaluate Directing, Leadership, Co-ordination and Controlling Course Contents.

Unit I: Evolution & Growth of Management Thought

Concepts, Theory and Practice: The Evolution of Management Thought – Scientific Management School, Behavioural School, Quantitative School, Integration School, Contemporary School, McKinsey's 7-S approach.

Unit II: Planning, Organizing & Direction

Planning- Nature, Purpose, Types & Process of Planning; Concept of MBO, MBE & MBWA.
Decision Making- Approaches, Decision Making under certainty, uncertainty & risk; Group Decision Making.
Organizing- Line/ Staff Authority, Decentralization & Delegation, Effective Organizing.
Direction- Supervision, Span of Supervision, Graicuna's Theory of Span of Management.

Unit III: Motivation, Control & Coordination

Motivation- elements, importance, methods, theories.
Controlling- Control Process, Importance, Critical Control Standards & Techniques, Maintenance Vs Crisis Management, Overall Control Process.
Coordination- Definition, Characteristics, Objectives, Techniques.

Unit IV: Modern approaches to Management

Concept of Knowledge management, change management, technology management, supply chain management, process and project quality standards – six sigma, CMM, CMMI, PCMM, Impact of IT quality management systems, learning organizations

Unit V: Contemporary Issues

Social Responsibility & Ethics,

Globalization & Management
Inventing & Reinventing Organizations
Culture & Multiculturalism

Recommended Books

- Koontz, Essentials of Management, Tata McGraw Hill
- L. M. Prasad: Principles of Management

Reference Books

- Robbins, De Cenzo, Bhattacharya and Agarwal, (2009): Fundamentals of Management- Essential Concepts & Applications 6e, India, Pearson
- Hellriegel, Jackson and Sloceum, (2008): Management- A Competency Based Approach 10e, India, South- Western Cengage Learning.
- Stoner, Freeman, Gilbert, Jr., (2006), Management 6e, India, Prentice- Hall
- Anil Bhat, Arya Kumar, Management Principles, Process and Practices, Oxford.

Note: Latest edition of readings may be used

Teaching Learning Process

Interactive class room sessions with the help of power point presentations, case discussions and group discussions to ensure active participation and continuous learning.

Assessment Methods

Class tests/Assignments, Class participation, Presentations, End-semester examination

Keywords

Principles of Management, Management Thoughts, Planning and Decision Making, Organizing and Directing, Controlling and Coordination, Contemporary Management Issues.

MBA: Semester-I

Paper MGTM-102: MANAGERIAL ECONOMICS

Duration: 3Hrs. **Marks: 100** **Credits: 4**

Objective

The basic objective of this course is to make the students aware of the various economic issues that they are expected to face as managers at the corporate level and to equip them with the tools and techniques of economic analysis for improving their decision-making skills.

Course Learning Outcomes

Upon successful completion of the course a student will be able to:

CO1: Understand the application of modern economic concepts, tools and techniques in valuating business decisions taken by a firm.

CO2: Identify needs of businessman to locate various factors affecting demand and supply of his product and plan marketing & business strategies accordingly.

CO3: Apply the concepts and economic theories for practical use in business decision making.

CO4: Compare and contrast the causes of inflation and deflation; National Income, business cycle, fiscal and monetary policy and plan accordingly to overcome the challenges.

CO5: Evaluate the principals of Economics in Managerial Decision Making.

Course Contents

Unit I: Introduction to Economics

Nature and Scope of Management Economics, Significance in decision-making and fundamental concepts. Objectives of a firm. Gap between theory and practice and role of managerial economist.

Unit II: Demand Analysis

Law of Demand, Exceptions to the law of Demand, Determinants of Demand. Elasticity of Demand- Price, Income, Cross and Advertising Elasticity; Uses of Elasticity of Demand for managerial decision making, measurement of Elasticity of Demand. Demand forecasting meaning, significance and methods.

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Unit III: Supply Analysis

Law of Supply, Supply Elasticity; Analysis and its uses for managerial decision making. Production concepts & analysis; Production function, single variable-law of variable proportion, two variable- Law of returns to scale. Cost concept and analysis, short-run and long-run cost curves and its managerial use.

Unit IV: Market Equilibrium and Average Revenue Concept. Market Structure

Perfect Competition, features, determination of price under perfect competition. Monopoly: Feature, pricing under monopoly, Price Discrimination. Monopolistic: Features, pricing under monopolistic competition, product differentiation. Oligopoly: Features, kinked demand curve, cartels, price leadership. Pricing Strategies; Price determination, full cost pricing, product line pricing, price skimming, penetration pricing.

Unit V: National Income

Concepts and various methods of its measurement, Inflation, types and causes, Business Cycle, Profit concept and major theories of profits; Dynamic Surplus theory, Risk & Uncertainty bearing theory and Innovation theory.

Recommended Book:

- Dwivedi D.N., Managerial Economics, Vikas Publication, 7th Edition.
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Reference Books:

- Paul A Samuelson, Economics, Mc-Graw Hill, 2011.
- Petersen, Jain, Managerial economics-4e, Prentice Hall.
- Mehta, P. L.; Managerial Economics, Sultan Chand & Sons., 2010.
- Peterson, Lewis; Managerial Economics, 4th Pearson Education, 2010.

Note: Latest edition of readings may be used

Teaching Learning Process

Interactive classroom sessions with the help of PowerPoint presentations, reflective assessment and case study discussions to ensure active participation and continuous learning.

Assessment Methods

The assessment method of this course is properly aligned with teaching learning processes and anticipated learning outcomes. It includes oral and written tests, problem solving exercises, presentations and end semester examinations.

Keywords

Micro Economics, Law of Demand, Law of Supply, Consumer Behavior, Theory of Production, Cost Function, Pricing, National Income.

MBA: Semester-I

Paper MGTM-103: ACCOUNTING FOR MANAGERS

Duration: 3Hrs. **Marks: 100** **Credits: 4**

Objective

This module provides students with a comprehensive introduction to Financial Accounting and Cost accounting, its meaning, principles, core concepts and usage. By the end of the module, students will be fully equipped with the knowledge and skills required to prepare and understand the financial and cost records.

Course Learning Outcomes

Upon successful completion of the course a student will be able to:

CO1: Describe the accounting principles and standards and rules.
CO2: Interpret the business transactions for making the summery for final accounting purpose.
CO3: Prepare the financial statement of an organization.
CO4: Identify various costs and apply techniques of costing.
CO5: Prepare cost sheet and cost accounts and apply the concept of standards costing.

Course Contents

Unit I: Introduction to Accounting

Meaning, Objectives, Basic accounting terms, Accounting principles, Meaning and nature, Accounting concept and conventions, Basis of accounting – Cash and Accrual, Origin of Transactions – Source documents and vouchers, Accounting equations, Rules of Debit and Credit, Difference between Financial Accounting, Cost accounting and Management accounting.

Unit II: Recording of transactions

Books of Original entry- Journal, How to record a Transaction in Journal; Subsidiary Books; Book of Principal Entry-Ledger, Opening of Accounts, Posting and Balancing, Closing of Accounts; Trial Balance- Meaning, Objective & Preparation.

Unit III: Financial Statements

Meaning of Capital Expenditure, Revenue expenditure and Deferred Revenue Expenditure; Meaning of Financial Statement; Preparation of Manufacturing Account Trading Account, Profit and Loss Account and Balance Sheet. Depreciation: Concept, WDV and SLM methods.

Unit IV: Introduction to Cost Accounting

Meaning of Cost, Costing and Cost Accounting; Objectives of Cost Accounting, Types of Costs; Cost and Expense- Meaning & Differences; Cost Centre-Meaning, Purpose, Types, Methods and Techniques of Costing.

Unit V: Cost Records & variance analysis

Meaning of Cost Sheet, Objectives of preparing Cost Sheet, Preparation of Cost Sheet. Cost Accounting System: Job Costing, Process Costing, Contract Costing, Service/ Operating Costing. Cost Analysis: Make or buy decisions, Accept or reject decisions, Process Costing

Concept of Standards Costing, Setting and revision of Cost Standards, Concept Variance, Calculating Material, Labour and Overhead Variance.

Recommended book:

- P.C. Tulsian, Financial Accounting, Pearson
- Hanif & Mukherjee, Financial Accounting, Tata McGraw Hill
- M.N.Arora, Cost Accounting, Principles & Practice, Vikas Publishing House

Reading List

- Dr. D.K.Goyal, Accountancy, Arya Book Depot
- Khan & Jain, Cost Accounting, Tata McGraw Hill
- Hongren, Datar, Foster, Rajan, Ittner, Cost Accounting, A Managerial Emphasis, Prentice Hall
- Nigam & Jain, Cost Accounting, Principles & Practice, Prentice Hall
- P. C. Tulsian, Cost Accounting, Pearson

Note: Latest edition of readings may be used.

Teaching Learning Process

Theory/ numerical with examples, Problem solving sessions.

Assessment Methods

Class tests/Assignments, Class participation, Presentations, End-semester examination.

Keywords

Financial Statements, Depreciation, Inventory Valuation, Cost Sheet, Standard costing.

MBA: Semester-I

Paper MGTM-104: BUSINESS COMMUNICATION

Duration: 3Hrs. **Marks: 100** **Credits: 4**

Objective

Communication is a two-way interactive process and its importance can be found in our professional as well as in our daily personal lives. We have intentionally taken a holistic approach in this module. This communication module is focused on the effective use and handling of communication situations, that individuals find themselves in both professional and personal environments. This module focuses on communication processes and key elements. It specifically explores the linkages between perception, personality, and communication including non-verbal communication. The prime purpose is to educate learners to effectively use and interpret verbal and nonverbal communication and understand what communication styles and skills can be adopted for different persons so as to ensure effective communication.

Course Learning Outcomes

Upon successful completion of the course a student will be able to:

CO1: Find how development of the students' ability to think critically, reason through a problem.

CO2: Explain & develop a cogent argument or explanation for all types of daily communication.

CO3: Identify & understand the need of effective communication & apply requires clarity of thought, ability to listen intentionally and deliver messages in the most optimal way.

CO4: Categorise the communication skills for variety of communication activities like discussion, presentation, task – based activities, such as group work, task work.

CO5: Evaluating the learnings of the students about how to communicate effectively.

Course Contents

Unit I: Elements of Communication

Communication: Meaning, Importance and Process

Objectives of Communication

Media and Types of Communication

CT-Lab

Phonetic Symbols and Transcriptions

Word Formation.

Unit II: Basics of Communication

Verbal and Non-Verbal Communication

Formal and Informal Channels of Communication

Qualities of Good Communication

CT-Lab

Affixes

Listening and speaking Skills

Unit III: Skills of Communication

Barriers to Communication

Professional Communication

Interpersonal Communication and methods to improve it

CT-Lab

Words often Mis-spelt and Mis- Pronounced

One Word for Many.

Unit IV: Grammar

Subject-Verb Agreement (Concord)

Linking Words (Conjunctions)

Relative Clauses

Common Errors

CT-Lab

Synonyms and Antonyms

Seminar Presentation.

Unit V: Composition

Resume Writing

Business Letter Writing: Sales, Credit, Enquiry, Order, Claim, Complaint, Job Applications, etc

E-mail messages

Telephone Etiquettes

CT-Lab

Group Discussion.

Job Interview.

Recommended Book:

- Essentials of Business Communication by Mary Ellen Guffey
- Business Communication Today by Courtland L. Bovee and John V. Thill

Reference Books:

- Communication Skills for Engineers and Scientists, Sangeeta Sharma and Binod Mishra, PHI Learning Pvt. Ltd. (New Delhi)
- Current English Grammar and Usage with Composition, R.P. Sinha, Oxford University Press (New Delhi)
- Business Communication, Meenakshi Raman & Prakash Singh, Oxford University Press (New Delhi)
- Professional Communication, Aruna Koneru, Tata McGraw Hills, New Delhi.
- A Practical Course for Developing Writing Skills in English, J.K. Gangal, PHI Learning Pvt. Ltd., New Delhi.
- Advanced Manual for Communication Laboratories and Technical Report Writing, D.Sudha Rani, Pearson, (New Delhi)
- A Course in Phonetics and Spoken English, J. Sethi & P.V. Dhamija, PHI Learning Pvt.Ltd. (New Delhi)
- English Language Laboratories: A Comprehensive Manual, Nira Konar, PHI Learning Pvt .Ltd. (New Delhi)
- Communication Skills for Engineers and Scientists, Sangeeta Sharma and Binod Mishra, PHI Learning Pvt. Ltd.(New Delhi).

- Oxford English Learning Package.(With CDs: Headway Series)
- Tata McGraw Hills English Learning Package (With CDs)\
- "Oxford Advanced Learners' Dictionary" published by Oxford University Press (New Delhi)

Note: Latest edition of readings may be used.

Teaching Learning Process

Interactive class room sessions with the help of power point presentations, case discussions and group discussions to ensure active participation and continuous learning.

Assessment Methods

Class tests/Assignments, Class participation, Presentations, End-semester examination

Keywords:
English, Oral Communication, Business letters, Basic Grammar, Reported Speech.

MBA: Semester-I

Paper MGTM-105: INFORMATION TECHNOLOGY FOR MANAGERS

Duration: 3Hrs. **Marks: 100** **Credits: 4**

Objectives: The primary objective of this course is to familiarize the student with basic concepts of information technology and their applications to business processes.

Course Learning Outcomes

Upon successful completion of the course a student will be able to:

CO1: Define the basic concepts of information technology and their applications to business processes.
CO2: Explain the Basic Framework of Information Technology & its Security.
CO3: Apply the Practical aspect of MS Excel usage. Using practical of MS Excel.
CO4: Make use of various Functions of information technology for reporting purpose.
CO5: Prioritize the data and information required for decision making.

Course Contents

Unit I: Computer Hardware and Number System

CPU, Basic Logic Gates, Computer Memory and Mass Storage Devices, Computer Hierarchy, Input Technologies, Output Technologies. Number Systems and Arithmetic: Basic understanding of Decimal, Binary, Octal and Hexadecimal Number System.

Unit II: Computer Software

Application and System Software, Programming Languages and their Classification, Assemblers, Compilers and Interpreters. Operating Systems- Functions of Operating Systems, Types of Operating Systems (Batch Processing, Multitasking, Multiprogramming and Real time Systems).

DBMS: Traditional File concepts and Environment, Database Management Systems Concepts, Types of Data Models, ER Modeling, Integrity Constraints, SQL queries.

Unit III: Data communication and Networks

Concepts of data communication, Types of data communication Networks, Communications Media, Concepts of computer networks, Primary Network Topologies, Network Architectures-The OSI Model, Inter-networking devices. The Internet, Intranet and Extranets: Operation of the Internet, Services provided by Internet, World Wide Web.

Unit IV: Functional and Enterprise Systems

Data, Information and Knowledge concepts, Decision making process, Physical components of Information systems, Classification of Information systems.

Unit V: Security Issues in Information Technology

Overview of Security Issues in Information Technology, Ransomware attack, Code injection, Cross-Site Scripting (XSS) Attack, Data Breach, Malware and Virus Infection, DDoS Attack, Weak Passwords and Authentication Issues, SPAM and Phishing, No Backups, Not Updating or Patching Regularly.

Recommended book:

- ITL Education Solutions (2009). Introduction to Information Technology, Pearson Education.
- Turban Efraim, Ephraim McLean, James Wetherbe (2006), Information Technology for Management–Transforming organizations in the digital economy, 6th Edition, Wiley India.

Reference books:

- Sinha, P.K. and Sinha, Priti, *Computer fundamentals*, BPB Publications, New Delhi, Sixth Edition, 2011.
- Norton, P. (2001). Introduction to computers. TMH
- Rajaraman, V. (2004). Introduction to Information Technology. PHI.
- Ram, B. (2003). Computer Fundamentals. New Age Publications

Note: Latest edition of readings may be used.

Teaching Learning Process

Theory/ numerical with examples, Practical Lab Lectures

Assessment Methods

There shall be 4 credit hours for lectures + one credit hour (Two Practical Periods per week per batch) for practical lab + one credit hour for tutorials (per group).

Class tests/Assignments, Class participation, Presentations, End-semester examination

Keywords

Binary, Database Management Systems, OSI Model, Microsoft Office, Information Technology, Primary Network Topologies.

MBA: Semester-I

Paper MGTM-106: QUANTITATIVE TECHNIQUES FOR MANAGERS

Duration: 3Hrs. **Marks: 100** **Credits: 4**

Objective

The focus of this course is to equip the students with the knowledge of various statistical tools and techniques used in business decision making. The course aims at providing fundamental knowledge and exposure to the students to use various statistical methods in order to understand, analyze and interpret data for managerial decision making.

Course Learning Outcomes

Upon successful completion of the course a student will be able to:

CO1: Define data and various data collection techniques, which will enable them to make evidence-based decisions.
CO2: Apply the various Statistical tools & techniques in field.
CO3: Construct a research design.
CO4: Analyse the primary and secondary data for arriving at a conclusive decision.
CO5: Decide the use of suitable statistical tools and techniques to assist in managerial decision making.

Course Contents

UNIT-I

Statistics: Meaning, evolution, scope, limitations and applications; data classification; tabulation and presentation: meaning, objectives and types of classification, formation of frequency distribution, role of tabulation, parts, types and construction of tables, significance, types and construction of diagrams and graphs.

UNIT-II

Measures of Central Tendency and Dispersion: Meaning and objectives of measures of central tendency, different measure viz. arithmetic mean, median, mode, geometric mean and harmonic mean, characteristics, applications and limitations of these measures; measure of variation viz. range, quartile deviation mean deviation and standard deviation, co-efficient of variation and skewness.

UNIT-III

Correlation and Regression: Meaning of correlation, types of correlation – positive and negative correlation, simple, partial and multiple correlation, methods of studying correlation; scatter diagram, graphic and direct method; properties of correlation coefficient, rank correlation, coefficient of determination, lines of regression, co-efficient of regression, standard error of estimate.

UNIT-IV

Index numbers and time series: Index number and their uses in business; construction of simple and weighed price, quantity and value index numbers; test for an ideal index number, components of time series viz. secular trend, cyclical, seasonal and irregular variations, methods of estimating secular trend and seasonal indices; use of time series in business forecasting and its limitations, calculating growth rate in time series.

UNIT -V

Probability: Basic concepts and approaches, addition, multiplication and Bayes' theorem.
Probability distributions - meaning, types and applications

Recommended book:

- Gupta, S.P. & M.P. Gupta, Business Statistics
- Gupta, C.B., An Introduction to Statistical Methods
- Richard I. Levin, David S. Rubin Statistics for Management by Pearson

Reference books:

- Business Statistics By Mr. R. S. Bharadwaj , pub: Excel Book
- Business Statistics by Richard Levin
- Business Statistics by Ken Black, pub: Tata Macgraw Hill
- Schaum's Series for problem practice
- Mathematical Statistics by Ray, Sharma and Choudhary
- Business Statistics by V. K. Kapoor, pub: S. Chand

Note: Latest edition of readings may be used.

Teaching Learning Process

Interactive class room sessions with the help of power point presentations, case discussions and group discussions to ensure active participation and continuous learning.

Assessment Methods

Class tests/Assignments, Class participation, Presentations, End-semester examination

Keywords:

Statistics, Central tendencies, Dispersion, Correlation, Regression, Probability, Bays' Theorem.

MBA: Semester-I

Paper MGTM-107: ORGANIZATIONAL BEHAVIOR

Duration: 3Hrs. **Marks: 100** **Credits: 4**

Objective

This module provides students with an elaborative understanding of organizational behavior, its key principles, concepts & theories. The range of concepts & theories that students will be introduced to include foundation of organizational behavior, groups & group dynamics, motivation, leadership, organization design, organization structure, work stress, organization culture, organization effectiveness and development. By the end of the module, students will be fully equipped with the knowledge and skills required to understand & deal human behavior in the organization as individual, group member & organization as a whole.

Course Learning Outcomes

Upon successful completion of the course a student will be able to:

CO1: Define the various behavioural aspects when working in an organization at any level.
CO2: Explain the implications of individual and group behaviour in organizational Context.
CO3: Identify the components of individual and group behaviour at various work, situations and apply behavioral techniques.
CO4: Analyse & implement the importance of attitude, values, beliefs, assumptions and Motivation & to make aware about dynamic nature of groups in the organisation.
CO5: Apply and create good organization culture and manage cultural diversity.

Course Contents

Unit I: Foundations of Organizational Behavior

Conceptual framework of OB- Nature & Scope of Organizational Behavior, Determinants of Organizational Behavior, Challenges of Organizational Behavior.

Individual Dimensions of OB- Nature of Human Behavior, Personality, Perception, Learning, attitudes & Values, Emotional Intelligence, Individual Decision Making, OB Mod

Unit II: Group & Group Dynamics

Defining and classifying groups, group structure and processes, individual vs group behavior, group dynamics theories, group decision making process, organizational conflicts, types and causes, techniques of conflict resolution.

Team vs groups, team development, Ingredients of effective teams, team life cycle, interpersonal skills - Johari window and transactional analysis, employee counseling.

Unit III: Motivation & Leadership Theories

Motivation - Needs, contents and processes, Maslow's hierarchy of needs, Herzberg's two factory theory, ERG theory, Vroom's Expectancy theory, Reinforcement theory and Behavior modification.

Leadership - Ohio State Studies, Michigan studies, and managerial grid. Contingency theories - Fiedler's model, Hersey and Blanchard's situational theory, leader-member exchange theory, path goal theory, and charismatic leadership.

Unit IV: Structural & Cultural Dimensions of OB

Design of Organization Structure, Forms of Organization Structure, works Design & Work Stress, Organizational Climate & Culture.

Unit V: Organization Effectiveness & Change

Organization Effectiveness, Organization Change, Organization development

Recommended book:

- L. M. Prasad, (2011): Organizational Behavior, India, Sultan Chand & Sons
- Robbins, Judge & Sanghi, (2009): Organizational Behavior 13e, India, Pearson, Prentice Hall

Reference books:

- Hersey, Blanchard & Johnson, (2009), India, Pearson/ Prentice Hall
- Keith Davis: Organizational Behavior
- Fred Luthans: Organizational Behavior

Note: Latest edition of readings may be used.

Teaching Learning Process

Interactive class room sessions with the help of power point presentations, case discussions and group discussions to ensure active participation and continuous learning.

Assessment Methods

Class tests/Assignments, Class participation, Presentations, End-semester examination

Keywords

Organizational Behavior, Personality traits, Group behavior, Motivation, Leadership, Stress Management.

MBA: Semester-II

Paper MGTM-201: BUSINESS ENVIRONMENT

Duration: 3Hrs. **Marks: 100** **Credits: 4**

Objective

The basic objective of this course is to familiarize the participants with various aspects of economic, social, political and cultural environment of India. This will help them in gaining a deeper understanding of the environmental factors influencing Indian business organizations.

Course Learning Outcomes

Upon successful completion of the course a student will be able to:

CO1: Define various laws & force, explain regulatory measures governing business operations in India.

CO2: Identify the latest developments in business Environment.

CO3: Examine Political and Legal environment, Social and Cultural Environment, Technological environment and Competitive Environment

CO4: Determine International Environment, evaluate the complexities of business environment and their impact on business & to analyze the relationship between Government and business and understand the Political, Economic, legal and social policies of the country.

CO5: Evaluate the student's cognizance about the concepts of business environment and its application practically.

Course Contents

Unit I: An Overview of Business Environment

Type of Environment-Internal, External, Micro and Macro Environment, Competitive Structure of Industries, Environmental Analysis and Strategic Management, Nature of the economy, structure of the economy, economic policies. Nature of Indian planning, Planning Commission. Achievement and failure of economic planning in India. Recent GNP trends, Major economic reforms.

Unit II: Industrial & Legal Environment

Industrial policy up to 1991, the new industrial policy, Public, private, joint and cooperative sectors, privatisation through disinvestment, village and small industries, industrial sickness, Regulatory role of the government, MRTP act, trade practices act, FEMA, patents and trade mark. Competition act 2000. Rational and extent of state intervention.

Unit III: **Demographic and Societal Environment**

Size of Population, Age Structure, Other demographic trends, population control policy, human development. Impact of foreign culture on business. Business and society, Business ethics and corporate governance. Social responsibility of business, social audit, consumer rights and business. Poverty and unemployment in India, planning for poverty elevation.

Unit IV: Monetary and Fiscal Environment

Measure of money supply, Monetary and fiscal policies, liquidity and interest rate environment. Overall structure and trends of taxation; direct taxes; recommendations of the 10^{th} plan advisory Group; Kelkar Committee Recommendations, indirect taxes - Kelkar Committee Recommendations; fiscal deficit and its management, alternate deficit concepts, deficit trends, challenges of deficit management, public borrowings in the fiscal environment.

Unit V: International Business Environment

Evaluation of WTO, function of WTO, Doha declaration, significance of foreign investment, FDI in India trends and pattern, FII, cross-border M&As. Trade balance and BOP. Globalisation of world economy, trend in globalisation, foreign trade policy, export promotion, EXIM policy, EPZs, EOUs, TPs & SEZs.

Recommended Book

- Aswathappa, K., (2000), Essentials of Business Environment, 7th edition, Himalaya Publishing House.
- Cherunilam, Francis, (2007), Business Environment - Text and Cases, Himalaya Publishing House.

Reference Book

- Gupta C. B., (2008), Business Environment, 4th edition, Sultan Chand.
- Bedi, Suresh, ((2004)), Business Environment Excel Book
- Agrawal Raj, Business Environment, Excel book
- Shaikh, Saleem, (2010), Business Environment, 2nd edition, Pearson Education.

Note: Latest edition of readings may be used.

Teaching Learning Process

Interactive class room sessions with the help of power point presentations, case discussions and group discussions to ensure active participation and continuous learning.

Assessment Methods

Class tests/Assignments, Class participation, Presentations, End-semester examination

Keywords

Business Environment, Societal Environment, Monetary and fiscal policies, WTO, FDI, FII, EXIM policy.

MBA: Semester-II

Paper MGTM-202: RESEARCH METHODOLOGY

Duration: 3Hrs. **Marks: 100** **Credits: 4**

Objective

Any body of knowledge cannot develop without the underlying research. This module introduces the fundamentals of research, its process and the way in which findings of a research initiative is presented and reported. It exposes the students to the various statistical tools being used to analyze data and draw inferences.

To provide a fundamental understanding of the research process, its tools and techniques and to help the students learn the art and science of presenting research finding in the form of a well formatted report.

Course Learning Outcomes

Upon successful completion of the course a student will be able to:

CO1: Understand the research process, tools and techniques in order to facilitate managerial decision-making.

CO2: Explain the basic concepts of research methods and its usefulness inbusiness situations.

CO3: Apply research design, sample design and sampling methods & applyappropriate methods for data collection for research work by implementation of statistical tools for data analysis and interpretation for business decision making.

CO4: Discover the analytical abilities and research skills with hands on experience and learning in Business Research.

CO5: Interpret the various research methods and its usefulness in real business situations.

Course Contents

Unit I: Introduction to Research

Meaning, types, process, research problem, Research design: Meaning, types of research design, features of a good research design, components of theory – definitions, concepts, constructs, variables, hypothesis, process of research and structure of research proposal.

Unit II: Data collection techniques

Data: Meaning, types, Data collection methods, Data collection instruments, Questionnaire vs. Schedule, Allied data collection instruments: Warranty cards, Distributor/Store audits, Pantry audits, Consumer panels, Mechanical devices, Projective techniques, Depth interviews, Content analysis, Case study method, its advantages & disadvantages.

Unit III: Sampling design

Introduction, Methods of the sampling: Sampling concepts, non-probability sampling, probability sampling, dependent and interdependent methods, Merit and limitation of sampling, sampling and non-sampling error, Test of hypothesis chi square test & goodness of fit.

Unit IV: Data compilation and analysis

Data processing: Editing, Coding, Classification, Tabulation, Issues in data processing

Data analysis: Types, Percentage analysis, Computer aided Charts (Pie chart, Bar diagram, Doughnut, Line diagram), Descriptive analysis, t-test, F-test, Z test and interpretation of the results.

Unit V: Report writing

Steps of writing research report, Report Layout: Preliminary pages, Main text, End matter, Mechanics of writing research report, Bibliography and references format, Precautions in writing research report.

Recommended books:

- Kothari, C. R., Research Methodology Methods and Techniques, New Age International Publishers, New Delhi, 2nd Edition.
- Paneerselvam, R., Research methodology, PHI Learning Pvt. Ltd., New Delhi.

Reference books:

- Green, Paul E., Tull, Donald S. and Albaum, Gerald, Research for marketing decisions, Prentice Hall of India Pvt. Ltd., New Delhi
- Saunders, Mark, Lewis, Philip and Thornhill, Adrian, Research methods for business students, Pearson Education, New Delhi
- Krishnaswamy, K.N., Sivakumar, Appa Iyer and Mathirajan, M., Management Research Methodology, Dorling Kindersley (India) Pvt. Ltd., New Delhi, Fourth Impression, 2010

Note: Latest edition of readings may be used.

Teaching Learning Process

Interactive class room sessions with the help of power point presentations, case discussions and group discussions to ensure active participation and continuous learning.

Assessment Methods

Class tests/Assignments, Class participation, Presentations, End-semester examination

Keywords:

Statistics, Central tendencies, Dispersion, Correlation, Regression, Probability, Bays' Theorem.

MBA: Semester-II

Paper MGTM-203: HUMAN RESOURCE MANAGEMENT

Duration: 3Hrs. **Marks: 100** **Credits: 4**

Objective

This module introduces the students with the key concepts, theories, tools & techniques of human resource management. The range of concepts that students will be introduced to include philosophy of HRM, human resource planning, job analysis, recruitment & selection, training & development, compensation & labor relation. By the end of the module, students will be fully equipped with the skills & techniques required to plan & manage the human resource in the organization.

Course Learning Outcomes

After completing the course, the student shall be able to:

CO1: Define the concepts, methods and techniques and issues involved inmanaging human resource.

CO2: Understand the concept of Managing Human Resources and work situations.

CO3: Apply the effective Human Resources and working environment of the organizations, the importance of Management; Training, performance appraisal.

CO4: Analyse the need of employing, maintaining and promoting a motivated force in an organization.

CO5: Impart knowledge on Industrial Relations- Trade unions, Grievance Management, Contemporary Issues in HRM and Strategic Issues confronting IR.

Course Contents

Unit I: Human Resource Management - An Overview

Human Resources Management (HRM): Meaning, Nature and Scope, Difference between HRM and Personnel Management, HRM functions and objectives, Evolution of HRM environment – external and internal. HRM within organization structure.

Human Resources Development in India: evolution and principles of HRD, HRD vs. Personnel functions, Role of HR managers. Strategic Human Resource Management

Unit II: Human Resource Planning (HRP), Recruitment and Selection

Human resources planning: definition, purposes, processes and limiting factors; human resources information systems (HRIS): personnel records and statistics, the use of information systems in HRM, HR accounting and audit.

Recruitment: recruitment policy, recruitment procedures, job analysis, job description, job specification, recruitment methods, and evaluation.

Selection: the selection procedure, the design of application form, selection methods, the offer of employment, and evaluation of process.

Unit III: Training & Development Performance Appraisal and Compensation Administration

Training and development: purpose, methods, and issues in training and management development programs.

Performance appraisal: definition, purpose of appraisal, procedures and techniques including 360 Degree Appraisal, the appraisal interview, and follow up.

Compensation Administration: Nature and Objectives of compensation, components of pay structure in India, Wage Policy in India – Minimum Wage, Fair Wage and Living Wage.

Incentive Payments: Meaning and Definition, Prerequisites for an effective incentive system, Types and Scope of incentive scheme, Incentive Schemes in Indian Industries, Fringe Benefits.

Unit IV: Grievance Handling and Industrial Relation

Discipline and grievance procedures: definition, disciplinary procedure model, the other procedures, grievance procedures and interview

Industrial relations: aspect of industrial relations (IR), nature and importance of union-management relations

Unit V: Promotion, Transfer and Separation

Promotion and Transfer: Promotion: purpose, principles and types; Transfer – reason, principles and types.

Separation: retirement, resignation, and termination of contract: layoff and exit interviews. Dealing with the human aspects of terminations: procedures for terminations, counseling, training and notice of dismissal.

Recommended Book

- K. Aswathappa, (2009): Human Resource Management- Text & Cases 5e, India, McGraw Hill.

Reference Books

- Dessler & Varkkey, (2010): Human Resource Management 11e, India, Prentice Hall.
- Decenzo & Robbins, (2006): Fundamentals of Human Resource Management, Wiley.
- Dipak Kr. Bhattacharyya, (2010): Human Resource Management 2e, India, Excel Books.
- Bernardin, (2007): Human Resource Management- An Experimental Approach, India, TATA McGraw Hill.
- Snell & Bohlander, (2008): Human Resource Management, India, South- Western Cengage Learning

Note: Latest edition of readings may be used.

Teaching Learning Process

Interactive class room sessions with the help of power point presentations, case discussions and group discussions to ensure active participation and continuous learning.

Assessment Methods

Class tests/Assignments, Class participation, Presentations, End-semester examination

Keywords

Human Resource Management, Recruitment, Selection, Training & Development, Performance Appraisal, Promotion, Transfer.

MBA: Semester-II

Paper MGTM-204: CORPORATE FINANCE

Duration: 3Hrs. **Marks: 100** **Credits: 4**

Objective

The focus in this paper would be on issues related to finance in the Indian Corporate Sector. The contents are related to the practices observed in Indian Corporate Sector. The objective is to enable and equip the future managers with basic tools for applying financial analysis.

Course Learning Outcomes

After completing the course, the student shall be able to:

CO1: Define the concepts, vital tools and techniques applicable forfinancial decision making by a business firm.

CO2: Explain the functions of Finance in organization and methods inmanaging funds for business

CO3: Apply the concepts of budgeting, working capital, cost of capitalincluding the choice of source of funds.

CO4: Analyse the practical problems relating to the financing of fundsincluding pricing and dividend theories.

CO5: Select the methods and techniques for analysing the data forfinancial decision making.

Course Contents

Unit I: Introduction to Financial Management

Meaning, objectives and scope, conflicts in profit versus wealth or value maximization principle, Time value of money.

Unit II: Valuation of Securities and Investment Decisions

Definitions. Types of Securities, Valuations of Bond, Types of Yield associated with Bond, Valuation of Preference share, Valuations of Equity. Capital budgeting techniques-Net Present Value Method, Internal Rate of Return Method. Cost of Capital-equity and debt.

Unit III: Cost of Capital and capital Structure

Cost of individual source of finance, cost of debenture, cost of preference share, cost of equity, cost of Term loan, weighted cost of capital, theory of capital structure, traditional approach, Net income, Net operating Income, MM approach.

Unit IV: Risk and Return

Calculating risk and return for individual security, Beta estimation, overview of capital market theory, Characteristic line, Securities market line.

Unit V: Short term financing, Leverage and Dividend Policy:

Management of Working Capital, Cash management, Inventory Management, Receivables Management, working capital leverage. Leverage- operating, financial and composite leverage, Dividend policy. Grahm-Dodd model, Walter Model, Gordon model, MM model.

Reading List

Recommended Book

- I. M. Pandey, (2010): Financial Management, Vikas Publishing House

Reference Books

- M Y Khan & P K Jain, Financial Management- Text, problems and cases, Tata McGraw Hills
- Dr. R. P. Rustagi (2011): Financial Management- Theory, concept and problems, Taxman Publications.

Note: Latest edition of readings may be used.

Teaching Learning Process

Theory/ numerical with examples, Problem solving sessions.

Assessment Methods

Class tests/Assignments, Class participation, Presentations, End-semester examination.

Keywords

Financial Management, Time value of money, Investment decisions, Cost of capital, Risk and return, Financial Leverage, Dividend policy.

MBA: Semester-II

Paper MGTM-205: MARKETING MANAGEMENT

Duration: 3Hrs. **Marks: 100** **Credits: 4**

Objective

The course introduces a wide range of marketing concepts and explores the various functional areas of marketing management. The course provides an opportunity to the students to explore and relate the conceptual and applied learning of the subject to the real market situations.

Course Learning Outcomes

After completing the course, the student shall be able to:

CO1: Relate the concepts, philosophies, processes and techniques of Marketing Management to real operations of a firm.

CO2: Interpret & relate the fundamental concepts & practices from business perspective in the organisation.

CO3: Make use of various opportunities available in various sectors in the field of marketing management & apply the concepts related tomarket research.

CO4: Analyse the consumer buying behavioural process & take part in theprocess of developing new product & market segmentation.

CO5: Evaluate various marketing campaigns and could decide on effective-strategies.

Course Contents

Unit-I: Introduction to Marketing

Marketing defined, Marketing process, Core marketing concepts (Need, want, demand, market offering, marketing myopia, Markets), Marketing Management orientations (Production, Product, Selling, Marketing, Societal marketing), Marketing vs. Selling, Marketing mix (4 P's of marketing).

Marketing environment, Internal environment, External environment, Micro environment, Macro environment and their impact or influences on marketing decisions.

Unit-II: Consumer Behavior

Introduction to Consumer buying behavior, Buyer Vs Consumer, factors influencing the Consumer buying behavior

Classification of CB (High & Low involvement) Dissonance reducing Buying Behavior, Habitual Behavior, Complex Buying Behavior, Variety Seeking Buying Behavior, Impulse Behavior, Buying Decision process, Stimulus Response model.

Unit-III: Market research & Customer oriented marketing

Marketing information system, Sources of customer related information

Marketing research, Concepts, Steps of marketing research process

Customer oriented marketing: Market segmentation, bases of market segmentation, patterns of segmentation, Targeting, Differentiation & Positioning, positioning maps

Strategic Marketing plan: Contents of a structured marketing plan.

Unit-IV: Segmentation, Targeting and Positioning:

Introduction to STP, STP Process, Requirement for Effective Segmentation, Bases for Segmenting

Consumer Markets, Steps in STP, Segmentation Strategy.
Market Targeting (developing selection criteria), Types of Market Targeting, Targeting Strategy, Positioning, Positioning for Competitive Advantage, Steps & Positioning Strategy.

Unit-V: NPD & Marketing Mix

Product life cycle & strategies, BCG Matrix, SWOC Analysis, Porters five force Model.
Product: Introduction to Product, Level of the product, New product development, Product mix & strategies.
Price: pricing objectives, selection of pricing policy, approaches to price adjustment, pricing strategies.
Distribution: Channel Management & Distribution methods.
Promotion: Promotion mix, Promotion strategies.

Recommended book:

- Kotler, Philip; Armstrong, Gary; Agnihotri, Prafulla and Haque, Ehsan Ul., *Principles of Marketing A South Asian Perspective*, Dorling Kindersley (India) Pvt. Ltd., New Delhi, 13th Edition.

Reference books:

- Panda, Tapan K, *Marketing Management Text and Cases*, Excel Books, New Delhi, 2nd Edition.
- Ramaswamy, V.S. and Namakumari, S, *Marketing management Global perspective Indian Context*, Macmillan Publishers India Ltd., New Delhi, 4th Edition, 2009.

Note: Latest edition of readings may be used.

Teaching Learning Process

Theory with examples, case study, market research etc.

Assessment Methods

Class tests/Assignments, Class participation, Presentations, End-semester examination.

Keywords

Marketing Management, Consumer behaviour, Market Research, Product Mix, Segmentation, Targeting, Positioning.

MBA: Semester-II

Paper MGTM-206: OPERATIONS MANAGEMENT

Duration: 3Hrs. **Marks: 100** **Credits: 4**

Objective

Production/operations management involves the integration of numerous activities and processes to produce products and services in a highly competitive global environment. Many companies have experienced a decline in market share as a result of their inability to compete on the basis of product design, cost or quality. Most now agree that world class performance in operations i.e., in product design, manufacturing, engineering and distribution, is essential for competitive success and long-term survival.

Course Learning Outcomes

After completing the course, the student shall be able to:

CO1: Define the basic concepts and theories of the production management & comprehend the operations management situations with greater confidence.

CO2: Understand the strategic significance of Production & Operation management.

CO3: Understand quality management and the evolution of practice; assess the relationship between quality and capability, and between quality and competitiveness;

CO4: Apply Planning, Scheduling and Control of Production and Operations Management functions in both manufacturing and Services.

CO5: Analyse the effectiveness of operations by job & work design, process design, layout design, design & control system.

Course Contents

Unit-I: Introduction to Operations management

Importance and functions of operation management, types of production system, facilities location, facilities layout and materials handling, Product design and process selection, Types of layouts, Analysis and selection of layout-product and process layout, Computer integrated manufacturing system and line balancing.

Unit-II: Production planning and control,

Introduction, functions aggregate planning and master production scheduling; materials requirement planning. BOM, capacity requirement planning, techniques, problems in MRP and CRP, business process reengineering, TPM, method study & work measurement.

Unit-III: Materials management

Introduction, meaning, importance and functions; purchasing management; stores management and inventory management, types of inventories, inventory control systems-perpetual, periodic, JIT, KANBAN; quality assurance-six sigma concepts acceptance sampling, statistical quality control; quality movement, quality circles, ISO quality certification and types, maintenance management.

Unit-IV: Operations Research

Introduction, Linear programming –Graphical method, Trans-shipment, Transportation problems, Assignment model, travelling salesman problems, PERT/CPM, Inventory Model, Game theory

Unit-V: Logistics Management

Introduction to logistics management, significance of logistics, Total distribution concepts, Integrated logistics, Materials handling packaging and transportation system. Case-special cases on Japanese manufacturing systems.

Recommended book

- Panneerselvam, Production and Operations Management, Prentice Hall of India, N. Delhi.

Reference books

- Krajewski Lee J. & Ritman, Larry P.; Operations Management: Strategy & Analysis; 5th edition; Pearson Education; New Delhi; 1999.
- Chase Richard B., Aquilano, Nicholas J, et al; Production & Operations Management Manufacturing & Services; 8th edition; Tata McGraw Hill., New Delhi; 1999.
- Adam, Everett E. & Ebert, Ronald J.; Production and Operations Management: Concepts,
- Models and Behaviour; 5th edition; Prentice Hall of India Private Ltd., New Delhi.

- Kaizen-One Small Step Can Change Your Life: The Kaizen Way by Robert Maurer

Note: Latest edition of readings may be used.

Teaching Learning Process

Theory/ numerical with examples, Problem solving sessions.

Assessment Methods

Class tests/Assignments, Class participation, Presentations, End-semester examination.

Keywords

Operations Management, Production Panning, Material Management, Operation Research, Logistic.

MBA: Semester-II

Paper MGTM-207: INTERNATIONAL BUSINESS

Duration: 3Hrs. **Marks: 100** **Credits: 4**

Objective

To get the knowledge of the business ramifications of Globalization. To understand the meaning and rationale of Globalization. To get an awareness about the international orientations and stages of Globalization. To have a detailed knowledge about the environment of international business. To examine the significance of economic, political, socio-cultural, demographic, natural and technological factors for international business. To get an idea of the trade strategies and their implications for international business. To get an understanding of the tariff and non-tariff barriers to trade. To get an overview of Multilateral Trade Negotiations. To understand the functions, role, functions and impact of GATT and WTO. To get an overall idea of the WTO Agreements. To get an overall knowledge about the concepts such as International Corporation, Multinational Corporation, Global Corporation and Transnational Corporation. To know the elements of the Code of Conduct for MNC's. To understand the types of foreign investment. To get an idea about the theories of foreign investment and factors affecting Foreign direct investment and Portfolio investment.

Course Learning Outcomes

After completing the course, the student shall be able to:

CO1: Define the concepts of international business management.

CO2: Explain the scope of international business creating awareness about international finance decisions and impact on operations.

CO3: Identify basics of WTO, SRC& different investment theories from theperspective of a business manager.

CO4: Analyse & inform the Modes of Entry in international market, Marketing mix, Factors affecting Decisions for International Business & define the Finance aspects of International Business, Capital Movement, Risk in international operations, international investment, Financing for foreign trade.

CO5: Evaluate the learning of the students about the various aspects of the international business concepts.

Course Contents

Unit I: International Business Environment

Introduction, Concept, Scope, Trends, Challenges and Opportunities; Globalization - Forces, Meaning, dimensions and stages in Globalization - Introduction to theories of International Trade by Adam Smith, Ricardo and Ohlin & Heckscher, Firm Specific Theories like Product Life Cycle Theory by Raymond Vernon and the Porter's Competitive Advantage Theory by Porter - Trading Environment of International Trade - Tariff and Non-tariff Barriers - Trade Blocks – Forms of Integration like Free Trade Area, Customs Union, Common Market, Economic Union and Economic Integration-NAFTA, SAPTA, SAARC, Indo-Lanka Free Trade Agreement, India-Singapore CECA-Rise of new economies like Japan, South East Asia and China (with comparison to India)

Unit II: International Economic Institutions and Agreements

General Agreement on Trade and Tariffs (GATT), The Uruguay Round, WTO (Seattle & Doha and Hongkong round of talks), Agreement on Textiles and Clothing (ATC), TRIPS, TRIMS, GATS-Dispute Settlement IMF, Asian Bank, World Bank, IBRD, IFC, IDA, UNCTAD, ILO, WIPO, UNIDO- GSP, GSTP and other international agreements and strategic alliances; International

Commodity Trading and Agreements.

Unit III: Multinational Corporations and Foreign Direct Investment

Nature of Multinational Corporations; MNC's and International Trade; Dominance of MNC's; India's Presence; Goals of MNC's; Fundamental Goals of Host Governments; Defenders and Critics of MNCs; In Defense of MNC's Foreign investments - Introduction, Patterns, Structure, Issues and Effects; Types of Foreign Investment-like FDI and Portfolio Investments; Theories of International Investments; FDI AND Production Linkages; Foreign Investment in India; Foreign Investment by Indian Companies; Cross-Border Mergers and Acquisitions

Unit IV: International Financial Environment

Financial Markets and Instruments - Introduction to Export and Import Finance - Methods of payment in International Trade – International Trade Financing- Institutional Finance for Trade-EXIM Bank-Forfaiting- Balance of Trade and Balance of Payments- Components of balance of payments- balance of payment disequilibrium and correction of disequilibrium-Financing of BOP deficit.

Unit V: Emerging Developments and Other Issues

Globalization and internal reform process - India's competitive advantage in industries like IT, pharmaceuticals, Steel, Textiles, Gems and Jewelry etc. – Potential Opportunities and threats

Recommended books:

- International Business by Hill and Jain, Sixth Edition Published by Tata McGraw Hill, New Delhi
- International Business by K Aswathappa, 4th Edition published by Tata McGraw Hill, New Delhi

Reference books:

- International Business by Justin Paul, 4th Edition published by Prentice Hall of India, New Delhi
- International Business-Text and Cases by Francis Cherunilam, 4th Edition, Published by Prentice Hall of India

Note: Latest edition of readings may be used.

Teaching Learning Process

Theory/ numerical with examples, Problem solving sessions.

Assessment Methods

Class tests/Assignments, Class participation, Presentations, End-semester examination.

Keywords

Operations Management, Production Panning, Material Management, Operation Research, Logistic.

MBA: Semester-III

Paper MGTM-301: MANAGEMENT INFORMATION SYSTEM

Duration: 3Hrs. Marks: 100 Credits: 4

Objective

Today, the management of information systems is mostly associated with databases, the Internet, and server rooms. However, "information management" has been around since before the invention of these tools. It is as old as commerce itself, as traders, bankers, and merchants have always had reason to track sales and inventory. Creditors must be aware of how much capital has been lent to borrowers and how much money has been deposited at banks. In its most general terms, information systems encompass any interactions between organized data and people.

MIS can be the means by which information is transmitted (such as the Internet), the software that displays the information (such as Microsoft Excel), or the systems that manage the data. In this course, you will learn about the various components of information systems and how to leverage them in business.

Course Learning Outcomes

Upon successful completion of the course a student will be able to:

CO1: Explain the Information Systems used in Business.

CO2: Make use of design, development, and security of ManagementInformation System & its utility.

CO3: Classify the ethical and social issues in using information system.

CO4: Compile the utility of Decision Support System.

CO5: Prioritise the use and analysis of data and information for decision-making.

Course Contents

Unit-I: Introduction

Concept of Data and Information, Information Systems, Classification, Operations Support System (OSS), Management Support System (MSS), Transaction Processing System (TPS), Process Control System (PCS), Enterprise Collaboration System (ECS), Management Information System (MIS), Decision Support System (DSS).

Unit-II: Artificial Intelligence (AI)

Artificial Intelligence (AI), Applications of Artificial Intelligence, Neural Networks, Fuzzy Logical Control System, Virtual Reality, Expert System (ES), Executive Information System (EIS), Cross Functional Information Systems.

Unit-III: Role of MIS

Strategic Advantage with MIS, Competitive Strategy Concept, The Value Chain and Strategic IS, Using IT for Strategic Advantage, Business Process Re-engineering, Creating a Virtual Company, Improving Business Quality, Total Quality Management, Becoming an Agile Company, Building a Knowledge Creating Company.

Unit-IV: Developing MIS Systems

System Development Life Cycle, Investigation Phase, Prototyping, Feasibility Analysis, System Analysis (DFD and ER Diagram), System Design, Implementing Business Systems, Testing, Documenting, Training, Conversion and Maintenance.

Unit-V: Applications

Enterprise Resource Planning (ERP), Customer Relationship Management (CRM), Security and Ethical Challenges of IT, Ethical Responsibility - Business Ethics, Technology Ethics; Cyber Crime and Privacy Issues.

Recommended Book

- Laudon K C and Laudon J P - Management Information Systems: Managing the Digital Firms (Prentice Hall, 1 Ed.)
- O'Brien James - Management Information System (Tata Mc Graw Hill, 12 Ed.)
- Jawedkar W S - Management Information System (Tata Mc Graw Hill, 3 Ed.)

Reference Books

- Arora Ashok, Bhatia Akshaya – Management Information System (Excel, 1 Ed.)
- Davis & Olson – Management Information System (TMH, 2 Ed.)
- Murdick, Ross, Claggett – Information System For Modern Management (PHI, 3 Ed.)
- Stair & Reynolds – Fundamentals of Information Systems (Thompson, 2 Ed.)

MBA: Semester-III

Paper MGTM-302: LEGAL ASPECTS OF BUSINESS

Duration: 3Hrs. **Marks: 100** **Credits: 4**

Objective

'*Ignorantia juris non excusat*' meaning thereby, 'ignorance of law cannot be excused'. So whether a person is aware of law or not, any violation of law even if unintentional, attracts penal action. It is therefore essential for a businessman to understand the fundamental legal aspects which directly affect the business operations. Some of such 'must-understand' legal areas covered in this module include provisions relating to Contracts, Sale of goods and matters associated with the formation and functioning of companies in India.

To provide a fundamental understanding of the various provisions of Indian Contract Act, 1872 Sale of Goods Act, 1930, Nagotiable Instrument Act, 1881, Indian Companies Act, 1956 and the consumer Protection Act, 1986 pertaining to Indian business scenario.

Course Learning Outcomes

Upon successful completion of the course a student will be able to:

CO1: Relate the rights and liabilities of a person based on the contractunder Indian contract Act, Companies Act, 2013,

CO2: Explain the utility of negotiable instrument Act and Partnership Actwith new concept of limited liability partnership.

CO3: Develop with case law studies related to Business Laws, labor laws.

CO4: Analyse and define the concept of business law, its application and source. Rights of customers and seller under Sale of Goods Act, different provisions. Negotiable instruments Act and Partnership Actetc.

CO5: Evaluate the major law enactments in India.

Course Contents

Curriculum

Unit I: The Indian Contract Act 1872

The Indian Contract Act 1872: Meaning and Essentials of contract; Kinds of contract based on validity, formation & performance; law relating to offer and acceptance, consideration, competency to contract, free consent, void agreements, performance of contracts, discharge of contracts, breach of contracts and quasi contract; Special contracts: contract of indemnity and guarantee, bailment and pledge, and agency.

Unit II: Sale of Goods Act 1930

Sale of Goods Act 1930: Sale and agreement to sell, implied conditions and warranties, sale by non-owners, rights of unpaid seller.

Unit III: Negotiable Instruments Act 1881

Negotiable Instruments Act 1881: Meaning of negotiable instruments, type of negotiable instruments, promissory note, bill of exchange, cheque.

Unit IV: The Companies Act 2013

The Companies Act 2013: Meaning and types, Incorporation, Memorandum & Articles of association, Prospectus, Issue of shares and bonus shares, rights issue, sweat equity, role of directors, share

qualification, company meetings. The Limited Liability Partnership Act 2008: Meaning and nature of limited partnership, formation, partners & their relations, extent and limitation of liability.

Unit V: Consumer Protection Act 1986

Consumer Protection Act 1986: Objectives and machinery for consumer protection, defects and deficiency removal, rights of consumers. The Right to Information Act 2005: Salient features and coverage of the act, definition of terms information, right, record, public authority; obligations of public authorities, requesting information and functions of PIO. Information Technology Act 2000: The rationale behind the act, Digital signature and Electronic signature, Electronic Governance

Recommended books:

- Tulsian, P C, Business Law, Tata McGraw Hill Education Private Limited, New Delhi.
- Garg, Sharad, Case Laws in Mercantile Law, Ramesh Book Depot, Jaipur.
- Kuchhal, M C, Modern Indian Company Law, Shree Mahavir Book Depot, New Delhi.

Reference books:

- Aggarawal, Rohini, Mercantile & Commercial Laws, Taxmann Publications, New Delhi, 2012.
- Majumdar, A K and Kapoor, G K, Company Law, Taxmann Publications, New Delhi, 2012.
- Gogna, P P S, A Text book of Mercantile Law (Commercial Law), S Chand, New Delhi.
- Singh Avtar, Principle of Mercantile Law, Eastern Book Company.

MBA: Semester-III
Paper MGTM-303: BUSINESS STRATEGY

Duration: 3Hrs. **Marks: 100** **Credits: 4**

Objective

Strategy is at the heart of general management education. It explores how firms compete and what they need to do to be successful. Clear strategic thinking should inform the decisions of every general manager and is the basic competence of management consultants everywhere. The Course structure gives an insight into the strategic planning process done by organizations. The student is required to learn basics of that how a strategy is formed and finally implemented by organization.

Course Learning Outcomes

Upon successful completion of the course a student will be able to:

CO1: Define & understand of the Business Strategy process in a dynamic and Competitive global environment.

CO2: Explain the growing importance of strategies in uncertain business Environment & learn the unique challenges faced by firms in competitive environment.

CO3: Identify the applicability of various Strategies in varied situations & also in general and competitive business environments.

CO4: Examine how to resolve cases through strategic decision making, & the use strategic management concepts and techniques.

CO5: Evaluate the understanding of the students about the application of various strategic models through different business perspectives.

Course Contents

Unit I:

Concept of strategy: Defining strategy, Levels at which strategy operates, Strategic Decision Making and Approaches to Strategic Decision making, essence of strategic thinking, replacing planning with strategic thinking, strategic management process, Mission and Purpose, Objectives and Goals, Strategic Business Units.

Unit II:

Environment Analysis and Diagnosis - Concept of Environment and its components, Environment scanning and appraisal, organizational appraisal, Strategic advantage analysis and diagnosis, SWOT analysis.

Unit III:

Grand Strategies –Stability, growth, retrenchment & combination strategies- Modernization, Diversification, Integration, Merger, Take-over and Joint Venture strategies, Turnaround – divestment and Liquidation strategies. Strategies for competing in globalizing markets.

Process of Strategic Choice – Process of strategic choice – Gap analysis. Industry analysis, competitor analysis - Porter's Five forces Model of competition. SWOT analysis- Synergy and Dysergy, Mckinsey's 7's framework; GE-9 Cell Model, Bostan's Consultancy Model. Distinctive competitiveness; Factors affecting Strategic Choice.

Unit IV:

Inter-relationship between formulation and implementation; Issues in strategy implementation, Resource Allocation, Budgets, Behavioural Issues – Leadership styles – Charismatic, transformational, visionary, team, cross-cultural & ethical leadership, Corporate culture and values power Social Responsibilities – Ethics, Building capable organization.

Functional Issues – Financial, Marketing, Operations and Personnel Plans and policies. Strategy and Structure: Organization structure, Structural Considerations, Structure for strategies, Organizational design and change, Matching structure and strategy.

Unit V:

Strategy Evaluation: Importance, Overview of strategic evaluation, strategic control, techniques of strategic evaluation and control, Operational Control.

Corporate Governance – Introduction & meaning, stakeholders, ownership & management, governing board, governance issues, governance & strategic implementation.

Recommended books:

- Business policy and strategic Management, Azhar Kazmi, Tata McGraw -Hill

Reference books:

- Strategic management and business policy, William F. Glueck, Tata McGraw -Hill
- Strategic Management, Michael Porter, Prentice hall of India
- Cases in Strategic Management, S.B. Budhiraja & Atheya, Excel Books

MBA: Semester-III

Paper MGTM-307: SUMMER INTERNSHIP/ PROJECT (PAP/PCP)

Marks: 100 **Credits: 4**

Objective

Student has to undergo a practical training of minimum forty-five days after second semester. MBA being professional course it is essential for each student to practically apply or understand theoretical concepts what he/she learn during the course. During the training programme student is expected to collect vital information through internal and external source so as to reach concrete conclusions on the given subject. Student has to prepare the project report under the guidance of internal teacher. Director/Principal of the institution/college will decide the last date of submission of final copy. Student should submit two typed copies to the Institute. One copy for the institute and another copy for his/her personal record. Students may prepare additional copies for the organization, guide etc.

A viva-voce examination will be conducted before the Semester III examination. A viva-voce committee of minimum two members will be appointed by the university.

Course Learning Outcomes

Upon successful completion of the course a student will be able to:

CO1: Understand the real-time working of organizations.

CO2: Demonstrate professional knowledge, skills and attitude along withthe experience needed to constitute a successful career.

CO3: Analyse career opportunities in their areas of interest.

CO4: Build aptitude for gaining supervised professional experiences.

CO5: Create a clear understanding of industry trends and advancements.

Course Contents

Guidelines for the project report

Declaration from the student that the research work is not copied from any other existing reports.
Certificate of the guide. Guide should certify that the research work is original and completed satisfactorily under his guidance.

The Chapter scheme for the project report will be as follows-.

CHAPTER NO-I – Introduction to the study.

Introduction
Objectives and importance of the study
Scope and limitations of study
Research Methodology

CHAPTER NO.II – Introduction to the organisation

Introduction to the industry
Brief History of organisation
Subsidiaries, Associates of the company
Departments / Manufacturing process

Important statistical information
Future prospect
Organisation Structure

CHAPTER – III - Theoretical Background

Basic concepts
Necessary theoretical inputs may be added to support the research work.

CHAPTER –IV – Data Analysis and Interpretation

Data should be analyzed with help of various tools studied in the Subject "Application of Research Methods in Management".

CHAPTER-V Findings / Observations

CHAPTER VI- Suggestions / Conclusion

Appendix

Questionnaire / Charts / Data / Diagrams / Tables / etc.

Bibliography

The above guidelines are not the prescription on writing the project report but can be used as milestones while writing the Project Report. The guide has the every discretion to change the chapter scheme as per the requirement

Note

1. There should be proper linkage between objectives, data analysis and interpretation, findings and suggestions.
2. Student should not use logos and name of company on the project report pages.
   Header and Footer shall consist of university name and institute name respectively. No other information should be included in the Header and Footer.
3. Use of colors in text matter should be avoided.

MBA: Semester-III

Paper MGTM-301F: SECURITY ANALYSIS

Duration: 3Hrs. **Marks: 100** **Credits: 4**

Objective

Integration of the world's Financial Markets has undoubtedly Increased the Investment Opportunities Manifold. A number of Transformations have taken place in India ever since the Economy was Opened up. A Constitution of Securities Exchange Board of India (SEBI) as Regulator was a Major Step in the Direction of Reforms in this subject, we Included A sense of Awareness is Included Among the Investors and they are encouraged to invest in the capital markets.

The aims of the students for taking a long -term view of the markets and taking wise investment decisions. it Covers in depth, the Investment Climate in India, Various Investment Avenues, Risk Return Profiles, Fundamental Analysis etc.

CO1: Remember the basics of financial market of India, focused on the Stock Market (Capital Market), various theories of portfolio, risk-return concepts and behavioural finance.

CO2: Understand the various investment & revenues & to understand the functions and importance of Indian security market.

CO3: Apply the concepts of TVM (Time Value of Money) concepts and calculations; including future value of a present sum, present value, and present and future values of annuities to management decision making.

CO4: Analyse and predict the trend of stock price movement & design portfolio of investment to reduce risk and earn profit & interpret the evidence relating to market efficiency.

CO5: Formulate the portfolio and evaluate the performance with revision if required.

Curriculum:

Unit I

Investment Scenario:

Concept of Investment, Investment Objective and Constraints, Investment Classification, Financial Market, Real Investment Avenues.

Units II

Risk and Return:

Concept of Risk and Return, Reduction of risk through Diversification, Quantify Portfolio Return and Risk, Security Market lines and its Applications.

Unit III

Fundamental Analysis and Equity Valuation Model:

Objective and Beliefs of Fundamental Analysis, Industry Analysis, Structural Analysis, Company Analysis, Valuation Methods, Dividend Discount Models, Measures of Relative Value, Price Earnings Ratio, Price to Book Value Ratio, Price to Sales Ratio, Free Cash Flow Model to Equity Model.

Units IV:

Technical Analysis and EMH:

Concept of Technical Analysis, Fundamental vs Technical, Technical Trading Rule, The Dow Theory, Charting, Price Patterns, Trendiness, Advances Technical tools, EMH-Concepts of Efficiency of the Stock Markets Forms of EMH, Test of EMH in Indian Market.

Unit V:

Bond Valuation, Bond With Warrants and Embedded Options:

Role of Bond from an Investors point of View, Tipes of Bonds, Value of Bond, Bond Yield Measures,

Forecasting Inerest Rates and Determinants of Interest Rates , Theory of Interest Rates, Types of Risks, Duration, Immunization of Risk Convexity, Term Structure of Interest rates. Bond With Warant, Convertible Bonds, Callable Bond.

Sugested Readings:

1.Investments :williams F. Sharpe,Gordon J .Alexander: PHI
2.Investments: Zvi Bodie, Alex kane, Alan J . Marcus TMH.
3. Introduction to Investment :Herbert B . MAYO: Cengage Learning.
4.Investment management Yogesh maheshwari.: PHI
5. Investment Analusis and manegment.:Charles P.james: WILEY India

MBA: Semester-III

Paper MGTM-302F: PORTFOLIO MANAGEMENT

Duration: 3Hrs. **Marks: 100** **Credits: 4**

Objective

Portfolio Management is the ultimate guide to understand the Various of Investment Management and How Managers run Money. Tthe Selection of Investment vehicles ,how they are valued, and how various strategies can be used, this Understanding is essential to Accomplish Investment Objectives.
This subject, aims to Enable the Student of Portfolio Management to Specify Appropriate Investment Policy or to be Frame an Investment Policy for the Business Organizations.
CO1 : Understand the capital market theory
CO2 : Understand investment policy, framework and constraints
CO3 : Understand the Asset Allocation, various approaches of asset allocation
CO4 : Gain knowledge and skills in portfolio diversification
CO5 : Develop proficiency in performance measurement by understanding portfolio evaluation measures

Curriculum

Unit I

Capital Market Theories: Markowitz Portfolio Theory, Capital Asset pricing model(CAPM),Capital Market Line(CML), Security market line (SML), Aebitrage pricing theory(APT).

Unit II

Investment Policy: Investment Objectives, Individual Investors, Determination of Investment Policies, Institutional Investors, Investment Constraints**.**

Unit III

Asset Allocation: Asset Allocation Process, Types of Asset Allocation, Asset Allocation-Management Style, Different Approaches to Asset Allocation Decision**.**

Unit IV

Portfolio Revision: Portfolio Diversification, PortfolioRevision, Transaction Costs,Constraints in Portfolio Rebalancing, Portfolio Monitoring and Rebalancing, Portfolio Revision Techniques, Issues in portfolio Rebalancing,Selection and Revision of equity portfolios.

Unit V

Performance Measurement: Portfolio Evaluation Measures, measures of returns , portfolio segment measurment, eugene Fama"s portfolio decomposition, use of maltiple benchmark and multiple index models for performance, performance attribution analysis, monitoring influance of asset allocation decisions, sector and security selection, performance evaluation of the portfolio manager.

Suggested Readings:

1. Investments :williams F. Sharpe,Gordon J .Alexander: PHI
2. Investments: Zvi Bodie, Alex kane, Alan J . Marcus TMH.
3. Introduction to Investment :Herbert B . MAYO: Cengage Learning.
4. Investment management Yogesh maheshwari.: PHI
5. Investment Analusis and manegment.:Charles P.james: WILEY India

MBA: Semester-III

Paper MGTM-303F: FINANCIAL MARKETS AND SERVICES

Duration: 3Hrs. **Marks: 100** **Credits: 4**

Objective

The focus in this paper would be on issues related to the financial markets & instruments along with different financial services and current scenario of Indian financial system & markets.

This paper provides an introduction to the financial markets products and services, markets and market participants. The objective of this course is to familiarize the student with the operations of Indian financial markets and basic concepts of different financial services along with the banking system.

CO1: The Student will be acquainted to various Banking and Non-Banking financial services in India.
CO2: The Student will understand the activities of Merchant Banking and credit rating.
CO3: The Student will be equipped to understand micro financing and other financial services in India.
CO4: The Student will understand how to evaluate and compare leasing & hire purchase.
CO5: The students will be able to understand the mutual funds functioning.

Curriculum

Unit I: Introduction to the Financial System

Nature and role of financial system, financial system and financial markets, government intervention in the financial system, informal and formal financial system, components of formal financial system-institutions, intermediaries, markets and services, functions and weaknesses of Indian Financial System.

Unit II: Introduction to Financial Markets

Money market and Capital market, money market instruments- T Bills, CPs & CDs. Capital Market-primary and secondary, methods of raising capital, Derivative concepts, Role of SEBI.

Unit III: Introduction to Financial services

Fund based and Fee based service. Conceptual aspect of factoring, forfeiting, credit rating, bill discounting, leasing, securitization and consumer finance. Evaluation of strategic decisions regarding factoring, leasing and merger & acquisitions.

Unit IV: Insurance and Mutual funds

Basic concepts of insurance and mutual funds, role of IRDA and AMFI

Unit V: Introduction to Banking

An overview of the different activities performed by a bank. Retail Banking: Concepts, forms and products of retail banking. Corporate Banking: meaning, nature, functions and products.

Recommended books:

- "Financial Markets and Services" E. Gordon & K. Natarajan, Himalaya Publishing House

Reference books:

- "Financial Markets, Institutions and Financial Services" Clifford Gomez, Prentice Hall of India
- “Financial Markets and Institutions-An Introduction to the Risk Management Approach” A. Saunders & M. M. Cornett. Tata McGraw Hills Publication
- “Indian Financial System” Bharti Pathak, Pearson Education.
- “Financial Institutions and Markets- structure, growth and innovations” L. M. Bhole & Jitendra Mahakud. Tata McGraw Hills Publication

MBA: Semester-III

Paper MGTM-301H: HUMAN RESOURCE PLANNING & DEVELOPMENT

Duration: 3Hrs. **Marks: 100** **Credits: 4**

Objective

This paper has been designed keeping in mind the current need of organizations. Human resource planning and management has become a bigger challenge for organization due to growing globalization and emerging new trends specially because of changing environment. This paper addresses all those challenges and suggests ways to handle them efficiently.

The objective of this paper is to develop a conceptual as well as a practical understanding of Human Resource Planning and Development in organizations. It includes almost every basic aspect of human resource management orientation.

COURSE OUTCOMES:

CO1: To understand the various concepts, principles, importance of Human Resource Management for an organization.

CO2: To design a Human Resource Plan for an organization and construct its Selection Process

CO3: To develop a job analysis and produce a job description and job specification for a given job profile.

CO4: To evaluate/justify the applicability of various techniques of Training

CO5: To identify the performance appraisal process, Job evaluation, Compensation factors and explain the utility of various methods involved in it.

Curriculum

Unit-I

Overview of Human Resources, Historical evolution, Integrated HR function, Corporate and HR environment, Strategic environment, Strategic Management

Unit-II

HR planning at Enterprise level, Need for systematic planning, Planning process, Operating Environment-Internal & External, Job description, Models & techniques of Manpower demand and Supply forecasting. Retention-Redeployment and Exit strategies

Unit-III

Career management-Recruitment and Selection, Employee Induction Programme, Employee training, Training needs & objective setting, Methods of training, Development & Development needs, Human Resource Development, Development process

Unit-IV

Performance planning – Performance appraisal, Measures of appraisal, System components appraisal methods, Ethics of appraisal, Problems & issues

Unit-V

Human Resource Information System- Concept, Objectives of HRIS, Types of information, Sources of

Information, Method of Data collection, Procedure of maintaining HRIS at Micro & Macro level

Recommended Book

- Praveen Durai (2010), Human Resource Management, Pearson Education, South Asia

Reference Books

- John Storey, Graeme Salaman, Christopher Mabey(1998): Strategic Human Resource Management: A Reader, SAGE Publications, 1998
- Christopher Mabey, Rosemary Thomson (2011): Developing Human Resources, Routledge, Taylor and francis group, New York, USA.
- Dessler & Varkkey, (2010): Human Resource Management 11e, India, Prentice Hall
- Richard D. Johnson, Michael J. Kavanagh, Mohan Thite (2011): Human Resource Information System 2e, SAGE Publications, 2011.

MBA: Semester-III

Paper MGTM-303H: MANAGEMENT TRAINING & DEVELOPMENT

Duration: 3Hrs. **Marks: 100** **Credits: 4**

Objective

Training and development is one of the key areas where rapid changes have been observed. Introduction of new technology in the market has made it compulsory for managers to train their employee for the survival of the enterprise. Secondly, training makes an employee efficient and effective resulting in better job satisfaction and increased overall production of the company which ultimately leads to profitability.

This paper has been designed, keeping in view the needs of the organizations. Successful managerial performance depends on the individual's ability to observe, interpret the issues and modify his approach and behavior. All organizations need to pay adequate attention to equip their employees. Rapid progress in technology has changed not only in the physical facilities but also in the abstract qualities required of the men who are using them. This paper will attempt to orient the students to tailor themselves to meet the specific needs of the organizations in training and development activities.

Course outcomes:

CO1: Demonstrate their conceptual Skills in understanding benefits of training, training need assessment and compare training and development.

CO2: Demonstrate conceptual Skills and application of designing training programme and apply the same to business situations.

CO3: Demonstrate their conceptual Skills in various training techniques and methods and to analyze target audience to identify typical style and needs.

CO4: Demonstrate conceptual understanding of evaluation of training.

CO5: Demonstrate the ability in applying the training and development concepts learnt to analyze a case let.

Curriculum

Unit-I

Training: Introduction - Conceptual framework of training - approaches on training – Difference between Training and Development - Training and applied psychology - principles of training - Learning and skills acquisition - Transfer and retention of skills.

Unit-II

Need for Training - Methods of Identification of Training needs - Training policy - Planning and organizing the training programmes - Methods of Training - – on the job training – off the job training – choosing optimum method – the lecture –panel discussion – behaviour modeling – interactive demonstrations – brain storming – case studies, incident process, in-baskets, team tasks, agenda setting, role plays, simulations, business games, critical incidents, grouping methods, transactional analysis, exception analysis.

Unit-III

Management Development (MD) and Organisational Development (OD) - Difference between MD and OD - Aims and objectives of MD and OD - Methods of MD -OD interventions – Succession Planning and Career development.

Unit-IV

Evaluation of training-need for evaluation, Principles of evaluation, Criterion and Approaches: Return on investment in training, Process of calculating ROI in training; emerging trends in training and development; New perspectives on training- Cross culture training.

Unit-V

Technology in training: CBT, Multimedia training, e-learning/Online learning, Distance learning

Recommended Book

- B.L. Gupta(2011), Management Training and Development, Vrinda Publication, New Delhi.

Reference Books

- Alan M. Saks, Robert R. Haccoun (2010): Managing Performance Through Training and Development, 5e, Nelson Education ltd. USA.
- Craig Eric Schneier, Craig J. Russell (1994): The Training and Development Sourcebook
- 2e, Human Resource Development Press Inc, USA.
- Wendell L. French, Cecil. H. Bell (2008): Organization Development, 6/e, India, Pearson Prentice Hall.
- Donald L. Anderson (2012): Organization Development: The Process of Leading Organizational Change, 2e, sage publication Inc.

MBA: Semester-III

Paper MGTM-301I: INTERNATIONAL ECONOMICS

Duration: 3Hrs. **Marks: 100**

Credits: 4

Objective

The course stresses policy topics that are topical. It is intended to provide an introduction to select economic and policy issues for advanced economies, the economies in transition, and emerging and developing countries

Course learning outcomes:

CO1. Identify the basics of international economics, difference between inter-regional and international trade, understand how international economics has helped countries to acquire goods at cheaper cost and explain it through the various international trade theories.

CO2. Show the benefits of international trade in a way how nations with strong international trade have become prosperous and have the power to control world economy and how global trade can be one of the major contributors of reducing poverty.

CO3. Explain how restrictions to international trade would limit a nation in the services and goods produced within its territories and at the same time explain that a rise in international trade is essential for the growth of globalization.

CO4. Show the importance of maintaining equilibrium in the balance of payments and suggests suitable measures to correct disequilibrium as well.

CO5. Be aware of trade policy and the changes in the composition as well as direction of foreign trade after international trade and know the causes and effects of deficits in the balance of payments, measures adopted to correct the deficits and identify the need for having trade reforms.

Curriculum

Unit-I: Meaning, Nature and Scope of International Economics:

Theoretical and descriptive international economics; features of global economy; categories of economies; developing and developed economies; characteristics of developed and developing economies; growing economic power of developing countries; factors promoting global economic co-operation; India and the global economy

Unit-II: The Pure Theory of International Trade

Features of international trade; International trade equilibrium-some analytical tools; the classical theory of comparative advantage; the classical theory of comparative costs;

refinements of the comparative costs theory; the modern theory of factor endowments: the Heckscher-Ohlin theory; international trade and factor prices; factor intensity reversals: Stopler-Samuelson and Rybezynski Theorems; New theories of international trade; economic growth and international trade; technical progress and international trade; the gains from trade; the terms of trade; terms of trade and economic development.

Unit-III: Commercial Policy:

Free trade versus protection: Tariffs; effective rate of protection; on-tariff barriers; import quotas; dumping; exchange control; international cartels; state trading; international economic integration; ASEAN and NAFTA

Unit-IV: Balance of Payments:

Meaning and components; adjustment mechanism of the balance of payments; balance of payments policies; internal and external balance; income adjustment: foreign trade multiplier; foreign exchange rate; foreign exchange rate policy; devaluation; optimum currency area; the foreign exchange market; international capital movements; the transfer problem.

Unit-V: Trade Policy and Co-operation:

Trade strategy; trade barriers; social issues in international trade; south-south co-operation; SAARC; SAPTA; Indo-lanka free trade agreement; indo-Singapore CECA; GSTP

Recommended Book

- International Economics by Francis Cherunilam published by Tata McGraw Hill, New Delhi
- International Economics by M.L Jhingan published by Vrinda Publications

MBA: Semester-III

Paper MGTM-303I: INTERNATIONAL MARKETING

Duration: 3Hrs. **Marks: 100** **Credits: 4**

Objective

To improve the learning and knowledge of the students about the concepts of International marketing; making the students understand marketing in all cultures; to create awareness about the economic, political and social changes that have occurred over the last decade which have altered the landscape of global business; to brief the students about the strategic implications of competition in different country markets.

Course Outcomes:

1. The students aware about the challenges of positioning the same product or service indifferent cultural markets.
2. The students will demonstrate their conceptual knowledge of Pricing decisions andproduct & services in international marketing.
3. To demonstrate their conceptual skill of analyzing global marketing channels, distribution and logistics management.
4. To anticipate problems and take proactive steps.

Curriculum

Unit I: An Overview of International Marketing

The scope and challenges of international marketing: global perspective, international marketing defined, the international marketing task, environmental adaptation, the self-reference criterion and Ethnocentrism, stages of international marketing involvement, strategic orientation; The dynamic environment of international trade: global perspective, balance of payments, protectionism, easing trade restrictions, IMF and World Bank

Unit II: The Cultural Environment of Global Markets

Global perspective; geography and global markets; geography, nature and economic growth; social responsibility and environmental management; world population trends; world trade routes; communication links; historical perspective in global business; Cultural dynamics in assessing global markets:

Global perspective; culture: definition and scope; cultural knowledge: factual versus interpretive knowledge, cultural sensitivity and tolerance; cultural values: business customs in global markets; political risks in global business

Unit III: Assessing Global Market Opportunities

Developing a global vision through marketing research: breadth and scope of international marketing research, problems of availability and use of secondary data, problems in analyzing and interpreting research information; Emerging markets: marketing and economic development, marketing in a developing country, developing countries and emerging markets; strategic implications of marketing; patterns of Multinational Corporations; global markets and multinational markets.

Unit IV: Developing Global Marketing Strategies

Global Marketing Management: planning and organization; products and services for consumers; products and services for businesses; International marketing channels; Exporting and logistics: special issues for business; integrated marketing communications and international advertising; personal selling and sales management; pricing for international markets;

Unit V: Implementing Global Marketing Strategies

Negotiating with international customers, partners and Regulators; the danger of stereo types; the pervasive impact of culture on negotiation behavior; implications for managers and negotiators

Recommended Book:

- Cateora, Philip R and Graham, John L, *International Marketing,* Tata Mc Graw Hill, New Delhi

Reference Books:

- International Marketing: Analysis and Strategy by Sak Onkvisit and John J. shaw published by Pearson Education, Fifth Impression
- International Marketing by P. K. Vasudeva published by Excel Books, latest edition.
- International Marketing by Michael and IKKA, PUBLISHED BY South-Western Cengage Learning, latest edition

MBA: Semester-III

Paper MGTM-301M:RETAIL MANAGEMENT

Duration: 3Hrs. **Marks: 100** **Credits: 4**

Objective

With International retailers like Wal-mart, Metro, Carrefour etc. expanding their arms in India, organized retailing is set to take Indian retail scenario by storm. The organized retailing sector is generating huge demand for management professionals to handle retailing operations in a professional manner. This necessitates the introduction of Retail management courses for the management professionals.This paper helps the students learn the functional aspects of organized Retailing and its management.

Course Outcomes:

CO1: The student will be able to systematically approach personal selling and sales targets.

CO2: The student will be able to explain the basics of retail store management.

CO3: The student will be able to systematically choose a location and layout of the store.

CO4: The student will be able to explain the concepts related to merchandise management.

CO5: Relate store management and visual merchandising practices for effective retailing.

Curriculum

Unit-I:Introduction to Retail Management

Retailing: Meaning, Retail format, types of retailers (store, non-store retailing), Indian retailing scenario, Functions performed by retailers.

Unit-II: Retail Consumer behavior and communication mix

Types of buying decisions, Retail buying process, Factors influencing retail buying decisions.
Retail communication mix: Meaning, methods, Retail communication process.

Unit-III:Retailing strategy

Definition, strategic retail planning process
Location & site analysis: Types of retail locations, factors affecting Trade area demand, factors affecting attractiveness of a site.

Unit-IV: Retail operations

Supply chain management: Meaning, process, importance, retail logistics.
CRM: Meaning, Importance, CRM process (customer data collection, data analysis, target customer identification, Development of CRM program implementation)
Retail Pricing: Pricing strategies (EDLP, HLP), Price adjustments (Mark downs, coupons, Rebates, Price bundling, multiple-unit pricing, variable pricing, online pricing)

Unit-V: Store management

Functions of store manager, Layout and Visual merchandising: Types of store layout designs, planograms, Merchandise presentation techniques.
Customer service: Importance, SERVQUAL GAPS MODEL.

Recommended book:

- Levy, Michael,Weitz, Barton A.&Pandit, Ajay,*Retailing Management*, Tata McGraw-Hill Education Private Ltd., New Delhi, Eighth edition, 2012

Reference book:

- Vedamani, Gibson G., *Retail Management*, Jaico Publishing House, Mumbai
- Pradhan, Swapna, *Retailing Management: Text and Cases*, Tata McGraw-Hill Publishing Company, New Delhi, 2nd ed.
- *Retail Management*, ICFAI Centre for Management Research, Hyderabad, May, 2003.

MBA: Semester-III
Paper MGTM-302M: CONSUMER BEHAVIOUR

Duration: 3Hrs. **Marks: 100** **Credits: 4**

Objective

The course introduces a wide range of behavioral concepts, and explores the strategic implications of customer behavior for marketers. The course challenges students to explore and relate the realities and implications of buyer behavior in modern cut throat markets.

The core objectiveof the course is to demonstrate to the student as to how an understanding of buyer behavior can help to improve and facilitate effective strategic decision making in the field of marketing. It also aims to help them understand and legitimize the behavior of a consumer in response to a variety of marketing stimuli.

Course Outcomes:

CO1: Understand environmental variables affecting consumer behavior

CO2: Explain the process of consumer behavior, the various external and internal factors that influence consumer behaviour and to apply thisunderstanding to the development of marketing strategy.

CO3: Utilize the knowledge of consumer decision making process and its applications in marketing function of firms & examine influence of social class, group dynamics on consumer behavior.

CO4: Create consumer-oriented marketing strategies & correlate the impact ofpersonality, perception, learning, motivation and attitude to the choices consumers make.

CO5: Create an ability to strategize and execute marketing strategies as per the preferences of customers.

Curriculum

Unit I: Consumer research, segmentation & motivation

- Consumer research, Quantitative vs. Qualitative research, Consumer research process
- Consumer segmentation, basis of segmentation, segmentation patterns, Targeting, Positioning
- Consumer motivation, Buying motives and their application in advertising appeals

Unit II: Consumer personality, perception & learning

- Personality concept, theories, Personality types (Type A, Type B) and their impact on consumer behavior
- Perception & individual information processing
- Learning, Cognitive learning (Classical conditioning, Instrumental conditioning)
- Brand equity, Brand loyalty

Unit III: Consumer attitude, reference group & family influence:

- Consumer attitudes, Measurement (Semantic differential scale, Likert scale), effecting attitude change
- Reference groups and their influence
- Family influences

Unit IV: Socio-cultural influence & consumer decision making:

- Social class, stratification in India, Social class mobility, Social class influence
- Culture, Sub-culture, their influences
- Consumer decision making, types, process

Unit V: Consumer behavior in market, post purchase behavior & organizational consumer

- Consumers in real markets, factors affecting outlet selection, In-store influences
- Consumer post purchase behavior, dissonance, consumer satisfaction/dissatisfaction
- Organizational consumer-Buying process, factors influencing organizational buying behavior

Recommended book:

1. Schiffman, Leon G. and Kanuk, Leslie Lazar, *Consumer behavior*, Dorling Kindersley (India) Pvt. Ltd., New Delhi, Ninth Edition.

Reference books:

1. Loudon, David L. and Bitta, Albert J. Della, *Consumer behavior Concepts and Applications*, Tata McGraw-Hill Publishing Company Ltd., New Delhi, Fourth Edition, 2008.

1. Blackwell, Roger D.; Miniard, Paul W. and Engel, James F., *Consumer behavior*, Cengage Learning India Pvt. Ltd., New Delhi, India Edition, 2009.

MBA: Semester-III

Paper MGTM-302P: PROCUREMENT MANAGEMENT

Duration: 3Hrs. **Marks: 100** **Credits: 4**

Objective

This course will put the emphasis on the design and management of processes and control systems of the inbound supply chain. The content that is covered in this course include procurement processes and strategies, risk pooling and multi-stage inventory control systems, value of collaboration and streamlined information and financial flow in supply chains, supplier relationship management as well as elementary and advanced methods for analysis and planning.

CO1 : Develop a foundational understanding of procurement management
CO2 : Acquire knowledge and skills in supplier identification, enabling effective supplier management
CO3 : Develop the skills and knowledge of global sourcing and international procurement
CO4 : Understand of the nature of outsourcing, and successful outsourcing implementation
CO5 : Understand the meaning and functionalities of an e-procurement system, enabling effective utilization of e-procurement systems

Curriculum

Unit-I: Introduction to Procurement management

Function of procurement, purchasing cycle, roles in the purchasing organization for a large project, contribution of shipping and freight forwarding agents in procurement management, preparation of purchase specifications, nature and relevance of purchase requisition, importance of procurement management.

Unit-II: Supplier Selection

Supplier identification, Key issues in Supplier selection, Supplier selection Methods, Contract with the supplier, bidding process, Bargaining and Negotiation.

Unit-III: Sourcing

Global sourcing and international procurement, problems associated with international sourcing and recommend solutions, nature of arbitration in international sourcing, implications of customs and countertrade in global sourcing.

Unit-IV: Outsourcing

Nature of outsourcing, Meaning by outsourcing, Methodologies of outsourcing, Drawbacks of outsourcing and ways of avoiding or managing such drawbacks.

Unit-V: E-Procurement Systems

Meaning by an e-procurement system, Benefits of e-procurement, barriers to e-procurement, key indicators for measuring the benefits of e-procurement.

Recommended Book

- Peter Bailey et 2008; Procurement, Principles and Management. Prentice Hall

Reference Books

- Kenneth Lysons et al 2008; Excellence in Procurement: How to optimise costs and add value.
- Purchasing and Materials Management - K S Menon.

MBA: Semester-III
Paper MGTM-303P: MATERIAL MANAGEMENT
Duration: 3Hrs. Marks: 100 Credits: 4

Objective

The course intends to equip students with updated knowledge of modern materials management concepts and aims to develop their functional expertise in the store and purchase management discipline. To increase the profitability of industry, the course intends to prepare the fleet of students equipped with latest tools and techniques of materials management so that they can face the challenges arising out of present scenario of competitiveness due to globalization of economy

Course Outcomes

CO1: Explain the scope of materials and spare parts management in an organization.
CO2: Explain the key characteristics of the purchasing system.
CO3: Apply the policies of Inventory Management and Develop overall materials requirement plan.
CO4: Explain the ERP System for Materials management.
CO5: Understand the importance of warehouse and supplier development in materials management.

Curriculum

Unit-I: Introduction to Material management

Introduction: Materials Management - Evolution, Importance, Scope and Objectives - Interface with other functions. Concept of Logistics and Supply Chain Management and evolution to 4PL, Trade off Customer Service & Cost.

Unit-II: Material Requirement Planning

Advantages over conventional planning (Order Point Method) – Input and output of MRP system - Forecasting – Overview of quantitative and qualitative methods of forecasting - Master Production Schedule - Bill of Materials – BOM Explosion - Material flow in MRP. MRP II. Concept of ERP. (Numericals expected on BOM Explosion, estimating Net requirements)

Unit-III: Inventory Management

Need of Inventory, Costs associated with Inventory, Types of Inventory , Basic EOQ Model, EOQ with discounts, Classification of material, ABC Analysis, VED, HML, FSN, GOLF, SOS (Numericals expected on Basic EOQ, EOQ with discounts & ABC)

Unit-IV: Inventory control & Cost Reduction techniques

Inventory turns ratios, Standardization, need and importance, Codification, concept, benefits. Value Engineering and Value Analysis, concept and process.

Unit-V: Purchasing Management and Materials Handling

Responsibilities of Purchase Department, Purchase Cycle, Negotiation & Bargaining, Vendor relations, Purchasing Methods, Global sourcing.
Principles of Materials Handling system - Materials Handling Equipments – Safety issues.

Recommended Book

- An integrated approach to Materials Management – Gopal krishnan & Sundersan
- Materials Management - Dutta

Reference Books

- Materials Management – Mr. K. K. Ahuja
- Purchasing and Materials Management - K S Menon
- Handbook of Materials Management - Gopalkrishnan
- Materials & Logistics Management - L.C.Jhamb

MBA: Semester-IV

Paper MGTM-401: PROJECT MANAGEMENT

Duration: 3Hrs. **Marks: 100** **Credits: 4**

Objective

This course examines business planning and project management in theory and practice. It offers a practical approach to managing projects, focusing on organizing, planning, and controlling the efforts of the project.

Course Learning Outcomes

Upon successful completion of the course a student will be able to:

CO1: Demonstrate an understanding of various phases of Project Management i.e. planning as well as implementing

CO2: Demonstrate the use of various tools available for Risk analysis in Capital budgeting to measure the financial feasibility of the project.

CO3: Demonstrate an understanding of various means of project financing and their merits and demerits

CO4: Demonstrate a systematic project implementation and review

Course Contents

Unit I: Introduction to Business Planning and Project management

Business Planning: Importance of Planning; the planning process-objectives vis-a vis a plan; the benefits of planning; types of plans used by the managers-short-range and long-range plans, strategic and operational plans; policies and procedures; budgets and projects.

Overview of the Project Management: Capital investment - Investment and Difficulties, Types of capital Investment, Phase of Capital Budgeting, Levels of Decision Making.

Unit-II: Planning Tools & Techniques and the Control Process

Forecasting; contingency planning; Benchmarking; Best Practices; use of staff planners; participatory planning; Importance of controlling; steps in the control process; types of controls; internal and external controls; organizational control; information and financial controls; operations management and controls.

Unit III: Project Risk Analysis:

Sources, Measures, and perspectives on Risk, Sensitivity Analysis, Scenario Analysis, Break even Analysis, Simulation Analysis, Decision tree Analysis Project selection under P

Unit IV: Multiple projects and Constraints:

Constraints, Method of Ranking, Mathematical programming Approach, Linear Programming Approach, Integer Linear Programing model, Goal Programing Model.

Unit V: Network Techniques for Project Management:

Development of Project network, Time Estimation, Determinations of Critical Path, PERT Model, CPM Model, Network Cost system.

Recommended Book

- Projects: Prasanna Chandra: Tata McGraw- HILL.
- Project Management :Panneerselvam:PHI

Reference Books

Project Management: Choudhary: TMH.

- Project Management For Business and Technology: Nicholas,:Pearson

Note: Latest edition of readings may be used

Teaching Learning Process

Interactive class room sessions with the help of power point presentations, case discussions and group discussions to ensure active participation and continuous learning.

Assessment Methods

Class tests/Assignments, Class participation, Presentations, End-semester examination

Keywords

Project Management, Business Planning, Risk Analysis, Linear Programming Approach, Project network.

MBA: Semester-IV

Paper MGTM-402: ENTREPRENEURSHIP

Duration: 3Hrs. **Marks: 100** **Credits: 4**

Objective

The course aims to acquaint the students with challenges of starting new ventures and enable then to investigate, understand and internalize the process of setting up a business.

Course Learning Outcomes

Upon successful completion of the course a student will be able to:

CO1: Define how to search financing alternatives for specific new concepts /idea of being an entrepreneur.

CO2: Develop Entrepreneurship Skills by explaining different stories of some leading entrepreneurs are and develop competences are needed to become an entrepreneur.

CO3: Apply 3S Model: Stimulate Sustain and Support so that a spirit of Entrepreneurship & explain about Management of Small Family Business.

CO4: Analyse management function of a company with special reference to SME sector, start–ups and Entrepreneurship along with government subsidies available to them & also understand the role of entrepreneurship in the economic development.

CO5: Analyze the entrepreneurial skills within individual by correlating the concepts & models taught.

Course Contents

Unit I: Introduction to Entrepreneurship

Definition of Entrepreneur, Internal and External Factors, Functions of an Entrepreneur, Entrepreneurial motivation and Barriers, Classification of Entrepreneurship, Theory of Entrepreneurship, Concept of Entrepreneurship, Development of entrepreneurship; Culture, stages in entrepreneurial process.

Unit II: Creativity and Entrepreneurial Plan

Creativity and Entrepreneurial Plan: Idea Generation, Screening and Project Identification, Creative Performance, Feasibility Analysis: Economic, Marketing, Financial and Technical; Project Planning: Evaluation, Monitoring and Control segmentation. Creative Problem Solving: Heuristics, Brainstorming, Synectics, Value Analysis, Innovation.

Unit III: International Entrepreneurship Opportunities

International Entrepreneurship Opportunities: The nature of international entrepreneurship, Importance of international business to the firm, International versus domestics' entrepreneurship, Stages of economic development.

Institutional support for new ventures: Supporting Organizations; Incentives and facilities; Financial Institutions and Small-scale Industries, Govt. Policies for SSIs.

Unit IV: Family and Non-Family Entrepreneur

Family and Non-Family Entrepreneur: Role of Professionals, Professionalism vs family entrepreneurs, Role of Woman entrepreneur.

Unit V: Venture Capital

Venture Capital: Venture capital, Nature and Overview, Venture capital process, locating venture capitalists.

Recommended Book:

- Hisrich, Robert D., Michael Peters and Dean Shepherded, Entrepreneurship, Tata McGraw Hill, ND

Reference Books:

- Barringer, Brace R., and R., Duane Ireland, Entrepreneurship, Pearson Prentice Hall, New Jersy (USA).
- Lall, Madhurima, and Shikha Sahai, Entrepreneurship, Excel Book, New Delhi.
- Charantimath, Poornima, Entrepreneurship Development and Small Business Enterprises, Pearson Education, New Delhi.

Note: Latest edition of readings may be used

Teaching Learning Process

Interactive class room sessions with the help of power point presentations, case discussions and group discussions to ensure active participation and continuous learning.

Assessment Methods

Class tests/Assignments, Class participation, Presentations, End-semester examination

Keywords

Entrepreneurship, Creative Performance, Govt. Policies, Family Entrepreneur, Non-Family Entrepreneur, Venture Capital

MBA: Semester-IV

Paper MGTM-403: BUSINESS ETHICS

Duration: 3Hrs. **Marks: 100** **Credits: 4**

Objective

The main objective of teaching Business Ethics and Corporate Governance to students of Management is to provide detailed knowledge to the students about the significant contribution of ethics and corporate Governance in the welfare of the society at large. Ethics constitutes the value and social system for individuals and organizations. It promotes an orderly corporate life and a disciplined society. Ethics and values are deep rooted in our traditional heritage of culture and beliefs. In fact, it has been realized that a successful business is one that is ethical and upholds its contribution to the society at large. Similarly, corporate governance is the acceptance by the management of the inalienable rights of the shareholders as the true owners of the corporation and of their role as trustees on behalf of the shareholders.

To improve the learning and knowledge of the students about the concepts of values and ethics, display of values, role of ethics and values in building an organization, aligning individual and organizational values for optimal gains and also to improve the knowledge and learning of the students about the best corporate governance practices.

Course Learning Outcomes

Upon successful completion of the course a student will be able to:

CO1: Find about business ethics, emerging trends in good governance practicesand corporate social responsibility in the global and Indian context.

CO2: Explain the significance of ethics and ethical practices in businesses whichare indispensable for progress of a country & recite the applicability of ethics in functional areas of management.

CO3: Identify the emerging need and growing importance of effective governance by the management of organizations.

CO4: Analyse ethical issues related to business and suitable corporate governance necessary for long term survival of business by applying integrates contemporary Ethics in business.

CO5: Evaluate the learning of various business ethics concepts that can be applied in the business models and decisions.

Course Contents

Unit I: Management Models in the Socio-Political Environment

Business and the new world, management challenges for the 21st Century, models of management in the current environment, management process and ethics, ethical issues, work ethics, promoting ethical climate in the business, relationship between values and behavior, similarities between attitudes and values, value system for managers

Unit II: Normative Ethics in Management

Theories of ethics, ethical reasoning, ethical relativism, ethical conflict and ethical congruence, normative ethics in management, categories of ethical theories, virtue ethics in business, strengths and weaknesses of virtue ethics

Unit III: Managing Ethics

Ethical activities, code of ethics, ethics training programs, ethics committees, law enforcing ethical conduct, company codes, key organizational and program design factors associated with ethics

compliance management, recipients of intended ethical action, the rational organization, Employees obligations to the firm, firm's duties towards employees.

Unit IV: SEBI Committee on Corporate Governance

The key mandatory recommendations focusing on strengthening the responsibilities of audit committees, improving the quality of financial disclosures including the proceeds from initial public offerings, corporate executive boards to assess and disclose business risks in the annual reports of companies, position of nominee directors, stock holder approvals and disclosures relating to compensation to non-executive directors

Unit V: Corporate Governance and Performance

Government failure: Corporate frauds and regulatory responses; an overview of corporate governance; internal control mechanisms; ownership concentration; contractual theory of the firm; executive compensation; outside control mechanisms; multiple control mechanisms; alternate governance systems.

Recommended Book:

- Business Ethics: Text and Cases by C.V.S Murthy published by Himalaya Publishing House, New Delhi

Reference Books:

- Ethics in Management and Indian Ethos by Biswanath Ghosh published by Vikas Publishing House
- Report of the SEBI Committee on Corporate Governance
- Takeover, Restructuring and Corporate Governance by Weston, Mitchell and Mulherin published by Pearson Education

Note: Latest edition of readings may be used

Teaching Learning Process

Interactive class room sessions with the help of power point presentations, case discussions and group discussions to ensure active participation and continuous learning.

Assessment Methods

Class tests/Assignments, Class participation, Presentations, End-semester examination

Keywords

Socio-Political Environment, Normative Ethics, Ethical code, SEBI, Corporate governance.

MBA: Semester-IV

Paper MGTM-407: RESEARCH PROJECT AND VIVA-VOCE

Marks: 100 **Credits: 4**

MBA: Semester-IV

Paper MGTM-404I: GLOBAL BRAND STRATEGY

Duration: 3Hrs. **Marks: 100** **Credits: 4**

Objective:

To develop the ability to Understand the methods of managing brands and strategies for brand management. Learn nature, scope and structure of International Business. Understand the influence of global environmental factors on international business operations.

Course Learning Outcomes:

On the completion of this course the student will be able to:

CO1: Identify the steps in brand building.
CO2: Use techniques for brand positioning.
CO3: Measure and interpret brand performance.
CO4: Design and implement brand strategies.
CO5: Analyze and suggest solutions for brand problems.

Curriculum

Unit-I: Evolution of Global Branding:

Colonialism- a major force of globalization and created a multitude of cross-border trade links. The Second World War- new consumer brands came to Europe and Asia. Big push for branding - erosion and subsequent demise of communism. The fall of the Berlin Wall-opened up previously inaccessible markets to foreign brands in Eastern and Central European markets, other markets such as Chile and South Africa. Opening up of China- a massive market and a massive production location for U.S, Japanese and European Brands.

Unit-II: Defining a Global Brand:

A brand-a construct and not a living and breathing organism. Brands- created, stimulated and applied by people working in organizations seeking to create worthwhile experiences for their customers that will induce behaviour beneficial to the organization. Global brands- as brands that are available across multiple geographies, without specifying any lower limit or any continental requirements.

Unit-III: The Brand Environment:

The brand environment- brand's own expression, perception and recognition-surrounded by internal and external factors that have an influence on the brand. Operation of a brand in an environment-the elements of the strategic planning cycle and, on the other hand, organizational conventions, competitive forces, market structures, cultural factors, consumer motivation and media attention; the lenses and filters

through which consumers perceive and experience the brand.

Unit-IV: The Management of Global Brands:

Local brands versus a global brand-multiple markets; a conflict between finding an optimum fit of the brand with local circumstances, and the desire to obtain brand consistency across markets; global and local brand management-a common basis for their brand strategy and planning. Common basis-a shared language, definitions, interpretations, assessments and most importantly a clear understanding of the relationships between the factors that shaped a brand in its global and local context; success and failure of global brands; the global brand proposition model-the internal and external analysis; emerging market firms and branding.

Unit-V: Applied Analytics In Brand Management:

Environmental Analysis, Competitor Analysis, Market Sizing, TAM, SAM, Target Market, R&D, Interviews, Surveys.

Recommended Book

- Global Marketing with a special Indian focus by Svend Hollensen and Madhumita Banerjee, 4th edition, published by Pearson
- Global Marketing by Johny K Johansson, 4th edition published by Tata McGraw Hill Publishing Limited, New Delhi

MBA: Semester-IV

Paper MGTM-405I: INTERNATIONAL BUSINESS OPERATIONS AND LOGISTICS

Duration: 3Hrs. **Marks: 100** **Credits: 4**

Objective

Business today is set in a global environment. The global environment is forcing companies, regardless of their location or primary market base, to consider the rest of the world in their competitive strategy analysis. Firms cannot isolate themselves or ignore external factors such as economic trends, competitive situations, or technology innovation in other countries if some of their competitors are competing or are located in those countries. Now a days it not uncommon for a company to develop a new product in the United States, manufacture it in Asia, and sell it in Europe.

International markets are predominated by Multinational Corporations who have perfected the principles, procedures, and practices of operations management. Most of the International business originates from developed countries who have a long history of industrial growth and this has kept the MNC's in good stead. MNC's have deep pockets, spend vast sums on R&D, carve core competencies for themselves, come out with innovative products, maintain quality, and fix low prices for their products.

Course learning Outcomes:

CO1: Develop basic understanding of operations and logistics, types of shipping, international laws related to logistics and transportation of goods, strategy process.

CO2: Learn discussion of terms of global market, current global marking approach

CO3: Discuss current practices, issues, and concerns in the field of international logistic operations.

CO4: Understand the reason of existence of International Trade.

CO5: Apply logistics principles in international business decisions.

Curriculum

Unit I: Global Operations & Logistics: Evolution and Design

Forces of Globalization; operations and logistics: application and objectives; Strategic role of operations and logistics; the strategic framework; flow management; global operations and logistics: an integrated approach; the concept of an operations and logistics strategy; the strategic process.

Unit II : The globalization of Operations and Marketing Strategies

The four driving forces of globalization process; global market, technological , cost, political and macroeconomic forces; changing consumer behaviour; global versus local marketing; functional integration of logistics and operations; the global product; sectorial integration: Manufacturer/distributor; efficient consumer response (ECR); The need for a global marketing approach; current and future challenges.

Unit III: Global Operations and Logistic Planning

The evolving concept of outsourcing; the importance of channels of distribution in physical distribution; the architecture of a physical distribution network in a globalised operations approach; logistic service firms and Third Party Logistics; demand, volatility, information distortion and the Bullwhip Effect in supply chains; from domestic to global supply chains: added complexities and uncertainties; vertical integration issues in global supply chains.

Unit IV : Risk Management in Global Operations

Operating exposure to exchange rate; risk and its management; the concept of operating exposure; managing operating exposure; pricing strategies for exporting firms; use of operational flexibility to minimize operating exposure; global sourcing strategies under exchange rate uncertainty; impact of exchange rates and classification of hedging strategies in global sourcing; basic function of foreign exchange markets; micro and macro level strategies for managing exchange rate risk.

Unit V: Effective Management of Global Operations and Logistics

The global LIS/LITS (Logistics Information system/Global Logistics and Telecommunications System); characteristics of LITS; Logistics organization and its relationship with LITS; Functional and geographic dimensions of LITS; Operations and logistics control: key activities need performance information; measuring performance in functional integration; new organizations related to manufacturing and logistics operations; the organizational implications of sect oral logistics co-operation; the international factor in global organizations.

Recommended Book

- Global Operations and Logistics: Text and Cases by Dornier, Ernst, Fender and Kouvelis published by John Wiley and Sons

Reference Books

- International Business, 2nd Edition by Roger Bennett published by Pearson Education.
- International Business, 3rd Edition by K Aswathappa published by Tata McGraw Hill Publishing Company Limited, New Delhi

- International Business by Hill and Jain, Sixth Edition published by Tata McGraw Hill Publishing Company Limited, New Delhi
- International Business: Environment and operations, 11th Edition by Daniel, radebaugh and Sullivan published by Pearson Education.

MBA: Semester-IV

Paper MGTM-406I: EXPORT IMPORT PROCEDURES AND DOCUMENTATION

Duration: 3Hrs. **Marks: 100** **Credits: 4**

Objective: To get students aware of the procedures of export and imports. MBA students will be able to compile the documents required for the purpose of the foreign trade. The roles of different regulatory and controlling bodies will be well known to the students.

Course learning outcomes:

CO1: understand Import/export trade organizations, the procedure of licensing, documents required at the time of export and import.

CO2: understand the nature of trading houses.

CO3: understand export sales contract and its processing.

CO4: understand export payment methods and Export-Import trade regulatory framework in India.

CO5: understand institutional set up for export promotion and export assistance in India.

Curriculum

Unit-I

Significance of procedures and documentation in international trade; procedures and documentation as trade barriers; WTO provisions; Aligned Documentation System (ADS); official machinery for trade procedures and documentation;

Unit-II

ITC(HS) classification System ;Role of ICC; INCOTERMS; nature of export/trading houses.

Unit-II

Export order processing; export contract; export price quotations; shipping and custom clearance of export and import cargo; central excise clearance; main export and import documents; Role of forwarding agents; cargo insurance and claim procedure.

Unit-III

Methods of payment in international trade; documentary collection of export bills; UCPDC guidelines; realization of export proceeds – provisions of RBI's Exchange Control Manual;

Unit-IV

Pre-shipment and post-shipment finance; role of EXIM bank and ECGC in India.

Unit-V

Major export promotion schemes in India – EPCGS, duty exemption scheme; DEPB scheme; SIL; facility for deemed exports; Export promoting institution's – role of export promotion councils, commodity boards and ITPO.

Recommended Book

- M.D. Jitendra, Export Procedures and Documentation, Rajat Publications, Delhi.

Reference Books

- Pervin Wadia, Export Markets And Foreign Trade Management, Kanishka Publications, New Delhi.
- Nabhi's Exporters Manual and Documentation.
- Nabhi's New Import-Export Policy Procedures.

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MBA- SEM IV

Derivatives Analysis and Valuation (MGTM-404F)

Course Credits: 4 **Contact Hours: 48 Hrs**

Objective

This course provides inputs that cater to the requirement of a reader intending to gain expertise in the area. the contents are divided into five chapters. these cover various features, dynamics and impact of Derivative markets and instruments, Forward markets and instrument futures markets options, markets. It is to explain the Structure of Global Derivative Market vis-a-vis the Indian Market . it Include Fundamental Concepts of Instruments ,their Characteristics, Mechanics of their Trading, Pricing Principles, Hedging and various applications of Derivative Instruments.

Course Learning Outcomes:

On the completion of this course the student will be able to:

CO1: The students will understand the mechanism of forwards/futures, options, financialswaps, commodity derivative.

CO2: The students will assess the application of derivative instruments using numericalproblems

CO3: The students will suggest and make better decisions for their company in riskmanagement.

CO4: The students will become more curious to research on the new developments that aretaking place in business environment.

Curriculum

Unit I: Derivative Markets and Instruments: Global scenario, indian scenario,Tipes of risk, tipes of Derivative Instruments, International Derivative market, Elementary pricing principles,purpose of Derivatives.

Unit II:Forward Market and Instruments:

TheStructure of Global Forward Markets types and Features of Forward Contracts, ValuingForward Contracts ,Forward contracts strategies.

Unit III: Futures: Structure of Global Futures Markets, Types of Contracts and Charecteristics,The Machanics of Future Trading, Valuation of Future Contracts, Applications of Futures(Hedging)

Unit IV: Option markets:

Introduction to options: srtucture of global option market option trading, option pricing - principle and models. Facors Influancing Option prices Intrinsic and time value of an Option.valuation of option(call and put). option pricing models-(Binomial option pricing model and Black -scholes model).sensitivity of option premium.

Unit V: Swap Markets :

The structure of Global Swaps Markets , Types and charecteristics of swaps , Vluaing swaps,Swap strategies, Forward swap ands Swaptons.

Recommended books:

- Financial Derivatives: S L Gupta:PHI learning pvt limited.
- Option Future and Other Derivatives :John.C.Hull: Pearson

MBA- SEM IV

International Finance and Trade (MGTM-406F)

Objective

Liberalization and Globalization of Economies in the recent years has increased the Prominence of International Finance and Trade, which prompted the Finance Managers to concentrate on the International Perspective as well, and it is Vital for a Student learning Finance to know the Intricacies of the Foreign Exchange Market and the Methods to Combat the Forex Risk.

Aim of this subject is to develop a body of knowledge and skills, and make it available to the students to make them successful managers in the new era of liberalization and globalization.

Course Credits: 4 **Contact Hours**: 48 Hrs

Course Learning Outcomes:

On the completion of this course the student will be able to:

CO1: The student will be able to demonstrate a better understanding of international trade.

CO2: The students will be able to learn about current exchange rate regime, functioning offoreign exchange markets and various participants.

CO3: The students will be able to demonstrate with managing firm's exposure to risk.

CO4: The students will be able to demonstrate with currency trading and swaps.

Curriculum

Unit I: Introduction to International Finance and Theory of International Trade:

Increasing interdependence in the global economy, trends in international trade and cross-border financial flow, recent developments in global financial markets, liberalization, Integration and Innovation, Challenges of International Financial Management, Theory of Absolute Advantage, Theory of Comparative advantage, Heckscher-Ohlin Model, Imitation -Gap Theory.

Unit II Balance of Payments

concept of Economic transactions, Resident, General Government institution, principles of accounting, Components of theBOP Account, factor affecting the components of the Bop account, balance of payments compilation, BoP- The Indian Perspective, Importance and limitations of BoP Statistics.

Unit III Foreign Exchange Market and Exchange rate determination, Introduction toExchange risk and Management of Rxchange Risk:

Structure and the Participants, Types of Transactions,Mechanics of Currency dealing,exchange rate quotations, arbitrage, forward rates evolution of Exchange control and the foreign exchange market in india, relation between forex and money market, coverd interest arbitrage, covered parity theorem, option forwards, cancelation of forward contracts, purchasing power parity, interest rate parity, defining foreign exchange expoxure, measuring foreign rxchange exposure, management of exchange risk, Internal vs External Hedging Strategies.

Unit IV:Short Term Financial Management:

Short Term Funding and Investment, Centralized vs. Decentralized Cash Management, Netting, Pooling, Exposure Management,Offshre Invoicing Centers.

Unit V: Inroduction to Trade block, WTO**, GATT, EXIM POLICY:**

Formation of Trade Blocks, OPEC, its Objective, Function of Euiropean Community(EC), Function and Structure of WTO Agreements,trade releted Aspects of Interllectual Property Rights (TRIPS), trade releted aspects of Investment Measures (TRIMS), Genral Agreement on Trade in Services (GATS), Trade Negotiations under GATT, EXIM Policy Historical Perspective, Objective,Highlight of Current policy, imports export import formation capital goods scheme (EPCG).

Recommended Book

- International Financial Management: P G APTE : The Mcgrow Hill Companies.

Reference books:

- International Economics: Francis Cherunilam: The Mc Graw Hill Companies.
- International Corporate Finance:JEFF MADURA:CENGAGE Learning.
- International money and Finance: michal melvin : Pearson Education.

MBA Sem-IV
Total Quality Management and Six Sigma (MGTM-404P)

Objective

The course is developed exclusively for the Management and Strategy Institute and is designed to give the student a strong understanding of TQM and how to apply it in a professional work environment. It also covers all basic TQM principles and gives the student a solid understanding of TQM and how it is implemented in a business environment.

Course Credits: 4 **Contact Hours**: 48 Hrs

Course Learning Outcomes:

On the completion of this course the student will be able to:

CO1: Evaluate the principles of quality management and to explain how these principles can be applied within quality management systems.

CO2: Evaluate the performance measures using various quality and management tools

CO3: Apply the Quality Function Deployment, Taguchi principles, Total Productive Maintenance and Failure Mode and Effect Analysis concepts to solve industrial problems.

CO4: Practice the various quality system in industry.

Curriculum

Unit-I: Introduction to Total Quality Management

Basics of Total Quality: Evolution of Quality, Definitions of Quality, Symptoms of a Non Quality Business, What is Total Quality, Total Quality Control (TQC), Dimensions of Quality (Kano's Model), Quality Challenge to Industry, Need for Quality Improvement: Impact of quality improvement, Differences between ISO 9000 and TQM.

Unit-II: Problem Solving and QC Tools

Types of problems, QC Tools, Approaches to problem Identification, Quality improvement Methodologies, Problem solving process, Seven basic QC Tools, Applications of problem solving Tools, Seven Management Tools: Tree diagram, Matrix diagram, Matrix data analysis, Process decision program chart, Arrow diagram.

Unit-III: TQM Principles and Tools

Continuous process improvement, Juran trilogy, PDSA cycle, 5S, Supplier partnership, Partnering, Sourcing, Benchmarking, Quality Function Deployment (QFD), House of quality, Taguchi quality

loss function, Total Productive Maintenance (TPM).

Unit-IV: Kaizen

Continuous Improvement: Kaizen Umbrella, Kaizen and Management, Kaizen and Innovation, Main Kaizen practice: Management, Kaizen and Labour-Management relations, Cultural change for Kaizen, 3- MUs checklist of Kaizen activities, 5-S Kaizen movement, 4 Ms checklist.

Unit-V: Six Sigma

Quality engineering and Six Sigma, DMAIC process for process and design improvement, Acceptance Sampling, SPC (Statistical Process Control), Taguchi methods for robust design, Six Sigma sustainability; Case studies.

Recommended Book

- Total Quality Management, Sharma D D, Sapna Book House
- Six Sigma Fundamentals: A Complete Guide to the System, Methods and Tools, D.H. Statmatis

Reference Books

- Six Sigma: The Breakthrough Management Strategy Revolutionizing The World's Top Corporations, Mikel J. Harry, Richard Schroeder, Don R. Linsenmann, Richard
- Total Quality Management, Poornima M Charantimath, Sapna Book House

MBA Sem-IV
Enterprise Resource Planning (MGTM- 406P)

Objective

To know the basics of ERP
To understand the key implementation issues of ERP
To know the business modules of ERP
To be aware of some popular products in the area of ERP
To appreciate the current and future trends in ERP

Course Credits: 4 **Contact Hours**: 48 Hrs

Course Learning Outcomes:

On the completion of this course the student will be able to:

CO1: Analyze concepts of Business Functions, Business Model and Business Processes.
CO2: Evaluate various benefits and risks in the Implementation of ERP
CO3: Asses the need for ERP applications in a business function and recommend a right package.
CO4: Create implementation Methodology while identifying the resources for the implementation process.

Curriculum

Unit-I: Introduction to Enterprise Resource Planning

Basic Concept & Introduction to Enterprise Resource Planning*;* Related Technologies – Business Intelligence, E-Commerce and E-Business, Business Process Reengineering, Data Warehousing, Data Mining , OLAP, Product life Cycle management, SCM , CRM

Unit-II: ERP Implementation

Implementation Challenges, Strategies, Life Cycle, Pre-implementation Tasks, Requirements Definition, Methodologies, Package selection, Project Teams, Process Definitions, Vendors and Consultants, Data Migration, Project management, Post Implementation Activities.

Unit-III: ERP in Action and Business Module

Operation and Maintenance, Performance, Maximizing the ERP System, Business Modules, Finance, Manufacturing, Human Resources, Plant maintenance, Materials Management, Quality management, Marketing, Sales, Distribution and service.

Unit-IV: ERP Market

ERP Marketplace, Dynamics, SAP AG, Oracle, PeopleSoft, JD Edwards, QAD Inc, SSA Global, Lawson Software, Epicor, Intutive.

Unit-V: Recent trends in ERP

Enterprise Application Integration, ERP and E-Business, ERP II , Total quality management, Future Directions, Trends in ERP.

Recommended Book

- Alexis Leon, “ERP DEMYSTIFIED”, Tata McGraw Hill, Second Edition, 2008.
- Mary Sumner, “Enterprise Resource Planning”, Pearson Education, 2007.

Reference Books

- Jim Mazzullo,”SAP R/3 for Everyone”, Pearson, 2007.
- Jose Antonio Fernandz, “The SAP R /3 Handbook”, Tata McGraw Hill, 1998.
- Biao Fu, “SAP BW: A Step-by-Step Guide”, First Edition, Pearson Education.

MBA Sem-IV
E-Marketing (MGTM-406M)

Objective

The course describes the internet and the various business models employed in online marketing, and it explores methods for conducting online market research and developing competitive intelligence for an organization.

Its detail processes for planning and implementing comprehensive e-marketing strategies using alternative online pricing strategies, Web-based advertising and promotion, and internet distribution channels. E marketing also considers other critical issues such as customer acquisition and retention, customer relationship management (CRM), and the challenges faced by firms in the application of e-marketing strategies in global markets.

Course Credits: 4 **Contact Hours**: 48 Hrs

Course Learning Outcomes:

On the completion of this course the student will be able to:

CO1: Define the importance of the digital marketing for marketing success.

CO2: Demonstrate customer relationships across all digital channels and buildbetter customer relationships.

CO3: Identify a digital marketing plan, starting from the SWOT analysis anddefining a target group.

CO4: Classify digital channels, their advantages and limitations, to perceivingways of their integration taking into consideration the available budget.

CO5: Propose different ways of their integration taking into consideration theavailable budget.

Curriculum

Unit I: E-Marketing in Context

Past, Present, and Future
Strategic E-Marketing and Performance Metrics
The E-Marketing Plan

Unit II: E-Marketing Environment
Building Inclusive E-Markets Ethical and Legal Issues

Unit III: E-Marketing StrategyE-Marketing Research Consumer Behaviour Online
Segmentation, Targeting, Differentiation, and Positioning Strategies

Unit IV: E-Marketing Management

Product: The Online Offer
Price: The Online Value The
Internet for Distribution
E-Marketing Communication Tools

Unit V: Customer engagement strategies

Engaging Customers with Social Media
Buying Digital Media Space
Customer Relationship Management

Recommended book:

- Strauss, J., & Frost, R. (2012). *E-Marketing* (6th ed.). Upper Saddle River, NJ: PearsonPrentice Hall

Reference books:

- Creating a Winning **E-Business**, Second Edition, Thompson - Course Technology

MBA Sem-IV

Sales & Distribution Management (MGTM-404M)

Objective

The course exposes the students to a wide range of activities and sub-activities involved in the field of Sales & distribution management and attempts to equip them with skill sets required to handle this marketing sub-function dexterously.

To apprise the student with the detailed conceptual and functional aspects of Sales management as also to augment and reinforce conceptual learning with application in real corporate framework.

Course Credits: 4 **Contact Hours**: 48 Hrs

Course Learning Outcomes:

On the completion of this course the student will be able to:

CO1: Find the necessary skills and knowledge needed to manage sales force, distribution management.

CO2: Relate the theoretical concepts of sales and distribution to real working infield.

CO3: Apply sales forecasting methods, sales budgeting techniques and methodsto manage selling expenses.

CO4: Analyse personal selling strategies and will be able to function as a team member in sales meetings & could build relationship with its team members.

CO5: Choose appropriate selling strategies in professional life.

Curriculum

Unit I: Sales Management & personal selling

- Conceptual understanding, Sales objectives, Importance
- Personal selling: Buying decision process, Classification of buyer accounts, Personal sellingprocess, Selling methods
- Sales forecasting, budgeting, Territories, Quotas

Unit II: Sales force management

- Need assessment, Recruitment, Selection
- Sales organization structures
- Sales force development: Training, Motivating, Compensating
- Sales force control mechanism

Unit III: Distribution management:

- Importance, Types of distribution channels, Channel decisions
- Selecting & motivating distribution channel partners
- Distribution channel cost control

- Retailing explored
- Wholesaling explored

Unit IV: Logistics & Supply Chain Management:

- Logistics: Conceptual understanding
- Functional areas of Logistics management
- Key decision areas of logistics management:
  - Inventory management
  - Warehousing
  - Transportation
  - Merchandize shrinkage/theft

Unit V: Recent trends in Sales management:

- Sales Management Information system
- Relationship marketing
- E-selling/e-marketing/Selling with internet leverage
- Direct marketing
- International Sales Management

Recommended book:

- Still Richard R, Cundiff Edward W and Govoni Norman A P, *Sales Management Decisions,Strategies and Cases*, Prentice Hall of India Pvt. Ltd., New Delhi, 5th Ed., 2008.

Reference books:

- Havaldar Krishna K and Cavale, Vasant M, *Sales and Distribution Management Text andCases*, Tata McGraw Hill Education Pvt. Ltd. , New Delhi, 2009.
- Gupta S L, *Sales and Distribution Management Text & Cases An Indian Perspective*, Excel Books, New Delhi, 2005.

MBA-SEM IV
International Business Operations and Logistics (MGTM-405I)

Objective

Business today is set in a global environment. The global environment is forcing companies, regardless of their location or primary market base, to consider the rest of the world in their competitive strategy analysis. Firms cannot isolate themselves or ignore external factors such as economic trends, competitive situations, or technology innovation in other countries if some of their competitors are competing or are located in those countries. Now a days it not uncommon for a company to develop a new product in the United States, manufacture it in Asia, and sell itin Europe.

International markets are predominated by Multinational Corporations who have perfected the principles, procedures, and practices of operations management. Most of the International business originates from developed countries who have a long history of industrial growth and this has kept the MNC's in good stead. MNC's have deep pockets, spend vast sums on R&D, carve core competencies for themselves, come out with innovative products, maintain quality, and fix low prices for their products.

International businesses are in a position to take advantage of location economies. An MNC can locate its subsidiary in any part of the world where cost of production is the lowest. If American and Canadian firms invest in Mexico or European companies go to China or India, the motive behind such move is to take advantage of the low cost of labour in those countries. China has proved to be a low wage country. Its wage rates are a third of Mexico and Hungry and five percent of those in U.S or Japan.

Course Credits: 4

Course Outcomes **Contact Hours**: 48 Hrs

CO 1: The students will be able to identify and define the Meaning, Nature, importance and types of International Business.

CO 2: It will make the students able to understand the International business environment and the theories related to it.

CO 3: It will make the students able to analyse the Modes of Entry in international market, Marketing Mix, Factors Affecting Decision For International Business.

CO 4: The students will be able to evaluate the trends in International Trade and Documentation

Unit I: Global Operations & Logistics: Evolution and Design

Forces of Globalization; operations and logistics: application and objectives; Strategic role of operations and logistics; the strategic framework; flow management; global operations and logistics: an integrated approach; the concept of an operations and logistics strategy; the strategicprocess.

Unit II : The globalization of Operations and Marketing Strategies

The four driving forces of globalization process; global market, technological , cost, political and

macroeconomic forces; changing consumer behavior; global versus local marketing; functional integration of logistics and operations; the global product; sectorial integration: Manufacturer/distributor; efficient consumer response (ECR); The need for a global marketing approach; current and future challenges.

Unit III: Global Operations and Logistic Planning

The evolving concept of outsourcing; the importance of channels of distribution in physical distribution; the architecture of a physical distribution network in a globalised operations approach; logistic service firms and Third Party Logistics; demand, volatility, information distortion and the Bullwhip Effect in supply chains; from domestic to global supply chains: added complexities and uncertainties; vertical integration issues in global supply chains.

Unit IV : Risk Management in Global Operations

Operating exposure to exchange rate; risk and its management; the concept of operating exposure; managing operating exposure; pricing strategies for exporting firms; use of operationalflexibility to minimize operating exposure; global sourcing strategies under exchange rate uncertainty; impact of exchange rates and classification of hedging strategies in global sourcing; basic function of foreign exchange markets; micro and macro level strategies for managing exchange rate risk.

Unit V: Effective Management of Global Operations and Logistics

The global LIS/LITS (Logistics Information system/Global Logistics and Telecommunications System); characteristics of LITS; Logistics organization and its relationship with LITS; Functional and geographic dimensions of LITS; Operations and logistics control: key activities need performance information; measuring performance in functional integration; new organizations related to manufacturing and logistics operations; the organizational implications of sect oral logistics co-operation; the international factor in global organizations.

Recommended Book

- Global Operations and Logistics: Text and Cases by Dornier, Ernst, Fender and Kouvelis published by John Wiley and Sons

Reference Books

- International Business, 2nd Edition by Roger Bennett published by Pearson Education.
- International Business, 3rd Edition by K Aswathappa published by Tata McGraw Hill Publishing Company Limited, New Delhi
- International Business by Hill and Jain, Sixth Edition published by Tata McGraw Hill Publishing Company Limited, New Delhi
- International Business: Environment and operations, 11th Edition by Daniel, radebaugh and Sullivan published by Pearson Education.

MBA Sem-IV

Performance Appraisal and Evaluation (MGTM-406H)

Objective

To acquaint the student to develop an understanding of the performance management of employees and its implications. Study of performance management that aid in motivation, employee development and productivity improvement to meet organization goals.

Course Credits: 4 **Contact Hours**: 48 Hrs

Course Outcomes:

CO1: Define the of issues related to the performance evaluation or rewarding Human Resources in the Corporate Sector, public services and other forms of organizations.

CO2: Understand the importance of performance appraisal and informed them of how organizations manage performance.

CO3: Apply the skills for handling the issues relating to not only appraising staff but also managing their performance.

CO4: Analyse the skills in designing, analyzing and restructuring compensationpackages related systems, policies and strategies.

CO5: Evaluate the strategic role of HR in executing compensation packages for business excellence.

Unit I

Introduction to Performance Management, Definition, nature, scope, importance, Business and sub functional Performance Management, Performance Management as a management Tool, Performance objectives and standards, Standards of Performance. Performance Domains and dimensions.

Unit II

Performance Planning Process, Contents of Performance Plan, 8 Step Model, Individual and Group Performance Planning, Role clarity and Job description.

Meaning of Performance appraisal, methods and approaches to performance appraisal, Obstaclesin appraisal, Designing appraisal for better results, Performance Appraisal Interview, Potential Appraisal.

Unit III

Introduction, Definition, Purpose and Role of appraisal in Performance Management, Methods and Steps in Performance Appraisal. Why Appraisal Fail, Types of Appraisal, Approaches and Design, MBO, 360*, Potential Appraisal, Performance Review, Performance counseling/ Mentoring. Team Performance Appraisal.

Unit IV

Introduction to PMS, Importance, Features, Process of Building PMS, PMS Dimensions, Conceptual Framework. 4 pillars of PMS, PMS Prism, Strategic Performance Management, Performance and Strategy linkage, Components of SPM, SPM- Balanced Score Card, SPM and Metrix, SPM Environment teatre and Risks.

Unit V

Competency Based Performance Management System, Performance Measurement, Performance Measurement through BSC, Performance and Succession Plan/ Career Development,

International Performance Management, Performance Audit, Human Resource Valuationaccounting and Audit.

Recommended Book:

- D. K. Bhattacharya, Performance Management Systems and Strategies- Text book, Pearson.

Reference Books:

- Aquinis, Performance Management, Pearson.
- Chadha, Performance Management, Macmillan.
- Armstrong, Michael, Baron, Jaico, Performance Management.
- Cardy, Performance Management, PHI.
- Kohli, Deb, Performance Management, Oxford.
- D Sharma, Performance Management, HPH.
- R.K. Sahu, Performance Management System, EB.
- TV Rao, Performance Management and Appraisal, Sage.

MBA- SEM IV

Global Brand Strategy (MGTM-404I)

Objective

- To help the students appreciate the relationship between Corporate Strategy and Product and Brand Management.
- To provide a framework to understand the new product development process, the organizational structures for new product development and product management functions within an organization.

Course Credits: 4 **Contact Hours**: 48 Hrs

Course Outcomes:

CO1: Identify the steps in brand building.
CO2: Use techniques for brand positioning.
CO3: Measure and interpret brand performance.
CO4: Design and implement brand strategies.
CO5: Analyze and suggest solutions for brand problems.

Unit-I: Evolution of Global Branding:

Colonialism- a major force of globalization and created a multitude of cross-border trade links.The Second World War- new consumer brands came to Europe and Asia. Big push for branding - erosion and subsequent demise of communism.The fall of the Berlin Wall-opened up previously inaccessible markets to foreign brands in Eastern and Central European markets, other markets such as Chile and South Africa.Opening up of China- a massive market and a massive production location for U.S, Japanese and European Brands.

Unit-II: Defining a Global Brand:

A brand-a construct and not a living and breathing organism. Brands- created, stimulated and applied by people working in organizations seeking to create worthwhile experiences for their customers that will induce behavior beneficial to the organization. Global brands- as brands that are available across multiple geographies, without specifying any lower limit or any continental requirements.

Unit-III: The Brand Environment:

The brand environment- brand's own expression, perception and recognition-surrounded by internal and external factors that have an influence on the brand. Operation of a brand in an environment-the elements of the strategic planning cycle and, on the other hand, organizational conventions, competitive forces, market structures, cultural factors, consumer motivation and media attention; the lenses and filters through which consumers perceive and experience the brand.

Unit-IV: The Management of Global Brands:

Local brands versus a global brand-multiple markets; a conflict between finding an optimum fit of the brand with local circumstances, and the desire to obtain brand consistency across markets; global and local brand management-a common basis for their brand strategy and planning. Common basis-a shared language, definitions, interpretations, assessments and most importantly a clear understanding of the relationships between the factors that shaped a brand in its global and local context; success and failure of global brands; the global brand proposition model-the internal and external analysis; emerging market firms and branding.

Recommended Book

- Global Marketing with a special Indian focus by SvendHollensen and Madhumita Banerjee, 4th edition, published by Pearson
- Global Marketing by Johny K Johansson, 4th edition published by Tata McGraw Hill Publishing Limited, New Delhi

MBA-SEM IV

Industrial Relations (MGTM-405H)

OBJECTIVE:

Industrial relations constitute one of the most delicate and complex problems of the modern industrial society. This paper has been made keeping in mind all kind of Industrial relation problems and how to handle them effectively. The objective of this paper is to develop a conceptual and practical framework of Industrial relations i.e. Relationship between employee and management.

Course Credits: 4 **Contact Hours**: 48 Hrs

Course Outcomes

CO1: Learners will recognize the concept of performance management in organizations.
CO2: Learners will realize the Industrial Disputes and its related concepts.
CO3: Learners will aspire about the Trade Union, Collective Bargaining and Worker's Participation in Management.
CO4: Learners will comprehend Employee Discipline, Grievance Handling and also Industrial Related Laws in India.

Unit I

Industrial Relations- Concept and scope, Stake holders; Approaches to Industrial Relations; Labor Market, Demand and Supply of Labor, Nature and composition of Indian labor, Employment and Unemployment Scenarios.

Unit II

History: Evolution of Industrial Relations UK), Emergence of Industrial relations/ Trade Union movement in India, Government initiatives, Industrial relations machineries, ILO and its impact on Indian IR scenarios.

Unit III

Industrial Disputes resolutions: Sources – Wages, service conditions and discipline, Concept of wages, Wage theories, wage differentials, Regulations for protection of wages, service conditions and Work discipline. Law of natural justice and domestic enquiries; Workers participation in Management, Works committees, Joint Councils.

Unit IV

Industrial Conflict: Negotiation, Mediation/ Conciliation, Arbitration, Adjudication- Labor court, Industrial Tribunal, National Tribunal; Special reference to Pay Commissions.

Unit V

Trends: Globalization and its impact on Industrial Relations, Employee Engagement practices, current trends in Industrial Relations in India, Industrial Relations bill- ifs and buts, Ethics, governance and Industrial Relations.

Recommended Book

- P. N. Singh, Neeraj Kumar, Employee Relations Management, Pearson.
- Personnel Management and Industrial Relations, P.C. Tripathi, Sultan chand and sons.

RAFFLES UNIVERSITY

ALABBAR SCHOOL OF MANAGEMENT
RAFFLES UNIVERSITY, NEEEMRANA

Bachelor of Business Administration (BBA 3 Years)

Programme Objectives (PO)

The objectives of BBA Programme are:

PO1: To remember the conceptual knowledge with an integrated approach to various functionsof management.
PO2: To develop leadership and communication skills to become successful business leadersand managers.
PO3: To encourage and develop critical thinking, analysis and initiative ability skills.
PO4: To develop problem-solving skills through experiential learning and innovative pedagogy to ensure utilization of knowledge in professional careers.
PO5: To apply the various concepts, theories and models in the area of HR, Marketing, Finance.
PO6: To develop a positive attitude and life skills to become a multi facet personality with a sense of environmental consciousness and ethical values.

Programme Learning Outcomes (PLO)

The expected outcomes after completing the program would be:

PLO1: Management knowledge: Acquire adequate knowledge through principles, theory and models of business management, Accounting, Marketing, Finance, IT, Operations and Human Resource.

PLO2: Communication: Demonstrate proficiency for Business Communication for effective and professional business management.
PLO3: Technical Knowledge: Acquire employability skills through practical exposure of IT and its usage in management.

PLO4: Investigation of Business Problems: Analyze and comprehend the applicability of management principles in solving complex business issues.
PLO5: Entrepreneurial Perspective: Develop entrepreneurial skills to become an entrepreneur.

PLO6: Environment and Sustainability: To build perspective about global environment including cultural, social and sustainability issues.

PLO7: Leadership Skills: Ability to develop group behavior and lead a team to achieve the individual, group and organizational goals.

PLO8: Ethics: Understand importance of ethics in business decision-making and inculcate the spirit of social responsibility.

PLO9: Global Perspective: Comprehend the applicability of management principles in the situations pertaining to global business world.

PLO10: Area Specific Expertise: Apply various concepts, theories and models in the functional areas of business like Marketing, HR and Finance in the Organizations.
PLO11: C**ross-Disciplinary Integration and Strategic Perspective**: Acquire and apply knowledge of economics, mathematics, statistics and production and operation management and its integration relevant to business decisions.

PLO12: Legal Knowledge: Obtain legal knowledge of various business operations for effective decision-making.

Program Specific Outcomes (PSO)

PSO1 Acquire Practical learning through summer internship, industrial visit and Business Plan etc.
PSO2 Demonstrate analytical and problem-solving skills through core elective area of specialization in Finance, Human Recourse, and Marketing to solve the business issues.
PSO3 Understand and develop the new dimensions of knowledge through open electives to cater the need of the industry.

BBA

I Year: I Semester

S. No.	Subject Code	Subject	L	T	P	CIE	ESE	Total	C
	CORE								
1.	MGTB103	Management Process	4	0	0	60	40	100	4
2.	MGTB104	Business Organization and Environment	4	0	0	60	40	100	4
3.	MGTB105	Principles of Accounting	4	0	0	60	40	100	4
4.	MGTB106	Business Mathematics	4	0	0	60	40	100	4
AECC									
5.	MGTB101	English Language-I	2	0	0	30	20	50	2
SEC									
6.	MGTB102	Constitution of India and Human Rights	4	0	0	60	40	100	4
GE									
7.	MGTB107	Fundamentals Computer and IT	3	0	1	60	40	100	4
		Total	**25**	**0**	**1**	**390**	**260**	**650**	**26**

BBA

[Effective from the Session 2019-20]

I Year: II Semester

S. No.	Subject Code	Subject	L	T	P	CIE	ESE	Total	C
	CORE								
1.	MGTB203	Business statistics	4	0	0	60	40	100	4
2.	MGTB204	Cost Accounting	4	0	0	60	40	100	4
3.	MGTB205	Organization Behavior	4	0	0	60	40	100	4
AECC									
4.	MGTB201	English Language-II	3	0	0	30	20	50	2
SEC									
5.	MGTB202	Environmental Studies	4	0	0	60	40	100	4
		Total	**19**	**0**	**0**	**270**	**180**	**450**	**18**

BBA

Year: III Semester

S. No.	Subject Code	Subject	L	T	P	CIE	ESE	Total	C
	CORE								
1.	MGTB 302	Business Economics	4	0	0	60	40	100	4
2.	MGTB 303	Corporate Accounting	4	0	0	60	40	100	4
3.	MGTB 304	Human Resource Management	4	0	0	60	40	100	4
4.	MGTB 305	Rural Management	4	0	0	60	40	100	4
5.	MGTB 306	Comprehensive Viva Voce	0	0	0			100	4
SEC									
6.	MGTB-301	Cyber Phenomenon & Law	3	0	0	60	40	100	4
		Total	**19**	**0**	**0**	**300**	**200**	**600**	**24**

BBA

Year: IV Semester

S. No.	Subject Code	Subject	L	T	P	CIE	ESE	Total	C
	CORE								
1.	MGTB402	Financial Management	3	0	0	60	40	100	4
2.	MGTB 403	Direct Tax	4	0	0	60	40	100	4
3.	MGTB 404	Management Accounting	4	0	0	60	40	100	4
4.	MGTB 405	E- Business	4	0	0	60	40	100	4
5.	MGTB 406	Business Research Methods	4	0	0	60	40	100	4
SEC									
6.	MGTB-401	Business Communication	4	0	0	60	40	100	4
		Total	**23**	**0**	**0**	**360**	**240**	**600**	**24**

BBA

Year: V Semester

S. No.	Subject Code	Subject	L	T	P	CIE	ESE	Total	C
CORE									
1.	MGTB501	Marketing Management	3	0	0	60	40	100	4
2.	MGTB502	Human Resource Planning and Development	4	0	0	60	40	100	4
3.	MGTB505	Summer Internship & Project	4	0	0			100	4
DSE(Choose any one**)**									
4.	MGTB503	Investment Management Entrepreneurial c. Management Advertising	4	0	0	60	40	100	4
5.	MGTB504	International Finance Accounting Information System c. Labour Law	**4**	**0**	**0**	60	40	100	4
		Total	**22**	**0**	**0**	**240**	**160**	**500**	**20**

BBA
III Year: VI Semester

S. No.	Subject Code	Subject	L	T	P	CIE	ESE	Total	C
	CORE								
1.	MGTB 603	International Business	4	0	0	60	40	100	4
2.	MGTB 604	Operation Management	4	0	0	60	40	100	4
3.	MGTB 605	Research Project Report	4	0	0			100	6
DSE(Choose any one**)**									
4.	MGTB 601	a. Business Ethics b. Financial Market Institutions, and Services c.Industrial Relation	4	0	0	60	40	100	4
5.	MGTB 602	Performance Management Goods and Services Tax Consumer Affairs and Customer care	4	0	0	60	40	100	4
		Total	**20**	**0**	**0**	**240**	**160**	**500**	**22**

BBA

Syllabus
BBA
I Semester

ENGLISH LANGUAGE

MGTB10

1**L T P**

C 20 0 2

BBA: Semester-I

Course Objective

Teaching English to students of Management is to prepare them with an adequate knowledge of communication in English in the periphery of business world. Students should feel comfortable and easy to communicate in English with others. They have learnt some basic grammatical usage and in this upcoming semester they will learn to communicate to each other with role play conversation. The course contents will, bring a lot of changes in their soft skills and personal development which are very essential for each of them. This syllabus is only for the second semester which will help them to communicate comfortably to others with general English in business field. The following contents are enlisted for the students of BBA/BBA in the second semester.

Course Learning Outcomes

After completing the course, the student shall be able to:

CO1: To make effective and impressive communication.
CO2: To make communication in ethical manner.
CO3: Capable to make persuasive digital communication.
CO4: Capable to make abstract & summaries of proposals.
CO5: Better presentation and communication using proper body language.

Course Contents

Unit I: Introduction to Communication

Meaning and Definition - Process - Functions - Objectives - Importance - Essentials of good communication - Communication barriers - Overcoming communication barriers

Unit II: Reported Speech

What is reported speech, where to use, how to report the speech of second person to others, words used for reported speech, etc.

Unit III: Oral Communication

Meaning, nature and scope - Principles of effective oral communication - Techniques of effective speech - Media of oral communication (Face-to-face conversation - Teleconferences - Press Conference – Meetings - Rumour -
Demonstration and Dramatization - Public address system - Group Discussion - Oral report - Closed circuit TV). The art of listening - Principles of good listening.
Jam sessions – Debates etc.

Unit IV: Business Letters

Need and functions of business letters - Planning & layout of business letter - Kinds of business letters - Essentials of effective correspondence
Drafting of business letters, Enquiries and replies - Placing and fulfilling orders - Complaints and follow-up - Sales letters -Circular letters - Application for employment and resume - Report

writing - Notices, Agenda and Minutes of the Meetings – Memos – cover letters – resume/ cv drafting.

Unit V: Basic Grammar

Aids to correct writing- Tenses, Modals, Subject-verb agreement, common errors.

Suggested Readings:

Bovee, and Thill, Business Communication Essentials, Pearson Education

Shirley Taylor, Communication for Business, Pearson Education

Locker and Kaczmarek, Business Communication: Building Critical Skills, McGraw Hill Education

Herta A Murphy, Herbert W Hildebrandt, Jane P. Thomas, Effective Business Communication (SIE), McGraw Hill Education

Dona Young, Foundations of Business Communication: An Integrative Approach, McGraw Hill Education

Raymond V. Lesikar, Marie E. Flatley, Kathryn Rentz, Paula Lentz, and Neerja Pande, Business Communication: Connecting in a Digital World (SIE), McGraw Hill Education

Course Learning Outcomes	Program Learning Outcomes(PLOs) MGTB101												Program Specific Outcomes(PSOs)		
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12	PSO1	PSO2	PSO3
CLO1	L	H		M	L		H	L		L		L	H	M	
CLO2	M	L		L			M			L	L	H	M	M	
CLO3	M			M			L			M			M	L	L
CLO4	L			M									L	L	

Mapping of CLOs with PLOs and PSOs

H: High -3

M:Medium -2

L:Low-1

MANAGEMENT PROCESS
MGTB103
L T P C
4 0 0 4
40 HOURS

Course Objective

CO1) To introduce students to the core concepts and principles of management.
CO2) To provide a foundational understanding of the role and importance of management in organizations.
CO3) To teach students how to develop and implement effective planning processes and to enable students to make informed and strategic decisions by applying various decision-making techniques.
CO4) To introduce the principles of staffing, including recruitment, selection, training, and performance appraisal and to understand the importance of human resource management in achieving organizational goals.
CO5) To analyze current trends and challenges in management, such as globalization, technology, sustainability, and diversity and to encourage critical thinking and adaptability in a rapidly changing business environment.

Course Learning Outcomes

After completing the course, the student shall be able to:

CO1: Evaluate the global context for taking managerial actions of planning, organizing and controlling
CO2: Assess global situation, including opportunities and threats that will impact management of an organization
CO3: Integrate management principles into management practices.
CO4: Assess managerial practices and choices relative to ethical principles and standards.
CO5: Specify how the managerial tasks of planning, organizing, and controlling can be executed in a variety of circumstances.
CO6: Determine the most effective action to take in specific situations.
CO7: Evaluate approaches to addressing issues of diversity.

Course Contents

Unit I: Introduction to Management(8 HOURS)

Nature of Management- Meaning, Definition, it's nature purpose, importance & Functions. Evolution of Management Thoughts- Contribution of F.W.Taylor, Henri Fayol ,Elton Mayo , Chester Barnard & Peter Drucker to the management thought. Various approaches to management (i.e. Schools of management thought)Indian Management Thought.

Unit II: Planning and Decision Making (8 HOURS)

Planning - Meaning - Need & Importance, types levels - advantages & limitations.
Forecasting - Need & Techniques
Decision making - Types - Process of rational decision making & techniques of decision making.

Unit III: Organizing and Directing (8 HOURS)

Organizing - Elements of organizing & processes: Types of organizations, Delegation of authority - Need, difficulties in delegation – Decentralization.
Directing- Introduction, Principles and Elements of Direction; Supervision, Traditional vs. Development Supervision.

Unit IV: Controlling and Coordination (8 HOURS)

Controlling- Concept, Importance, Process & Types of Controlling, Contemporary Issues in Control, Entrepreneurs and Control. Operations Management- Importance, Service and Manufacturing Firms, Project Management Tools & Techniques.
Coordination- Coordination- Definition, Characteristics, Objectives, Techniques.

Unit V: Contemporary Management Issues (8 HOURS)

Management in the International Area.
Change and Organizational Development.
Ethics, Corporate Governance and Social Responsibilities.

Recommended book

L. M. Prasad: Principles and Practice of Management, (2016): Sultan Chand & Sons Publications,. New Delhi
V.S.P. RAO: Principles of Management text and cases

Reference books

Robbins, De Cenzo, Bhattacharya and Agarwal, (2009): Fundamentals of Management- Essential Concepts & Applications 6e, India, Pearson
Hellriegel, Jackson and Sloceum, (2008): Management- A Competency Based Approach 10e, India, South- Western Cengage Learning.
Stoner, Freeman, Gilbert, Jr., (2006), Management 6e, India, Prentice- Hall

Mapping of CLOs with PLOs & PSOs

Course Learning Outcomes	**Program Learning Outcomes(PLOs) MGTB103**												**Program Specific Outcomes (PSOs)**		
	PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**	**PLO9**	**PLO10**	**PLO11**	**PLO12**	**PSO1**	**PSO2**	**PSO3**
CLO1	M		L							M				L	
CLO2	H		M							H				L	
CLO3	H		H	L	L					H		L		H	
CLO4	H		H	L	L					H		L		H	

H: High M: Medium L: Low

Business Organization And Environment
MGTB104
L T P C
4 0 0 4
40 HOURS

Course Objective

CO10 This module provides students with an elaborative understanding of organizational behavior, its key principles, concepts & theories.
CO2) The range of concepts & theories that students will be introduced includes foundation of individual behavior, groups & group dynamics, motivation, leadership, organization design, organization structure, work stress, organization culture, organization change.
CO3) By the end of the module, students will be fully equipped with the knowledge and skills required to understand & deal human behavior in the organization as individual, group member & organization as a whole.

Course Learning Outcomes

After completing this course, the students will be able to:
Identify and evaluate social, cultural, legal and technical factors in business environment.
Describe the various economic system and sectors.
Discuss economic planning and policies of Indian economy.
Apply ethical values and social responsibilities in business.
Explain International economic grouping and organisations.

Course Contents

Unit I: Foundations of Individual Behavior (8 Hours)

Introduction and Conceptual framework of OB- Nature & Scope of Organizational Behavior. The organization and the individual.
Personality: Determinants and Attributes, Big Five Model
Major Personality Attributes: Locus of Control, Machiavellianism, Self Esteem, Self-Monitoring, Type A & B personality, Risk taking ability.
Learning and Learning Theories: Concept, Law of Effect, Classical Conditioning, Operant Conditioning, Social Learning Theory. Reinforcement Theory and OB Modification Process and its Advantages.
Attitudes: Concept, its components and various job related attitudes, Job satisfaction and its impact on OB.
Values: Concept, types of values, Robbin's Dominant Work Values today, Hofstede's Values Across Cultures, Javidan & House's The G.L.O.B.E. Findings.
Perception: Definition, factors affecting individual perception, Perceptual Selectivity.

Unit II: Motivation and Leadership(8 Hours)

Motivation: Definition and concept, different types of motives.
Theories of motivation: Maslow's Hierarchy of Needs, Herzberg's Two Factor theory, ERG theory, Vroom's Expectancy theory, Equity theory, Reinforcement theory and Behavior Modification.

Leadership: Nature and Significance of leadership, Trait theory of leadership.
Behavioral theories of leadership- Ohio State Studies, Michigan Studies, and Managerial Grid.
Contingency theories - Fiedler's model, Hersey and Blanchard's situational theory, leader-member exchange theory, path goal theory, Charismatic leadership.

Unit III: Foundations of Group Behavior(8 Hours)
Group: Definition, Classification of Groups, stages of group development, Group Structure, Group Processes, Strength and weakness of group over individuals.
Team: Concept of team, Group v/s Team, Team Effectiveness, Different types of teams, how to convert an individual into team player.
Conflict and Collaboration: Transitions in Conflict Thought, Functional versus Dysfunctional Conflict, Conflict Process.
Conflict Management: Techniques, Negotiation process, Bargaining strategies, Global implications.

Unit IV: Structural & Cultural Dimensions of OB(8 Hours)
Organization Structure: Definition, Elements of Organization Structure, Common Organization Designs: simple Structure, Bureaucratic Structure, Matrix Structure.
New Designs Option: Team Structure, Virtual Structure, Boundaryless Organization Structure; Factors affecting choice of different organization designs.
Organization Culture: Meaning of Organizational Culture, Creating and Sustaining Culture, Countries and Culture, Employee Acculturation Process.
Organizational Climate: Concept and How to build a more positive and employee centered climate.

Unit V: Organizational Change and Stress Management(8 Hours)
Organizational Change: Change Concept, Forms of Change, Sources of Resistance to Change, Tactics to deal with resistance.
Approaches/ Models to Managing Change: Lewin's Change Model and Nadler's Organizational Model, Action Research: Steps in action Research and Change agents.
Stress Management: Work Stress, types of stress, stages of stress, causes of stress: extra-organizational, organizational, group and individual; Strategies to cope with stress: individual strategies and organizational strategies.

Recommended Book
Robbins, Judge & Sanghi, (2009): Organizational Behavior 13e, India, Pearson, Prentice Hall

Reference Book
L. M. Prasad, (2011): Organizational Behavior, India, Sultan Chand & Sons
Hersey, Blanchard & Johnson, (2009), India, Pearson/ Prentice Hall
Keith Davis: Organizational Behavior: Human Behavior at Work, McGraw Hill Book Co

Course Learning Outcomes (CLOs): On completion of this course, the students willbe able to:

Course Learning Outcomes	Program Learning Outcomes(PLOs) MGTB104												Program Specific Outcomes (PSOs)		
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12	PSO1	PSO2	PSO3
CLO1	M		L			L				M				L	
CLO2	H		M				L			H				L	
CLO3	H		H	L	L		M			H		L		H	
CLO4	H		H	L	L		M			H		L		H	

Mapping of CLOs with PLOs & PSOs

H: High M: Medium L: Low

Principles of Accounting
MGTB105
L T P C
4 0 0 4
40 HOURS

Course Objective

This course provides conceptual knowledge of financial accounting and the techniques for preparing accounts in different types of business organisations.

Course Learning Outcomes

After completing the course, the student shall be able to:

CO1: understand the theoretical framework of accounting and to prepare financial statements
CO2: explain and determine depreciation and value of inventory
CO3: learn accounting for hire purchase transactions, leases, branches and departments
CO4: understand the concepts of partnership firm and prepare accounts for dissolution of a partnership firm
CO5: develop the skill of preparation of trading and profit and loss account and balance sheet using computerized accounting.

Course Contents

Unit-1: Introduction(8 HOURS)

Conceptual Framework: Accounting principle, Concepts and Conventions Introduction to Accounting Standards and Indian Accounting Standards (AS & Ind AS), Accounting Process: Journal, ledger, Trial Balance, Financial Statements (overview) Capital Expenditure (and Receipts), Revenue Expenditure (and Receipts) and Deferred Revenue Expenditure. Preparation of Financial Statements of a profit making sole proprietorship trading firm with additional information, Preparation of Financial Statements of a not for profit organisations.

Unit-2: Depreciation Accounting and Inventory Valuation(8 HOURS)

Accounting for Plant Property and Equipment & Depreciation: Meaning of Depreciation, Depletion and amortization, Objective and Methods of depreciation (Straight line, Diminishing Balance), Change of Method, Inventory Valuation: Meaning, Significance of Inventory Valuation, Inventory Record System-Periodic and Perpetual, Methods of Inventory Valuation-FIFO, LIFO and Weighted Average
(Relevant accounting Standards as applicable)

Unit-3: Special types of Accounting(8 HOURS)

Hire Purchase Accounting: Calculation of Interest, Partial and Full Repossession, profit Computation (Stock & Debtors System only)**,** Accounting for Leases: Concept, Classification of leases (Simple practical problems)**,** Accounting for Branches (excluding foreign branches): Dependent branches (‘Debtors system’ and ‘Stock & debtors System’) and overview of

Independent branches. Departmental Accounting: Concept, Type of departments, Basis of allocation of departmental expenses, Methods of departmental accounting (excluding memorandum stock and memorandum mark-up account method)
(Relevant accounting Standards as applicable)

Unit-4: Accounting for Partnership Firm(8 HOURS)

Partnership accounts: Fundamentals, Admission, Retirement and Death of a partner (only an overview)**,** Accounting for Dissolution of Partnership Firm: Dissolution of Partnership Firm including Insolvency of partners (excluding sale to a limited company), Gradual realization of assets and piecemeal payment of liabilities

Unit-5: Computerized Accounting System(8 HOURS)

Computerized Accounting System: Computerized accounts by using any popular accounting software: Creating a company; Configure and Features settings; Creating Accounting Ledgers and Groups, Creating Stock Items and Groups; Vouchers Entry; Generating Reports – Cash Book, Ledger Accounts, Trail Balance, Profit and Loss Account, Balance Sheet, Funds Flow Statement, Cash Flow Statement, Selecting and Shutting a Company; Backup and Restore of Data of a Company
Note: Latest Accounting Standards to be followed

References

Goyal, Bhushan Kumar and H.N. Tiwari, Financial Accounting , Taxmann
Kumar, Alok. Financial Accounting, Singhal Publication.
Lt Bhupinder. Financial Accounting – Concepts and Applications, Cengage
Monga, J R. Financial Accounting: concept and Applications. Mayur paper Backs, New Delhi
Sehgal, Ashok & Deepak Sehgal. Fundamentals of Financial Accounting, Taxmann
Tulsian, P C. Financial Accounting, Tata McGraw Hill New Delhi
Lal, Jawahar, Seema Srivastava & Abrol, Shivani. Financial Accounting Text and problems, Himalaya Publishing House, New Delhi.

Course Learning Outcomes	ProgramLearning Outcomes (PLOs)												Program Specific Outcomes(PSOs)		
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12	PSO1	PSO2	PSO3
CLO1	M			H		L		M	L	M	H		L	H	L
CLO2	M	L	L	H	H	L		M	L		H		L	H	L
CLO3		L	L	H	H	L		M		M	H		L	H	L
CLO4				H	H	L		M			H		L	H	L

Matching of PLOs and CLOs:

H: High M: Medium L: Low

Business Mathematics
MGTB106
L T P C
4 0 0 4
40 HOURS

Course Objective

Business mathematics is used by commercial enterprises to record and manage business operations. Commercial organizations use mathematics in accounting, inventory management, marketing, sales forecasting, and financial analysis. Mathematics typically used in commerce includes elementary arithmetic, elementary algebra, statistics and probability. Business management can be made more effective in some cases by use of more advanced mathematics such as calculus, matrix algebra and linear programming.

Course Learning Outcomes

After completing the course, the student shall be able to:

CO1: comprehend the concept of systematic processing and interpreting the information in quantitative terms to arrive at an optimum solution to business problems.
CO2: develop proficiency in using different mathematical tools (matrices, calculus, linear programming, and mathematics of finance) in solving daily life problems.
CO3: acquire competence to use computer for mathematical computations, especially with Big data.
CO4: obtain critical thinking and problem-solving aptitude.
CO5: evaluate the role played by mathematics in the world of business and economy.

Course Contents

UNIT I : Basics of Business Mathematics(8 HOURS)
Ratio and proportion
Indices
Logarithms

UNIT II : Equations (8 HOURS)
Linear – simultaneous linear equations up to three variables,
Quadratic and cubic equations in one variable,
Equations of a straight line,
Intersection of straight lines,
Graphical solution to linear equations.

Inequalities
Graphs of inequalities in two variables
Feasible & Infeasible solutions

UNIT III(8 HOURS)

Simple and Compound Interest including annuity – Applications
Basic concepts of Permutations and Combinations

UNIT IV(8 HOURS)
Sequence and Series – Arithmetic and geometric progressions
Sets, Functions and Relations

UNIT V(8 HOURS)
Limits and Continuity – Intuitive Approach
Basic concepts of Differential and Integral Calculus (excluding trigonometric functions)

Recommended book:

R S Agarwal, Quantitative Aptitude, S. Chand Publishing, 17th Edition, 2012

Reference books:

Abhijit Guha, Quantitative Aptitude, Tata McGraw - Hill Education, 4th Edition, 2010
P.Gupta, Quantitative Aptitude, Unique Publisher
Zameerudin, Qazi, V.K. Khanna & S.K. Bhambri, Business Mathematics, Vikas Publishing House Pvt. Ltd, New Delhi.

Mapping of CLOs with PLOs & PSOs

Course Learning Outcomes	**Program Learning Outcomes(PLOs)**												**Program Specific Outcomes (PSOs)**		
	PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**	**PLO9**	**PLO10**	**PLO11**	**PLO12**	**PSO1**	**PSO2**	**PSO3**
CLO1	L									M			L		
CLO2		M								M				M	
CLO3			H							M					M
CLO4	L									M	H				L

H:High M: Medium L: Low

Fundamentals of computers
MGTB107
L T P C
3 0 1 4
40 HOURS

Course Objective

Computers have become an integral part of work life of every individual. Today's pace of corporate functioning cannot even be thought of without computers. Keeping into mind such a necessity, this paper is introduced to help the students learn the basic skills of operating a computer and office automation.

Course Learning Outcomes

After completing the course, the student shall be able to:

CO1: Understand the concept of input and output devices of Computers and how it works.
CO2: Understand the concepts, structure, types and design of operating Systems.
CO3: Understand the concept of Data Communication, its Modes, its Forms and Data Communication Channels
CO4: Understand evolution of internet, its application and its basic services.
CO5: Recognize when to use each of the Microsoft Office programs to create professional and academic documents
CO6: Create and design a word document for general office use.
CO7: Students will have a working knowledge of paragraph formatting, macro and mail-merge in MS-Word.

Course Contents

Unit I: Introduction to Computers(8 Hours)
Computer defined, Classification of computers, Basic computer organization, Input devices, Output devices, Primary Memory (ROM, RAM), Secondary Memory, Binary digit system, Bits, Bytes, Other units of memory, Software (Application software, Operating Software).

Unit II: Microsoft Word(8 Hours)
Introduction to Toolbars, Menus, Ribbons, Text formatting, Finding and replacing text, Inserting illustrations (picture, clipart, shapes, Smartart, Chart), Headers, Footers, Text box, Word art, Symbols, Page setup, Watermark, Page border, Paragraph formatting, grouping, ungrouping, Mail merge, Spell check, Word count, Zoom, Save, Save as, Printing documents, Print preview

Unit III: Microsoft Excel(8 Hours)
Introduction to components of Excel window interface, Toolbars, Worksheet concept, Cell address, Formatting, Cell alignment, Conditional formatting, Inserting, Deleting and formatting cell, Autosum, Sorting & Filtering, Inserting illustrations (picture, clipart, Shapes, Smartart),

Inserting and formatting charts, Text box, Header & Footer WordArt, Object, Symbol, page layout, Basic formulas (sum, multiplication, average, maximum, minimum, percentage), Spellcheck, Inserting & editing comment, Save, Save as, Printing, Print preview, Page break view.

Unit IV: Microsoft PowerPoint(8 Hours)
Introduction to components of PowerPoint window interface, Toolbars, Slide layout, design, Slide formatting, arranging and ordering, Inserting tables, Illustrations (Picture, Clipart, Shapes, Smartart, Chart, Text box, Header & Footer, WordArt, Movie, Sound, Slide animation, Slide transition, Slide show basics, Slides handout, Slides sorter, Printing handouts, Print preview.

Unit V: Networking and Internet(8 Hours)
Computer networking basics, Network topology (Star, Ring, Bus, Hybrid, LAN, WAN, MAN, Internet surfing, Internet browsers (Mozilla, Internet explorer, Chrome, Opera), Opening & operating email accounts, Dropbox, Instant messaging, Search engines

Recommended Readings
Sinha, P.K. and Sinha, Priti, Computer fundamentals, BPB Publications, New Delhi, Sixth Edition, 2011.
Peter Norton, Introduction to Computers, Tata McGraw Hill, Sixth Edition, 2009.
Behrouz Forouzan, Data Communication and networking, TMH

Mapping of CLOs with PLOs & PSOs

Course Learning Outcomes	**Program Learning Outcomes (PLO's)**														
	PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**	**PLO9**	**PLO10**	**PLO11**	**PLO12**	**PSO1**	**PSO2**	**PSO3**
CLO1		M		M		M	M		M	M			M	M	
CLO2		H		M		M	H	M	M	M		H	M	M	
CLO3	M	H		H		M	H	M	M	M		H	M	M	
CLO4	H	M		M		M	H	M	M	M		H	M	M	

H: High M: Medium L: Low

Constitution of India and Human Rights
MGTB102
L T P C
4 0 0 4
40 HOURS

Course Objective

To bring about aware among students about our constitution and human rights

Course Learning Outcomes

After completing the course, the student shall be able to:

CO1: Understand the emergence and evolution of Indian Constitution.
CO2: Understand the structure and composition of Indian Constitution
CO3: Understand and analyse federalism in the Indian context.
CO4: Analyse Panchayathi Raj institutions as a medium of decentralization.
CO5: Evaluate the Indian Political scenario amidst the emerging challenges.
CO6: Evaluate Indian foreign relations under cold war and post-cold war era.

Course Contents

Unit I: Indian Constitutional Philosophy (10 HOURS)
a) Features of the Constitution and Preamble
b) Fundamental Rights and Fundamental Duties
c) Directive Principles of State Policy

Unit II Union and State Executive, Legislature and Judiciary (10HOURS)
a) Union Parliament and State Legislature: Powers and Functions
b) President, Prime Minister and Council of Ministers
c) State Governor, Chief Minister and Council of Ministers
d) The Supreme Court and High Court: Powers and Functions

Unit III: Concept and Development of Human Rights (10HOURS)
a) Meaning Scope and Development of Human Rights
b) United Nations and Human Rights – UNHCR
c) UDHR 1948, ICCPR 1996 and ICESCR 1966

Unit IV: Human Rights in India (10 HOURS)
a) Protection of Human Rights Act, 1993 (NHRC and SHRC)
b) First, Second and Third Generation Human Rights
c) Judicial Activism and Human Rights

Suggested Readings:

Durga Das Basu, Introduction to the Constitution of India, Prentice – Hall of India Pvt. Ltd..

New Delhi
SubashKashyap, Indian Constitution, National Book TrustJ.A. Siwach, Dynamics of Indian Government & Politics
D.C. Gupta, Indian Government and Politics , Vikas Publishing House Pvt Ltd (1 July 1973)
H.M.Sreevai, Constitutional Law of India, 4th edition in 3 volumes (Universal Law Publication)

Mapping of CLOs with PLOs & PSOs

Course Learning Outcomes	**Program Learning Outcomes (PLO's)**														
	PLO 1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**	**PLO9**	**PLO10**	**PLO11**	**PLO12**	**PSO1**	**PSO2**	**PSO3**
CLO1	L	H	M	H	H	H	M	H	H	H	M	M	H	M	M
CLO2	L	H	M	H	H	M	M	H	M	H	M	M	H	M	M
CLO3	L	H	M	H	H	M	H	H	H	H	M	M	H	M	H
CLO4	M	H	L	H	H	H	H	H	H	H	M	M	H	M	H
CLO5	M	L	H	M	H	H	H	M	M	H	H	M	H	M	M

H: High M: Medium L: Low

BBA Semester: II

Business Statistics
MGTB203

L T P C
4 0 0 4
40 HOURS

Objective

The objective of this course is to familiarize students with the basic statistical tools used to summarize and analyze quantitative information for decision making.

Curriculum

Unit I (8 HOURS)

Probability: introduction, basic terminology, Types of probability, Probability rules, posterior probability.

Unit II(8 HOURS)

Probability distribution: Introduction, random variables, use of expected value in decision making, normal distribution, binomial distribution.

Unit III (8 HOURS)

Sampling and Sampling distribution: introduction, random sampling, sampling distribution, relationship between sample size and standard error.

Unit IV (8 HOURS)

Estimation: introduction, point estimate, interval estimate, confidence interval, sample size in estimation.

Unit V (8 HOURS)

Testing Hypothesis: introduction, basic concept, testing procedure, testing hypothesis, measuring the power of hypothesis test. Testing of proportion.

Reference books:

Vohra, N.D., (2009) Quantitative Techniques in Management, 4th edition, McGraw Hill Education.
Vishwanathan, P.K., (2008) Business Statistics and Applied Orientation, 1st edition, Pearson Education.
Rajagopalan, S. and Sattanathan, R., (2009) Business Statistics & Operations Research, 2nd Edition, McGraw Hill Education.
Sharma, J.K., (2009) Operations Research: Problems & Solutions, 2nd edition, Macmillan India Ltd.

Taha, Hamdy, (2008) Operations Research: An Introduction, 8th edition, Pearson Education.
Render, Barry, Stair, R.M., Hanna, M.E., and Badri, (2009) Quantitative Analysis for Management, 10th edition, Pearson Education
Richard l. Levin and Devid S. Rubin, Statics for management, Pearson

Mapping of CLOs with PLOs & PSOs

COURSE LEARN--ING OUT-COMES	**Program Learning Outcomes (PLOs)**												**Program Specific Outcomes (PSOs)**		
	PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**	**PLO9**	**PLO10**	**PLO11**	**PLO12**	**PSO1**	**PSO2**	**PSO3**
CLO1	M			H									H		
CLO2		L		H							H			H	
CLO3											H			H	
CLO4	M			H						H				H	H

H: High M: Medium L: Low

COST ACCOUNTING
MGTB204

L	T	P	C
4	0	0	4

(40 Hours)

Objective

The subject of Management Accounting is basicaliiy Designed to equip the Student with tools for analysing financial and non financial information which will help them in decision-making planing and control.

Aim: To acquaint the students with basic concepts used in cost accounting and various methods involved in cost ascertainment systems.

Curriculum

Unit I: Introduction(8 HOURS)

Meaning, objectives and advantages of cost accounting, Difference between cost accounting and financial accounting. Cost concepts and classifications, Elements of cost. Installation of a costing system. Role of a cost accountant in an organization.

Unit II: Cost concept(8 HOURS)

Types of cost, Cost Accumulations, cost objects , cost classifications, cost applications, cost behavior,Techniques of Costing.

Unit III: Overhead(8 HOURS)

Classification, allocation, apportionment and absorption of overhead.Under- and over-absorption. Capacity costs. Treatments of certain items in costing, like interest on capital, packing expenses, debts, research and development expenses, Bad Activity – based cost allocation.

Unit IV Methods of Costing(8 HOURS)

Unit costing, Job costing. Contract Costing. Process costing (process losses, valuation of work in progress, joint and by-products) Service costing (only transport).

Unit V:Cost -Volume -Profit Analysis(8 HOURS)

The Reletionship of cost and profit with volume, use of CVP Analysis, Marginal Costing and Absorption costing, Breakeven point, contribution marginal Approach, Use of Break even analysis.

Recommended Book

Lal, Jawahar. Cost Accounting. Tata McGraw Hill Publishing Co., New Delhi

Reference Book

Nigam, B.M. Lall and I.C. Jain. Cost Accounting: Principles and Practice. Prentice Hall of India, New Delhi.
Mittal, D.K. and Luv Mittal. Cost Accounting. Galgotia Publishing Co., New Delhi.
Arora, M.N.Cost Accounting–Principles and Practice. Vikas Publishing House, New Delhi.
Shukla, M.C., T.S. Grewal and M.P. Gupta. Cost Accounting: Text and Problems.

S. Chand & Co. Ltd., New Delhi.

Course Learning Outcomes	Program Learning Outcomes (PLOs)												Program Specific Outcomes (PSOs)		
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12	PSO1	PSO2	PSO3
CLO1	H									M				M	L
CLO2	H									M				M	L
CLO3	H			L						M				M	L
CLO4	H			L						M				M	L

Mapping of CLO with PLOs and PSOs

-H igh, M-Medium, L-Low

ORGANIZATIONAL BEHAVIOR

MGTB20
5L T P C
4 0 0 4
40 HOURS

Course Objective

CO1.) This module provides students with an elaborative understanding of organizational behavior, its key principles, concepts & theories.
CO2.) The range of concepts & theories that students will be introduced includes foundation of individual behavior, groups & group dynamics, motivation, leadership, organization design, organization structure, work stress, organization culture, organization change.
CO3.) By the end of the module, students will be fully equipped with the knowledge and skills required to understand & deal human behavior in the organization as individual, group member & organization.

Course Learning Outcomes:

CLO1) Students will demonstrate an understanding of the factors that influence individual behavior in organizational settings, including personality, motivation, perception, and attitudes.
CLO2) They will demonstrate the ability to work effectively in teams, manage conflicts, and contribute positively to group decision-making processes.

CLO3) They will be able to assess and apply effective leadership and management practices to improve organizational performance and employee satisfaction.

CLO4) Students will analyze the concept of organizational culture and its impact on employee behavior and organizational success.

Curriculum

Unit I: Foundations of Individual Behavior (8 HOURS)

Introduction and Conceptual framework of OB- Nature & Scope of Organizational Behavior. The organization and the individual.
Personality: Determinants and Attributes, Big Five Model
Major Personality Attributes: Locus of Control, Machiavellianism, Self Esteem, Self Monitoring, Type A & B personality, Risk taking ability.
Learning and Learning Theories: Concept, Law of Effect, Classical Conditioning, Operant Conditioning, Social Learning Theory. Reinforcement Theory and OB Modification Process and its Advantages.
Attitudes: Concept, its components and various job related attitudes, Job satisfaction and its impact on OB.
Values: Concept, types of values, Robbin's Dominant Work Values today, Hofstede's Values Across Cultures, Javidan & House's The G.L.O.B.E. Findings.
Perception: Definition, factors affecting individual perception, Perceptual Selectivity.

Unit II: Motivation and Leadership(8 HOURS)

Motivation: Definition and concept, different types of motives.
Theories of motivation: Maslow's Hierarchy of Needs, Herzberg's Two Factor theory, ERG theory, Vroom's Expectancy theory, Equity theory, Reinforcement theory and Behavior

Modification.
Leadership: Nature and Significance of leadership, Trait theory of leadership.
Behavioral theories of leadership- Ohio State Studies, Michigan Studies, and Managerial Grid.
Contingency theories - Fiedler's model, Hersey and Blanchard's situational theory, leader-member exchange theory, path goal theory, Charismatic leadership.

Unit III: Foundations of Group Behavior(8 HOURS)
Group: Definition, Classification of Groups, stages of group development, Group Structure, Group Processes, Strength and weakness of group over individuals.
Team: Concept of team, Group v/s Team, Team Effectiveness, Different types of teams, how to convert an individual into team player.
Conflict and Collaboration: Transitions in Conflict Thought, Functional versus Dysfunctional Conflict, Conflict Process.
Conflict Management: Techniques, Negotiation process, Bargaining strategies, Global implications.

Unit IV: Structural & Cultural Dimensions of OB(8 HOURS)
Organization Structure: Definition, Elements of Organization Structure, Common Organization Designs: simple Structure, Bureaucratic Structure, Matrix Structure.
New Designs Option: Team Structure, Virtual Structure, Boundaryless Organization Structure; Factors affecting choice of different organization designs.
Organization Culture: Meaning of Organizational Culture, Creating and Sustaining Culture, Countries and Culture, Employee Acculturation Process.
Organizational Climate: Concept and How to build a more positive and employee centered climate.

Unit V: Organizational Change and Stress Management (8 HOURS)
Organizational Change: Change Concept, Forms of Change, Sources of Resistance to Change, Tactics to deal with resistance.
Approaches/ Models to Managing Change: Lewin's Change Model and Nadler's Organizational Model, Action Research: Steps in action Research and Change agents.
Stress Management: Work Stress, types of stress, stages of stress, causes of stress: extra-organizational, organizational, group and individual; Strategies to cope with stress: individual strategies and organizational strategies.

Recommended Book
Robbins, Judge & Sanghi, (2009): Organizational Behavior 13e, India, Pearson, Prentice Hall

Reference Book
L. M. Prasad, (2011): Organizational Behavior, India, Sultan Chand & Sons
Hersey, Blanchard & Johnson, (2009), India, Pearson/ Prentice Hall
Keith Davis: Organizational Behavior
Fred Luthans: Organizational Behavior

Course Learning Outcomes	Program LearningOutcomes (PLOs)												Program Specific Outcomes (PSOs)		
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12	PSO1	PSO2	PSO3
CLO1	H	H		H			M		H	M	H		L	H	
CLO2	H	H	M	H	H		M		H	M	H	M	L	H	
CLO3	H	H	M	H	H		M		H	M	H	M	L	H	
CLO4	H		M	H	H		M		H	M	H		L	H	

Mapping of CLOs with PLOs & PSOs

: High M: Medium L: Low

ENVIRONMENT STUDIES
MGTB202

L	T	P	C
4	0	0	4

(40 Hours)

Objective
To bring awareness about our environment in management students

Unit I: The multidisciplinary nature of environmental studies
Definition,
Scope and importance
Need for public awareness

Unit II: Natural Resources:
Renewable and non-renewable resources:
Natural resources and associated problems.
Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.
Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.
Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.
Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources, case studies.
Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification.
Role of an individual in conservation of natural resources.
Equitable use of resources for sustainable lifestyles.

Unit III: Ecosystems
Concept of an ecosystem
Structure and function of an ecosystem
Producers, consumers and decomposers
Energy flow in the ecosystem
Ecological succession
Food chains, food webs and ecological pyramids
Introduction, types, characteristic features, structure and function of the following ecosystem:
Forest ecosystem
Grassland ecosystem
Desert ecosystem
Aquatic ecosystems (ponds, streams, lakes, rivers, ocean estuaries)

Unit IV: Biodiversity and its conservation
Introduction – Definition: genetic, species and ecosystem diversity
Biogeographical classification of India

Value of biodiversity: consumptive use, productive use, social, ethical aesthetic and option values
Biodiversity at global, national and local levels
India as a mega-diversity nation
Hot-spots of biodiversity
Threats to biodiversity: habitat loss, poaching of wildlife, man wildlife conflicts
Endangered and endemic species of India
Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity

Unit V: Environmental Pollution
Definition
Causes, effects and control measures of:
Air pollution
Water pollution
Soil pollution
Marine pollution
Noise pollution
Thermal pollution
Nuclear pollution
Solid waste management: Causes, effects and control measures of urban and industrial wastes.
Role of an individual in prevention of pollution
Pollution case studies
Disaster management: floods, earthquake, cyclone and landslides
Matching of PLOs and CLOs:

Course Specific Outcomes(CLO)	**Programme Learning Outcomes (PLO)**												**Programme Specific Outcomes (PSO)**		
	PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**		**PLO8 PLO9**	**PLO10**	**PLO11**	**PLO12**	**PSO1**	**PSO2**	**PSO3**
CLO1	M	M	H	M	L	M	H	M	-	M	-	M	M	-	-
CLO2	M	H	H	M	L	M	H	L	H	M	M	-	-	H	M
CLO3	M	M	H	-	-	H	M	L	M	H	M	M	M	H	M
CLO4	-	-	L	H	H	-	H	-	M	H	M	M	-	-	H

H:High; M:Medium; L:Low

BBA Semester:III

CYBER PHENOMENON LAW
Paper MGTB301

L T P C
3 0 0 4

(40 HOURS)

Course Objectives:
In recent times the Cyber law has emerged as medium for growth with immense potentials for solving many new and interesting challenges. Both the personal and professional worlds are extremely dependent today on the Cyber World. The world is increasingly dependent on networked information and communication technologies (ICT). However, with growing dependency, new threats to network and information security have emerged and there is ever-growing vulnerability to Cyber Crime. Thus, an effort to spread awareness of Cyber Security is the need of the hour and particularly among the law fraternity as these are the persons who must handle the cases of cybercrime.

Course Learning Outcomes
After completing the course, the student shall be able to:
CO1: Describe cyber organized crime and criminal groups that engage in cyber organized crime
CO2: Identify and discuss the structures and characteristics of organized criminal groups that engage in cyber organized crime
CO3: Identify different types of cyber organized crime
CO4: Explain and analyse the ways in which information and communication technology is used to commit cyber organized crime
CO5: Critically evaluate the measures used to counter cyber organized crime

CO5: understand the fundamentals of E-commerce and silent features of the same.

Course Contents

Unit I (8 HOURS)
Introduction to Cyber space, Need for Cyber Law. Cyber Jurisprudence at International and Indian Level. Cyber Law - International Perspectives-UN & International Telecommunication Union (ITU) Initiatives, Council of Europe - Budapest Convention on Cybercrime, Asia-Pacific Economic Cooperation (APEC), Organization for Economic Co-operation and Development (OECD), World Bank, Commonwealth of Nations

Unit II: (8 HOURS)
Constitutional & Human Rights Issues in Cyberspace-Freedom of Speech and Expression in Cyberspace. Right to Access Cyberspace – Access to Internet. Right to Privacy. Right to Data Protection

Unit III: (8 HOURS)

Cyber Crimes & Legal Framework-Cyber Crimes against Individuals, Institution and State, Hacking, Digital Forgery, Cyber Stalking/Harassment, Cyber Pornography, Identity Theft & Fraud, Cyber terrorism, Cyber Defamation, Different offences under IT Act, 2000.

Unit IV: (8 HOURS)

Cyber Torts-Cyber Defamation, Different Types of Civil Wrongs under the IT Act, 2000. Intellectual Property Issues in Cyber Space. Interface with Copyright Law. Interface with Patent Law. Trademarks & Domain Names Related issues

Unit V: (8 HOURS)

E Commerce-Concept, E-commerce-Salient Features, Online approaches like B2B, B2C & C2C.Online contracts, Click Wrap Contracts, Applicability of Indian Contract Act, 1872. Dispute Resolution in Cyberspace-Concept of Jurisdiction, Indian Context of Jurisdiction and IT Act, 2000. International Law and Jurisdictional Issues in Cyberspace. Dispute Resolutions

Textbook

Chris Reed & John Angel, Computer Law, OUP, New York, (2007).
Justice Yatindra Singh, Cyber Laws, Universal Law Publishing Co, New Delhi, (2012).
Verma S, K, Mittal Raman, Legal Dimensions of Cyber Space, Indian Law Institute, New Delhi, (2004)

References

Jonthan Rosenoer, Cyber Law, Springer, New York, (1997).
Sudhir Naib, The Information Technology Act, 2005: A Handbook, OUP, New York, (2011)
S. R. Bhansali, Information Technology Act, 2000, University Book House Pvt. Ltd., Jaipur (2003).
Vasu Deva, Cyber Crimes and Law Enforcement, Commonwealth Publishers, New Delhi, (2003).

Note: Latest edition of readings may be used

Mapping of CLOs with PLOs & PSOs

Course Learning Outcomes	Program Learning Outcomes (PLOs)												Program Specific Outcomes(PSOs)		
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12	PSO1	PSO2	PSO3
CLO1	H	M		H			M			H		L			
CLO2	H	M		M						H		M			

CLO3	H	M		H		L	L		L	M		M			
CLO4	H	M		H		H	L		H	M		M			

H: High M: Medium L: Low

BUSINESS ECONOMICS
Paper MGTB302

L T P C
4 0 0 4

(40 Hours)
Course Objective

Economics is the study of how individuals and societies make rational choices when confronted with scarce resources and an uncertain environment. Economic theory aims at the construction of models which describe the economic behavior of individual units (Consumers, Firms, and Government Agencies). Microeconomics studies the economic phenomenon at the micro level i.e. at the individual level. Microeconomics studies how consumers and producers make their choices; how their decisions and choices affect the demand and supply conditions and how consumers and producers interact to settle the prices of goods and services in the market.
Course Learning Outcomes
Upon successful completion of the course a student will be able to

CO1: Understand how households (demand) and businesses (supply) interact in various market structures to determine price and quantity of a good produced.
CO2: Understand the links between household behavior and the economic models of demand.
CO3: Represent demand, in graphical form, including the downward slope of the demand curve and what shifts the demand curve.
CO3: Understand the links between production costs and the economic models of supply.
CO4: Apply the concept of opportunity cost
CO5: Analyze operations of markets under varying competitive conditions

Course Contents

Unit I (8 Hours)
Introduction to Economics:
Nature, Scope, Definition of Managerial Economics, Difference between Managerial Economics & Economics, Micro and Macro Economics Opportunity cost.
Demand and supply: Demand & supply curves, Measurement of elasticity of demand, factors

affecting elasticity of demand, income elasticity of demand, cross elasticity of demand, advertising elasticity of demand.
Demand forecasting: need, objective & methods (in brief)

Unit II (8 Hours)

Consumer Behavior: Cardinal Utility Approach: Diminishing Marginal Utility, Law of Equi-Marginal Utility. Ordinal Utility Approach.
Indifference Curves, Marginal Rate of Substitution, Budget Line and Consumer Equilibrium.

Unit III (8 Hours)

Theories of Production: Meaning & concept of Production, Factors of Production, Production functions, Iso-quants, Fixed & Variable factors of production. Law of variable proportions (Short run production analysis), Law of returns to a scale (long run production analysis).

Unit IV (8 Hours)

Cost analysis & Price output decision in different market: Concept of Cost, Cost Function, Short Run Cost, Long Run Cost, Economics and Diseconomies of Scale. Explicit Cost and Implicit Cost, Profit maximization, equality of marginal cost and marginal revenue.

Unit V (8 Hours)

Pricing Under Perfect Competition, Pricing Under Monopoly, Control of Monopoly, Price Discrimination, Pricing Under Monopolistic Competition, Pricing Under Oligopoly.

REFERENCES

1. Samuelson, P & Nordhaus, W. (2009) Economics, 18th Edition, McGraw Hill Education.
2. Dwivedi, D.N.(2008) Managerial Economics, 7th edition, Vikas Publishing House.
3 Salvatore, D. ((2006)) Managerial Economics in a Global Economy, 6th edition, Oxford UniversityPress.
4. Kreps, D.(2009). MicroEconomics for Managers, 1st edition, Viva Books Pvt. Ltd.
5. Peterson, L. and Jain ((2006)) Managerial Economics, 4th edition, Pearson Education.
6. Colander, D, C (2008) Economics, McGraw Hill Education.
7. Managerial Economics: H.L Ahuja, Sultan Chand & Sons
Note: Latest edition of readings may be used

Mapping of CLOs with PLOs & PSOs

Course Learning Outcomes	**Program Learning Outcomes (PLOs)**	**Program Specific Outcomes (PSOs)**

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12	PSO1	PSO2	PSO3
CLO1	H		H	H						L	H			H	
CLO2	H		M	H	H		L			L	H	M		H	
CLO3	H		M	H	H		L			L	H	M		H	
CLO4	H		H	H	H		L			L	H			H	

Mapping of CLOs with PLOs & PSOs

H: High M: Medium L: Low

CORPORATE ACCOUNTING
Paper MGTB303

L T P C
4 0 0 4

(8 Hours)

Course Objective

To acquire the conceptual knowledge of corporate accounting and to understand the various techniques of preparing accounting and financial statements

Course Learning Outcomes
After completing the course, the student shall be able to:

CO1: develop an understanding of accounting for share capital and debentures
CO2: prepare financial statements of a company

CO3: understand the accounting for amalgamation
CO4: prepare consolidated balance sheet for Holding company
CO5: develop an understanding of cash flow statements

Course Contents

Unit 1. Accounting for Share Capital & Debentures
Issue, forfeiture and reissue of forfeited shares: concept & process of book building; Issue of rights and bonus shares; Buy back of shares; Redemption of preference shares; Issue and Redemption of Debentures

Unit 2. Final Accounts
Preparation of profit and loss account and balance sheet of corporate entities, excluding calculation of managerial remuneration, Disposal of company profits. Valuation of Goodwill and Valuation of Shares--Concepts and calculation: simple problem only

Unit 3. Amalgamation of Companies
Concepts and accounting treatment as per Accounting Standard: 14 (ICAI) (excluding intercompany holdings). Internal reconstruction: concepts and accounting treatment excluding scheme of reconstruction.

Unit 4. Accounts of Holding Companies/Parent Companies
Preparation of consolidated balance sheet with one subsidiary company; Relevant provisions of Accounting Standard: 21 (ICAI).

Unit 5. Accounting for Cash Flow Statement
Cash Flow Statement-Concept of funds, Preparation of cash flow statement as per Indian Accounting Standard (Ind-AS3 revised):
Note:
1. The relevant Indian Accounting Standards in line with the IFRS for all the above topics should be covered.
2. Any revision of relevant Indian Accounting Standard would become applicable immediately.

References:
1. J.R. Monga, *Fudamentals of Corporate Accounting*. Mayur Paper Backs, New Delhi.
2. M.C. Shukla, T.S. Grewal, and S.C. Gupta. *Advanced Accounts*. Vol.-II. S. Chand & Co., New Delhi.
3. S.N. Maheshwari, and S. K. Maheshwari. *Corporate Accounting*. Vikas Publishing House, New Delhi.
4. Ashok Sehgal, Fundamentals of *Corporate Accounting*. Taxman Publication, New Delhi.
5. V.K. Goyal and Ruchi Goyal**,**. *Corporate Accounting*. PHI Learning.
6. Jain, S.P. and K.L. Narang. *Corporate Accounting*. Kalyani Publishers, New Delhi.
7. Bhushan Kumar Goyal, *Fundamentals of Corporate Accounting*, International Book House
8. P. C. Tulsian and Bharat Tulsian, Corporate Accounting, S.Chand
9. Compendium of Statements and Standards of Accounting. The Institute of Chartered

Accountants of India, New Delhi.
Note: Latest edition of readings may be used

Teaching Learning Process

Theory/ numerical with examples

Assessment Methods

Class participation, Presentation, Viva/ test, End Semester Exam

Keywords
Shares, Financial Statements, Cash Flow, Amalgamation, Liquidation, Purchase Consideration, Holding Company

Course Learning Outcomes	Program Learning Outcomes (PLOs)												Program Specific Outcomes (PSOs)		
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12	PSO1	PSO2	PSO3
CLO1	H		H			L		L		H		H			
CLO2	H	H	H	M	L					H		H			
CLO3	M		H	M	L				L						
CLO4	M	M	H						L						

HUMAN RESOURCE MANAGEMENT
Paper MGTB304

LTPC
4 0 0 4

(40 HOURS)
Course Objective

This module introduces the students with the key concepts, theories, tools & techniques of human resource management. The range of concepts that students will be introduced to include philosophy of HRM, human resource planning, job analysis, recruitment & selection, training & development, compensation & labor relation. By the end of the module, students will be fully equipped with the skills & techniques required to plan & manage the human resource in the organization.

Course Learning Outcomes
After completing the course, the student shall be able to:

CO1: understand basic nature and importance of human resource management.
CO2: analyze the current theory and practice of recruitment and selection.
CO3: realize the importance of performance management system in enhancing employee performance.
CO4: recommend actions based on results of the compensation analysis and design compensation schemes that are cost effective, that increase productivity of the workforce, and comply with the legal framework.
CO5: understand role of modern HRM in meeting challenges of changing business environment.

Course Contents

Unit I: (8 HOURS)
Introduction to Human Resource Management

Definition and concept of HRM and personnel Management, Importance of HRM, Activities and functions of HRM, Organization of H.R.M. department, Role of HRM Department, Limitations of HRM, Challenges before HRM.

Unit II: (8 HOURS)
Human Resource Planning (HRP)

Definition and objectives of Human Resource Planning, Process of Human Resource Planning, Factors influencing estimation of Human Resources. Concept of Recruitment, Recruitment policy, Sources of Recruitment, Selection and its procedure.

Unit III: (8 HOURS)
Performance Appraisal

Concept and objectives of Performance Appraisal, Process of Performance Appraisal, Methods of Performance Appraisal, Uses and limitations of Performance Appraisal.

Unit IV: (8 HOURS)
Training & Development

Meaning and Definition of Training; need, objectives and importance of Training, Training Methods, Evaluation of Training Programme. Concept of Management Development, Management
Development Process and methods, Evaluation of Management Development Programme.

Unit V: (8 HOURS)
Wage and Salary Administration
Methods of wage payments, Employee Remuneration, factors determining the level of remuneration, Profit sharing, Fringe Benefits and Employee services, Wages & Salary Administration

Recommended book:
K. Aswathappa, (2009): Human Resource Management- Text & Cases 5e, India, McGraw Hill.

Reference books:
Dessler & Varkkey, (2010): Human Resource Management 11th ed., Prentice Hall of India.
Decenzo & Robbins, (2006): Fundamentals of Human Resource Management, Wiley.
Dipak Kr. Bhattacharyya, (2010): Human Resource Management 2e, India, Excel Books.
Bernardin, (2007): Human Resource Management- An Experimental Approach, India, TATA McGraw Hill.
Snell & Bohlander, (2008): Human Resource Management, India, South- Western Cengage Learning
Latest editions of the books may be used.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	M	M	M		M	M	M		H	M	H
CO2	M	M	H	M	M	H	H	H	H	H	H	M
CO3	H	M	H	L	H	M	M		M	M	M	M
CO4	M			H	H	L	H	H	H	M	M	M
CO5		H	M	M	L	M		M	H	L		

Rural Management
Paper MGTB305

LTPC
4 0 0 4

(40 HOURS)
Course Objective

To help the students develop a general understanding of the various aspects of rural management.

Course Learning Outcomes
After completing the course, the student shall be able to:

CO1: join in NGOs, CBOs, Projects of Funding Agencies (UNDP, World Bank, JICA, DFID,CARE,CRY,USAID,Action Aid),CSR Units of Corporate/Business houses.
CO2: join in Rural Development Organizations / Institutions as Social Worker, Community Mobilizer.
CO3: set up Small Scale Industry in rural areas supported by State govt. institutions like ORMAS, DDUGKY (Aajeebika), Indian Red Cross Society, District Rural Development Agency (DRDA) or District Industry Centre (DIC) of any district.
CO4: join in State /National Livelihoods Mission under Panchayati Raj Dept / Rural Development Dept. of the State / Nation as Manager or Programme Coordinator.
CO5: start a Non- Governmental Organisation or Voluntary agency to serve for the welfare of the rural poor. Currently NGOs play a very crucial role in rural development, by organizing poor people in villages. The funds for running of such NGOs will be available from both Central and State governments on the basis of the projects and requirements of theNGOs.

Course Contents

Unit I: Introduction (8 HOURS)
Definition of Rural Area, Meaning and concept of rural development, nature and scope of rural development in India. Demographic structure of rural India; Trends in population growth, composition of rural work force.
Unit II: Rural development(8 HOURS)

Concepts, Principles and Approaches: of rural management. Indicators of development; Conceptual framework, Strategies; Rural development in India:
Unit III: Policies and Programs: (8 HOURS)

A retrospective; Policies, Programs: Techniques of planning: Detail steps in district and block level planning: Area Development Planning: Definition, purpose, Area development plans.
Unit IV: Rural Administration: (8 HOURS)

Panchayati Raj & Rural Administration, Natural Resources Development & Management,

Unit V: Rural Marketing(8 HOURS)

Rural Marketing: Rural production and products: agricultural and non-agricultural products; types of rural production and products; Market functionaries: Concept of supply chain management and Value Addition; Problems of marketing; Role of co-operative agencies in marketing of agricultural and non-agricultural product.

References:

1. Rural Management by KB Gupta, Faizia Sidiqui, and Iftikhar Alam; CBS Publication
2. Rural marketing: Challenges and opportunities. by Dinesh Kumar and Punam Gupta; SAGE text
3. Rural Development: Principles, Policies and Management by Katar Singh; SAGE text
4. Rural Marketing by Pradeep Kashyap; Pearson Publication

Note: Latest edition of readings may be used

.

Comprehensive Viva-voce
Paper MGTB306

LTPC
0 0 0 4

Course Objective

A viva-voce of all the subjects of semester-III shall be conducted in front of a constituted committee of academicians/experts (internal and external)

Course Learning Objectives (CO):

CO1. To prepare comprehensively about the concept and overall knowledge of all courses.CO2. To gain confidence and develop interpersonal skills in the relevant field.
CO3. To acquaint the students with the overall framework of management concepts in business administration.CO4. To build professional conduct within any team activities.

Course Learning Outcomes (CLOs): On completion of this course, the students will be able to:

CLO1. The students will be able to understand the concept of management principles and various dimensions.
CLO2. The students will be able to Develop problem solving skills by gathering and assessing

appropriate managementinformation.
CLO3. The students will be able to Assess management concepts, plans and decision in business administration.CLO4. The students will be able to Analyze and build professional conduct within any team activities.

Methodology:

The confidence level, presentation and communication skills, decision-making ability and a comprehensiveunderstanding will be assessed.

The viva voce is of 100 marks and is to be conducted by the external examiners appointed by theUniversity. A weightage of 4 credits has been given to this to highlight its importance.

Course Learning Outcom Es	Program Learning Outcom es (PLOs)												Program Specific Outcom es (PSOs)			
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12	PSO1	PSO2	PSO3	PSO4
CLO1	H	M	M	M	M	H	M	H	M	H	M	M	H	H	M	
CLO2	H	M	M	M	M	M	H	M	M	M	M	H	M	M	H	
CLO3	H	H	M	H	H	M	H	M	M	M	M	M	M	M	M	
CLO4	H	H	M	H	H	H	H	H	M	H	M	M	L	M	M	

BBA-SEMESTER-IV

BUSINESS COMMUNICATION
Paper MGTB401

LTPC
4 0 0 4

(40 HOURS)
Course Objective

To develop the skills of the professional undergraduate students for proper self-expression, social communication, spoken English, correct pronunciation, voice modulation and business etiquettes.

Course Learning Outcomes (CLOs): On completion of this course, the students will be able to:

CLO1. Understand the basic concepts of communication and help them to transform their communicationabilities.
CLO2. To develop the students to acquire necessary skills of Business Etiquettes for handling day-to-day managerial responsibilities and evaluate the facilitators of business Communication. **CLO3. To** choose their body language more correctly and impressively in accordance with an organizational requirement and international standards
CLO4. To analyze the forms of Communication and make the students to understand the verbaland non-verbal Communication and to design impressive documents.
CLO5. The students will illustrate the correct practices of the strategies of Effective business writing

Curriculum

Unit I (8 HOURS)
Essentials of Business communication: Introduction, Basic Patterns of Business Messages: Writing process, Directness and Indirectness in new s and messages of all types, sales Massages, Persuasion.

Unit-II (8 HOURS)

Writing a Project Report: Basics, writing Reports on Field Work visits to Industries/Business Concerns etc.; Business-Negotiations.

Unit-III (8 HOURS)

E-Correspondence

Unit-IV (8 HOURS)

Spoken English for Business-communication: Presentation of Plans, Objectives; speech: Preparation, Mode of delivery presentation; Addressing the Audience. Oral Talking. Strategies to overcome Barriers in Address, speech.

Unit-V (8 HOURS)

Business Etiquettes and Public Speaking:
Business Manners. Body Language Gestures, Email and Net Etiquettes, Etiquette of the Written Word, Etiquettes on the Telephone, Handling Business Meetings; Introducing Characteristic, Model Speeches, Role Play on Selected Topics with Case Analysis and Real Life Experiences.

Reference books:

- Dr.Preeti Shukla, Business Communications, Shree Mahavir Book depot., Nai Sarak, New Delhi.
- A.Kumar, Effective Business Communications, Khanna Book Publishing Co..P, Ltd.
- John.M.Penrose, Robert W. Rosberry, Robert J. Myers, Advanced Business Communications, Thomsan South Western.
- Urmila Rai, S.M.Rai – Business Communication – Himalya Publishing House. 1. Boove, C.L., 5. Thill, J.V., and Chaturvedi, M., (2009) Business Communication Today, Pearson Education.

Mapping of CLOs with PLOs & PSOs

Course Learning Outcomes	Program Learning Outcomes(PLOs)												Program Specific Outcomes (PSOs)		
	PLO	PLO	PLO	PLO	PLO	PLO	PLO	PLO	PLO	PLO1	PLO1	PLO1	PSO	PSO	PSO 3
CLO1	M	M	L				M						L		
CLO2		M	M		M		L		M	L	L				
CLO3		L	L	M	M		M	M		L			L	M	
CLO4					L				L	L					
CLO5	L	M						L	L	M	M				

H: High M: Medium L: Low

FINANCIAL MANAGEMENT

Paper MGTB402

L T P C
3 0 0 4

(40 HOURS)

Course Objective

The focus in this paper would be on issues related to financial management in the Indian Corporate Sector. The contents are related to the practices observed in Indian Corporate Sector. The objective is to enable and equip the future managers with basic tools for applying financial analysis.

Course Learning Outcomes

CO1: Define the concepts, vital tools and techniques applicable forfinancial decision making by a business firm.

CO2: Explain the functions of Finance in organization and methods inmanaging funds for business

CO3: Apply the concepts of budgeting, working capital, cost of capitalincluding the choice of source of funds.

CO4: Analyse the practical problems relating to the financing of fundsincluding pricing and dividend theories.

CO5: Select the methods and techniques for analysing the data forfinancial decision making.

Curriculum

Unit I: Introduction to Financial Management (8 hours)

Meaning, objectives and scope, conflicts in profit versus wealth or value maximization principle, Time value of money.

Unit II: Investment Decisions (8 hours)

Capital budgeting techniques-Net Present Value Method, Internal Rate of Return Method. Cost of Capital-equity and debt.

Unit III: Financing Decisions (8 hours)

Leverage- operating, financial and composite leverage, Capital structure- theory and policy, Dividend policy, Asset based financing- lease and hire purchase.

Unit IV: Short term financing (8 hours)

Management of Working Capital, Cash management, Inventory Management, Receivables Management, working capital leverage.

Unit V: Risk and Return (8 hours)

Calculating risk and return for individual securities, Beta estimation, overview of capital market theory.

Recommended book:

- I. M. Pandey, (2010): Financial Management, Vikas Publishing House

Reference books:

- M Y Khan & P K Jain, Financial Management- Text, problems and cases, Tata McGraw Hills
- Dr. R. P. Rustagi (2011): Financial Management- Theory, concept and problems, Taxman Publications

Mapping of CO'S and PO'S

11003001	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	2	2	2	2	2			3	3
CO2	2	2	2	2	3		2	2	3	3	2	3
CO3	1		2	2	3	3	3		2		2	3
CO4			2	2	3	2		2			2	3
CO5	3	3	3	3	3	3	3	3	3	3	3	3

DIRECT TAX

Paper
MGTB403

LTPC

4004

(40 hours)

Objective

To provide basic knowledge and equip students with application of principles and provisions Income-tax Act, 1961.

Expected learning outcome: Students will gain a working knowledge regarding computation of taxable income and tax liability pertaining to individuals/firms.

Course Learning Outcomes

CO1: What are the fundamental provisions of the concept of Direct tax planning and to equip with a reasonable knowledge of tax planning devices?

CO2: Understand the intricacies relating to the filling of various forms and returns & to understand the relevance of GST in present Indian TaxScenario.

CO3: Applying the concepts of taxation to the corporate tax planning.

CO4: Analysing the skill of independent thinking and creativity in the field of direct tax law & evaluate the impact of laws on companies and on individuals & also, to make capable to understand amendments made from time to time in Acts related to the Tax.

CO5: Measure the tax liability of an individual or organisation.

Curriculum

Unit I (8 hours)

Basic concept: Income, agricultural income, person, assessee, assessment year, previous year, gross total income,

total income, maximum marginal rate of tax.

Unit II (8 hours)

Residential status Scope of total income on the basis of residential status Exempted income under section .

Unit III (8 hours)

Salaries.

Unit IV (8 hours)

Income from house property and Profits and gains of business or profession.

Unit V (8 hours)

Capital gains and Income from other sources.

Recommended Book:

- Singhania, Vinod K. and Monica Singhania. Students‟ Guide to Income Tax.Taxmann Publications Pvt. Ltd., New Delhi.

Reference Books:

- Ahuja, Girish and Ravi Gupta. Systematic Approach to Income Tax. Bharat Law House, Delhi.
- Chandra, Mahesh., S.P. Goyal and D.C. Shukla. Income Tax Law and Practice.Pragati Prakashan, Delhi.
- Pagare, Dinkar. Law and Practice of Income Tax. Sultan Chand and Sons, New Delhi.
- Mehrotra, H.C. Income Tax Law. Sahitya Bhawan, Agra.
- Lal, B.B. Income Tax Law and Practice. Konark Publications, New Delhi.
- Singhania, Vinod K. and Kapil Singhania. Tax Computation on CD. Taxmann Publications Pvt. Ltd., New Delhi.

Mapping of CO'S and PO'S

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	H	L	-	H	L	H	H	H	L	L	H
CO2	-	-	H	M	L	H	M	M	M	-	H	H
CO3	H	M	H	M	-	L	L	M	-	H	M	H
CO4	M	M	-	H	H	M	H	M	1	M	M	H
CO5	H	H	H	H	M	H	M	H	M	H	H	H

MANAGEMENT ACCOUNTING

Paper MGTB404

LTPC

4004

(40 hours)

Objective

The subject of Management Accounting is basically Designed to equip the Student with tools for analyzing financial and non-financial information which will help them in decision-making planning and control.
Aim: To acquaint the students with basic concepts used in cost accounting and various methods involved in cost ascertainment systems.

Course Learning Outcomes

CLO1) Develop the ability to analyze financial data and use it for making informed decisions related to budgeting, cost control, pricing, and resource allocation within an organization.

CLO2) Acquire skills to identify and analyze different types of costs (e.g., variable, fixed, direct, indirect) and implement strategies to control and reduce these costs effectively.

CLO3) Gain proficiency in designing and using performance measurement tools and key performance indicators (KPIs) to assess an organization's financial performance and track progress towards its goals.

CLO4) Learn to create budgets, financial forecasts, and perform variance analysis, enabling effective planning, resource allocation, and adaptation to changing business conditions.

CLO5) Develop the ability to integrate management accounting information into the strategic decision-making process, including evaluating investment opportunities, assessing project financial viability, and aligning financial strategies with the organization's goals.

Curriculum

Unit I: Introduction (8 HOURS)

Meaning, objectives and advantages of cost accounting, Difference between cost accounting and financial accounting. Cost concepts and classifications, Elements of cost. Installation of a costing system. Role of a cost accountant in an organization.

Unit II: Cost concept (8 HOURS)

Types of cost, Cost Accumulations, cost objects, cost classifications, cost applications, cost behavior, Techniques of Costing.

Unit III: Overhead (8 HOURS)

Classification, allocation, apportionment and absorption of overhead. Under- and over-absorption. Capacity costs. Treatments of certain items in costing, like interest on capital, packing expenses, debts, research and development expenses, Bad Activity – based cost allocation.

Unit IV Methods of Costing (8 HOURS)

Unit costing, Job costing. Contract Costing. Process costing (process losses, valuation of work in progress, joint and by-products) Service costing (only transport).

Unit V: Cost -Volume -Profit Analysis (8 HOURS)

The Relationship of cost and profit with volume, use of CVP Analysis, Marginal Costing and Absorption costing,

Breakeven point, contribution marginal Approach, Use of Breakeven analysis.

Recommended Book

- Lal, Jawahar. Cost Accounting. Tata McGraw Hill Publishing Co., New Delhi

Reference Book

- Nigam, B.M. Lall and I.C. Jain. Cost Accounting: Principles and Practice. Prentice Hall of India, New Delhi.
- Mittal, D.K. and Luv Mittal. Cost Accounting. Galgotia Publishing Co., New Delhi.
- Arora, M.N. Cost Accounting – Principles and Practice. Vikas Publishing House,
- New Delhi.
- Shukla, M.C., T.S. Grewal and M.P. Gupta. Cost Accounting: Text and Problems.
- S. Chand & Co. Ltd., New Delhi.
- Maheshwari, S.N. and S.N. Mittal. Cost Accounting: Theory and Problems. Shri
- Mahabir Book Depot, New Delhi.
- Jain , S.P. and K.L. Narang. Cost Accounting: Principles and Methods. Kalyani
- Publishers, Jalandhar.

Mapping of CO'S and PO'S

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	M	M	H	M	M	L	M	M	-	M	M
CO2	M	M	M	-	M	H	M	M	M	-	M	H
CO3	M	M	H	H	H	M	M	-	-	-	M	M
CO4	H	H	L	M	L	M	M	-	-	M	M	H
CO5	H	H	M	H	H	M	H	M	H	-	M	H

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E-BUSINESS

Paper MGTB405

LTPC
4004

Objective

To enable the student to become familiar with the mechanism for conducting business transactions through electronic means

Course Learning Outcomes

CLO1) Demonstrate proficiency in online marketing strategies and tactics, including search engine optimization (SEO), social media marketing, email marketing, and pay-per-click advertising, to effectively promote products and services in the digital marketplace.

CLO2) Analyze and interpret data from web analytics tools to make informed decisions about website and online store performance, user behavior, and customer preferences, leading to optimization of the online customer experience.

CLO3) Apply principles of e-commerce security and privacy to protect sensitive customer data and ensure secure transactions, safeguarding the integrity and reputation of the e-business.

Develop and implement an effective e-business strategy, incorporating aspects such as market CLO4) research, competitive analysis, and business model innovation, to gain a competitive edge and maximize online profitability.

CLO5) Collaborate with cross-functional teams, including web developers, designers, and IT professionals, to effectively manage the technical aspects of e-business operations, ensuring a seamless and user-friendly online presence for customers

Contents

Unit 1: Introduction:

Meaning, nature, concepts, advantages, disadvantages and reasons for transacting online, types of E-Commerce, e-commerce business models (introduction, key elements of a business model and categorizing major E-commerce business models), forces behind e-commerce.

Technology used in E-commerce: The dynamics of world wide web and internet (meaning, evolution and features); Designing, building and launching e-commerce website (A systematic approach involving decisions regarding selection of hardware, software, outsourcing vs. in-house development of a website)

Unit 2: Security and Encryption:

Need and concepts, the e-commerce security environment: (dimension, definition and scope of e security), security threats in the E-commerce environment (security intrusions and breaches, attacking methods like hacking, sniffing, cyber-vandalism etc.), technology solutions (Encryption, security channels of communication, protecting networks and protecting servers and clients),

Unit 3: IT Act 2000 and Cyber Crimes

IT Act 2000: Definitions, Digital signature, Electronic governance, Attribution, acknowledgement and dispatch of electronic records, Regulation of certifying authorities, Digital signatures certificates, Duties of subscribers, Penalties and adjudication, Appellate Tribunal, Offences and Cyber-crimes

Unit 4: E-payment System:

Models and methods of e–payments (Debit Card, Credit Card, Smart Cards, e-money), digital signatures (procedure, working and legal position), payment gateways, online banking (meaning, concepts, importance, electronic fund transfer, automated clearing house, automated ledger posting), risks involved in e-payments.

Unit 5: On-line Business Transactions:

Meaning, purpose, advantages and disadvantages of transacting online, E commerce applications in various industries like {banking, insurance, payment of utility bills, online marketing, e-tailing (popularity, benefits, problems and features), online services (financial, travel and career), auctions, online portal, online learning, publishing and entertainment} Online shopping (Amazon, Snapdeal, Alibaba, Flipkart, etc.)

Reference books:

1. Kenneth C. Laudon and Carlo Guercio Traver, *E-Commerce,* Pearson Education.
2. David Whiteley, *E-commerce: Strategy, Technology and Applications*, McGraw Hill Education
3. Bharat Bhaskar, *Electronic Commerce: Framework, Technology and Application, 4th Ed.,* McGraw Hill Education
4. PT Joseph, *E-Commerce: An Indian Perspective*, PHI Learning
5. KK Bajaj and Debjani Nag, *E-commerce,* McGraw Hill Education
6. TN Chhabra, *E-Commerce,* Dhanpat Rai & Co.
7. TN Chhabra, Hem Chand Jain, and Aruna Jain, *An Introduction to HTML,* Dhanpat Rai & Co.

Mapping of CO'S and PO'S

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	L	L	L	L	L	L	L	L	L	L	L
CO2	L	L	L	M	L	L	L	L	L	L	L	L
CO3	L	L	L	L	L	L	L	H	L	L	L	H
CO4	M	L	L	H	M	L	L	L	M	L	M	L
CO5	M	L	M	L	H	L	H	L	L	M	L	L

BUSINESS RESEARCH METHODS

Paper MGTB406

LTPC
4 0 0 4

(40 HOURS)
Objective

Any body of knowledge cannot develop without the underlying research. This module introduces the fundamentals of research, its process and the way in which findings of a research initiative is presented and reported. It exposes the students to the various statistical tools being used to analyze data and draw inferences.

Course Learning Outcomes

CO1: Define & Show Critical Thinking in their working.

CO2: Interpret the primary data & relate the research articles with theirresearch.

CO3: Interview respondents for data collection & organize discussions and chatshows.

CO4: Analyse the primary & secondary data and will be able to prepare ameaningful interpretation

CO5: Explain critical thinking process and decide the right course of action.

Curriculum

Unit I: (8 HOURS)

Introduction to Research

Research: Meaning, types & process. Research methods versus methodology, Research problem & Research design. Basic concepts of research- variables, hypothesis & its types, sample & population, parameter & statistic, type-I & type-II errors, one tailed and two tailed testing of hypothesis.

Unit II: (8 HOURS)

Sampling and Data Collection

Sampling: Meaning, types and techniques of sampling. Types of data: Primary & secondary data.
Methods of data collection: Interview-structured and unstructured, questionnaire & interview schedule, observation-participative and non-participative, Delphi method, focus group, depth interview and survey method.

Unit III: (8 HOURS)

Descriptive Statistics & Hypothesis Testing

Measures of central tendency- mean, median & mode, Measures of Variability- Average Deviation, Standard Deviation & Quartile Deviation, Skewness & Kurtosis. Testing of Hypothesis-I: One tailed and Two tailed Parametric Test- z-test and t-test

Unit IV: (8 HOURS)

Non-Parametric Tests

Testing of Hypothesis-II: Non Parametric Tests- Sign Test, Median Test, Chi-Square Test, Mann-Whitney U Test, Run Test for Randomness. Analysis of Variance- One Way and Two Way

Unit V: (8 HOURS)

Report writing

Steps of writing research report, Report Layout: Preliminary pages, Main text, End matter, Mechanics of writing research report, Bibliography and references format, Precautions in writing research report.

Recommended Books:

- C. R. Kothari, Research Methodology Methods and Technique

Reference Books:

R. Panneerselvam, Research methodology, PHI

Mapping of CO'S and PO'S

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	H	-	H	-	H	M	H	M	-	H
CO2	-	H	-	H	M	H	H	H	-	H	H	H
CO3	M	H	H	H	-	H	-	H	H	-	H	H
CO4	H	M	H	M	H	M	H	-	M	H	H	H
CO5	M	H	M	M	M	M	-	M	M	M	M	H

BBA-SEMESTER-V

MARKETING MANAGEMENT
Paper MGTB501

LTPC
3 0 0 4

(40 HOURS)
Course Objective

The objective of this course is to provide basic knowledge of concepts, principles, tools and techniques of marketing.

Course Learning Outcomes

After completing the course, the student shall be able to:
CO1: learn the basic concepts and principles of marketing and to develop their conceptual skill to be able to manage marketing operations of a business firm.
CO2: understand the complexities involved in various targeting and positioning decisions.
CO3: take effective decisions for launching new products and to understand the implications of different pricing strategies.
C04: develop the skills to design the promotion-mix strategies
C05: familiarize about the current trends in marketing to take proactive measures while taking marketing decisions

Course Contents

Unit I: Introduction (8 Hours)

Marketing: Meaning, Nature, Scope and Importance; Marketing Philosophies; Marketing Mix; Marketing Environment- Concept and need for studying marketing environment; Micro environmental factors- company, suppliers, marketing intermediaries, customers, competitors, publics; Macro environmental factors– demographic, economic, natural, technological, politico-legal and socio-cultural.

Unit II: **Consumer behaviour and Market Selection (8 Hours)**

Need for studying consumer behaviour; Stages in Consumer buying decision process; Factors influencing consumer buying decisions. Market Segmentation- concept, importance, levels and bases of segmenting consumer markets. Market Targeting- concept and factors affecting the choices for market targeting. Product Positioning– concept and bases. Product differentiation- concept and bases.

Unit III: Product and Pricing Decisions (8 Hours)

Concept and classification; Levels of Product; Product-mix dimensions; Branding- concept,

functions and qualities of good brand name; Packaging and Labeling- concept and functions; Product support services; New product development process. Concept and objectives of pricing decisions; Factors affecting price of a product; Pricing methods; Pricing strategies.

Unit IV: Distribution and promotion Decisions (8 Hours)

Channels of distribution- meaning and importance; types of distribution channels and their functions; Factors affecting choice of distribution channel; Distribution logistics– concept, importance and major logistics decisions. Wholesaling and retailing. Nature and Importance of Promotion; Promotion mix concept and distinctive characteristics of advertising, personal selling, sales promotion, public relations, publicity and direct marketing; Factors influencing promotion mix decisions.

Unit V: Developments in Marketing (8 Hours)

Relationship Marketing; Sustainable Marketing; Rural marketing; Social marketing; Digital marketing; Legal Issues in marketing- The Consumer Protection Act, 1986; Ethical issues in marketing.

References

1. Kotler, P., Armstrong, G. and Agnihotri, P. (2018). *Principles of Marketing (17th edition)* Pearson Education. Indian edition.
2. Sharma, K., & Swati Aggarwal. (2018). Principles of Marketing. Taxmann's.
3. The Consumer Protection Act,1986.

Additional Resources

1. Etzel, M. J., Walker, B. J., Stanton, W. J., & Pandit, A. (2010). *Marketing (14th ed.).* Mc Graw Hill.
2. Grewal, D. & Levy, M. (2017). *Marketing (5th ed.).* McGraw-Hill Education.

Note: Latest editions of the books may be used.

Mapping of CO'S and PO'S

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	H	-	H	-	H	M	H	M	-	H
CO2	-	H	-	H	M	H	H	H	-	H	H	H
CO3	M	H	H	H	-	H	-	H	H	-	H	H
CO4	H	M	H	M	H	M	H	-	M	H	H	H

CO5	M	H	M	M	M	M	-	M	M	M	M	H

HUMAN RESOURCE PLANNING AND DEVELOPMENT
Paper MGTB502

LTPC
4 0 0 4

(40 HOURS)

Course Objective

This paper has been designed keeping in mind the current need of organizations. Human resource planning has become a bigger challenge for organization due to growing globalization and emerging new trends specially because of changing environment. This paper addresses all those challenges and suggests ways to handle them efficiently. The objective of this paper is to develop a conceptual as well as a practical understanding of Human Resource Planning in organizations.

Course Learning Outcomes

After completing the course, the student shall be able to:

CO1: understand basic nature and importance of human resource management.

CO2: analyze the current theory and practice of recruitment and selection.

CO3: realize the importance of performance management system in enhancing employee performance.

CO4: recommend actions based on results of the compensation analysis and design compensation schemes that are cost effective, that increase productivity of the workforce, and comply with the legal framework.

CO5: understand role of modern HRM in meeting challenges of changing business environment.

Course Contents

Unit I

HR Planning: Conceptual framework, Definitions, Historical evolution, HR Planning levels,

Unit II

HR planning at Enterprise level, Need for systematic planning, Planning process, **Variables to be accounted for in planning process,** Operating Environment- Internal & External, Job description, Models & techniques of Manpower demand and Supply forecasting. Retention-Redeployment and Exit strategies

Unit III

Linkages with other HR business processes- Recruitment, Performance/ Productivity, Training and Development. Re-Engineering/ Organization Development etc

Unit IV

Study of HR Planning process Practices in select businesses, Ramp-up and scale down practices and tools, Research in HR Planning area, Career Planning and Succession Planning,

Unit V

Human Resource Information System- Concept, Objectives of HRIS, Types of information, Sources of Information, Method of Data collection, Procedure of maintaining HRIS at Micro & Macro level.

Recommended Book

1. Praveen Durai (2010), Human Resource Management, Pearson Education, South Asia
2. John Storey, Graeme Salaman, Christopher Mabey(1998): Strategic Human Resource Management: A Reader, SAGE Publications, 1998

Reference Books

1. Aloke K. Sen, Human Resource Development- Development Planing and Deployment- Asian Books
2. Christopher Mabey, Rosemary Thomson (2011): Developing Human Resources, Routledge, Taylor and francis group, New York, USA.
3. Dessler & Varkkey, (2010): Human Resource Management 11e, India, Prentice Hall
4. Richard D. Johnson, Michael J. Kavanagh, Mohan Thite (2011): Human Resource Information System 2e, SAGE Publications, 2011.

Latest editions of the books may be used.

Mapping of CO'S and PO'S

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	L	L	M	L	L	L	L	L	M	L	L
CO2	M	L	L	M	L	L	L	L	L	M	L	L
CO3	M	L	L	M	L	L	L	L	L	M	L	L
CO4	H	L	L	H	L	L	L	L	L	H	L	L
CO5	M	L	L	H	L	L	L	L	L	H	L	L

INVESTMENT MANAGEMENT
Paper MGTB503

LTPC
4 0 0 4

(40 Hours)

Course Objective

The focus of this paper would be on the intricacies of security markets, construction of optimal portfolios and analysis of different investment options.
The basic objective of this course is to acquaint the student with the investment decisions related to financial assets, risks and returns involved, functioning of securities market and principles of security analysis along with the theories and concepts associated with portfolio management in order to be able to judge the competitive position of firms in capital market and review the related business decisions.

Curriculum

UNIT I: Introduction To Investment And Securities Market (8 Hours)

- Concept of investment-investment objectives and constraints-security and non security forms of investment, investment process. Securities markets: markets and their functions- development of stock market in India, regulation of securities market (SEBI).

UNIT II: Risk and Return (8 Hours)

- Types of risk-systematic and unsystematic, security returns-ex post and ex ante returns, portfolio return, concept of Beta-risk of individual security, portfolio risk.

UNIT III: Introduction To Portfolio Management(8 Hours)

- Diversification, construction of optimum portfolio- Markowitz risk return optimization, performance evaluation and revision- Sharpe's Ratio, Treynor's Ratio, Jenson's Alpha.

UNIT IV: Capital Market Theory (8 Hours)

- Capital Asset Pricing Model (CAPM), application of Capital Market Line and Security Market Line, Arbitrage Pricing Theory (APT).

UNIT V: Security Analysis (8 Hours)

- Fundamental analysis-economy, industry and company analysis, Technical Analysis- Efficient Market Hypothesis.

Recommended Books:

- Pandian, P., Security Analysis & Portfolio Management, Vikas Publishing House.

Reference Books:

- Fischer, E.D. & Jordan, R.J., Security Analysis & Portfolio Management, Pearson Education

- Khan & Jain, Financial Management, Tata McGraw Hills, 2008

Mapping of CO'S and PO'S

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	H	-	H	-	H	M	H	M	-	H
CO2	-	H	-	H	M	H	H	H	-	H	H	H
CO3	M	H	H	H	-	H	-	H	H	-	H	H
CO4	H	M	H	M	H	M	H	-	M	H	H	H
CO5	M	H	M	M	M	M	-	M	M	M	M	H

Entrepreneurial Management
Paper MGTB503

LTPC
4 0 0 4

(40 Hours)
Course Objective

The purpose of this paper is to prepare a ground where the students view Entrepreneurship as a desirable and feasible career option. The paper seeks to build the necessary competencies and motivation for a career in Entrepreneurship. After studying this course, the students would be able to build on personal as well as external resources with a view to successfully launching and subsequently managing their enterprises. They would have not only a definite idea as to which support/ developmental agency to look up and for what purpose, but also the necessary know-how and wherewithal for accessing their help. They would have basic skills in operations, finance, and marketing and human resource management.

Course Learning Outcomes

After completing the course, the student shall be able to:

CO1: understand the concept of entrepreneurship in the context of Indian economic scenario.
CO2: link the individual's capability and strength as a guiding factor towards entrepreneurial orientation.
CO3: understand social support system for gaining strength towards entrepreneurial preferences.
CO4: understand entrepreneurial process for initiating new venture creation.
CO5: understand various dimensions of managing a business enterprise once it is formed.

Course Content

Unit I: **Entrepreneurship (8 Hours)**

Theories of Entrepreneurship

Role and Importance of Entrepreneur in Economic Growth.

Unit II: Entrepreneurial Behaviours

Entrepreneurial Motivation, Need for Achievement Theory

Risk Taking Behavior

Innovation and Entrepreneur

Unit III: Entrepreneurial Traint

Definitions, Characteristics of Entrepreneurial Types

Functions of Entrepreneur.

Unit IV: Entrepreneurial Development in India

History, Objectives, Stages of Growth

Target Group, Programmes

Govt. Policy towards SSI's

Unit V: Project Feasibility Analysis

Business Ideas – Sources, processing; Input requirements, Sources of Financing, Technical Assistance, Marketing Assistance

Preparation of Feasibility Reports, Legal Formalities and Documentation.

Recommended books:

1. McClelland, D.C. & Winter, W.G. : Motivating Economic Achievement, Free Press.
2. Pareek, U & Venkateswara Rao, T : Developing Entrepreneurship – A Handbook on Learning Systems, Learning Systems, New Delhi.
3. Desai, A.N. : Entrepreneur and Environment, Ashish, New Delhi.
4. Druckar, Peter : Innovation and Entrepreneurship, Heinemann.
5. Chakraborty, Tridib : Introducing Entrepreneurship Development, Modern Book Agency
6. Manimala, M.J. : Entrepreneurial Policies and Strategies,TMH

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Mapping of CO'S and PO'S

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	H	-	H	-	H	M	H	M	-	H
CO2	-	H	-	H	M	H	H	H	-	H	H	H
CO3	M	H	H	H	-	H	-	H	H	-	H	H

CO4	H	M	H	M	H	M	H	-	M	H	H	H
CO5	M	H	M	M	M	M	-	M	M	M	M	H

ADVERTISING
Paper MGTB503

LTPC
4 0 0 4

(40 Hours)

Course Objective:

Advertisements are a vital component of the promotion mix, which enhance the awareness of a company and its products. It helps a company build image and position a product on its target segment. This course introduces the conceptual framework and functional aspects of the field of advertising management.

The core objective of the course is to help the students understand the concepts of advertising, its types and the different functional areas of advertising management.

Course Learning Outcomes

1. Understand the fundamental principles of advertising, including its history, evolution, and its role in modern marketing strategies.

2. Develop the ability to analyze target audiences, consumer behavior, and market trends to create effective advertising campaigns.

3. Acquire proficiency in various advertising mediums and channels, such as print, digital, social media, and broadcast, and demonstrate the ability to choose the most appropriate ones for specific campaigns.

4. Learn how to craft compelling advertising messages and visuals, taking into consideration branding, storytelling, and the use of persuasive techniques.

5. Demonstrate the capability to evaluate the success of advertising campaigns through key performance indicators (KPIs) and metrics, and make data-driven decisions for optimizing future advertising efforts.

Curriculum

Unit I: Introduction to Advertising & its management

- Advertising defined, Major Indian advertising & media agencies, Integrated Marketing Communication concepts, Merits & Demerits of advertising, Advertising agencies: Roles & Functions, 5-M model of advertising management, Career options in Advertising field.

Unit II: Classification of advertisements & campaign planning

- Types of advertising
- Advertising campaign planning
- Advertising budget

Unit III: Advertising message

- AIDA model
- Message design & Development
- Print Advertisement layout
- Advertisement appeals

Unit IV: Advertising Media

- Types of advertising media: Print media, Electronic media, Internet, Outdoor and transit media, Cinema
- Media selection, Planning, Scheduling and strategy

Unit V: Advertisement effectiveness & ethical issues

- Measuring advertisement effectiveness(pre-launch methods, post launch methods)
- Ethical issues of advertising

Recommended book:

- Chunawalla, S.A. and Sethia, K.C., *Foundations of Advertising Theory and Practice*, Himalaya Publishing House, Mumbai, 2009.

Reference books:

- Batra, Myers, Aaker, *Advertising Management*, Prentice Hall of India, New Delhi
- Mishra, M. N., *Sales Promotion and Advertising Management*, Himalaya Publishing House, Mumbai

Mapping of CO'S and PO'S

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	M	L	M	L	L	L	L	L	L	L	L
CO2	L	H	L	H	L	L	M	L	L	L	L	L
CO3	L	L	H	L	L	L	L	L	L	L	L	L
CO4	L	L	L	M	L	L	L	L	L	L	L	L
CO5	L	L	L	L	H	L	L	L	L	L	L	L

INTERNATIONAL FINANCE
Paper MGTB504

LTPC
4 0 0 4

Course Objective

Liberalization and Globalization of Economies in the Recent years has increased the Prominence of International Finance and Trade, which Prompted the Finance Managers to concentrate on the International Perspective as well, and it is Vital for a Student learning Finance to know the Intricacies of the Foreign Exchange Market and the Methods to Combat the Forex Risk.

Aim of this Subject is to Develop a Body of Knowledge and Skills and Make it Available to the Students to make them Successful Managers in the New Era of liberalization and Globalization.

Course Learning Outcomes

After completing the course, the student shall be able to:

CO1: Demonstrate knowledge of basic theorems of exchange rate determination, interest rates and inflation and the role of arbitrage in keeping the foreign exchange market efficient.
CO2: Apply knowledge of foreign exchange hedging to identify and manage the foreign exchange risks faced by globally active firms.
CO3: Demonstrate the ability to select global financing strategies and propose solutions that will take advantage of opportunities in the global financial markets to the benefit of relevant stakeholders.
CO4: Demonstrate the ability to deliver an effective oral presentation with appropriate visuals.
CO5: Demonstrate the ability to produce a clear and concise written report that demonstrates higher order understanding of key concepts in international finance.

Curriculum

Unit I: Introduction to International Finance and Theory of International Trade:

Increasing interdependence in the global economy, trends in international trade and cross-border financial flow, recent developments in global financial markets, liberalization, Integration and Innovation, Challenges of International Financial Management, Theory of Absolute Advantage, Theory of Comparative advantage, Heckscher-Ohlin Model, Imitation - Gap Theory.

Unit II Balance of Payments

Concept of Economic transactions, Resident, General Government institution, principles of accounting, Components of the BOP Account, factor affecting the components of the Bop account, balance of payments compilation, BoP- The Indian Perspective, Importance and limitations of BoP Statistics.

Unit III Foreign Exchange Market and Exchange rate determination.

Structure and the Participants, Types of Transactions, Mechanics of Currency dealing, exchange rate quotations, arbitrage, forward rates evolution of Exchange control and the foreign exchange market in india, relation between forex and money market, covered interest arbitrage, covered parity theorem, option forwards, cancelation of forward contracts, purchasing power parity, interest rate parity.

Unit IV: Short Term Financial Management:

Short Term Funding and Investment, Centralized vs. Decentralized Cash Management, Netting, Pooling, Exposure Management, Offshore Invoicing Centers.

Unit V: Introduction to Trade block, WTO, GATT, EXIM POLICY:

Formation of Trade Blocks, OPEC, its Objective, Function of European Community(EC), Function and Structure of WTO Agreements, trade related Aspects of Intellectual Property Rights (TRIPS), trade related aspects of Investment Measures (TRIMS), General Agreement on Trade in Services (GATS), Trade Negotiations under GATT, EXIM Policy Historical Perspective, Objective.

Reference Books:

1. International Financial Management: P G APTE : The Mcgrow Hill Companies.
2. International Economics: Francis Cherunilam: The Mc Graw Hill Companies.
3. International Corporate Finance: JEFF MADURA:CENGAGE Learning.
4. International money and Finance: Michael Melvin: Pearson Education.

Note: Latest edition of readings may be used

Mapping of CO'S and PO'S

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	M		L						H			
CO2	M								H	L		
CO3	H								H		M	
CO4		H					H					
CO5		H		H							M	

LABOUR LAW
Paper MGTB504

LTPC
4 0 0 4

Course Objective

Understanding of the legal framework is important for the efficient decision-making relating to management and employees relations. The course aims to provide an understanding, application and interpretation of the various labour laws and their implications for industrial relations and labour issues.

Course Learning Outcomes

CLO1) Understand the foundational principles and concepts of labor law, including the rights and obligations of both employers and employees.
CLO2) Analyze and apply relevant labor legislation and regulations to real-world workplace situations.
CLO3) Evaluate the impact of labor laws on employment relationships, collective bargaining, and labor disputes.
CLO4) Develop effective strategies for resolving labor disputes and conflicts in compliance with labor laws.
CLO5) Demonstrate knowledge of international labor standards and their relevance to domestic labor laws and practices.

Curriculum

Unit I: Labour Legislations in a Changing Context

- The Classification of Labour Laws
- The Factories Act, 1948
- The Shop and Establishments Act, 1953
- The Contract Labour (Regulation and Abolition) Act, 1970

Unit II: Social-Security Legislations

- Major Legislations
- The Employees' State Insurance Act, 1948
- Maternity Benefit Act, 1961
- The Workmen's Compensation Act, 1923
- The Payment of Gratuity Act, 1972
- Employees' provident Funds and Miscellaneous Provisions Act, 1952

Unit III: Wage Legislations

- The History of Wage legislations
- The Payment of Wages Act, 1936
- The Minimum Wages Act, 1948
- The Payment of Bonus Act, 1965

Unit IV: Other Recent Significant Legislations in India

Recommended Book

- P. N. Singh, Neeraj Kumar, Employee Relations Management, Pearson.
- P.L. Malik, Handbook of Labour and Industrial Law, 5e, Eastern Book Company.

Reference Books

- H.K. Saharay, . Industrial and Labour laws of India, Universal Law Publishing.
- S. P. Jain, Industrial & labour laws.
- Arun Monappa, Industrial Relations, Tata Mc Graw Hill.

Mapping of CO'S and PO'S

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	M	-	-	-	-	-	-	-	L	-	-	H
CO2	-	-	-	-	-	-	-	-	-	M	M	H
CO3	-	-	-	-	-		M	M	-	-	-	H
CO4	-	-	-	M	-	-	M	-	-	-	-	H
CO5	M	-	-	-	-	-	-	-	H	-	M	-

SUMMER INTERNSHIP &PROJECT
MGTB505

LTPC
4 0 0 4

COURSE LEARNING OUTCOME

CO1: Understand the real-time working of organizations.

CO2: Demonstrate professional knowledge, skills and attitude along withthe experience needed to constitute a successful career.

CO3: Analyse career opportunities in their areas of interest.

CO4: Build aptitude for gaining supervised professional experiences.

CO5: Create a clear understanding of industry trends and advancements

Mapping of CO'S and PO'S

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	M	M	H	H	M	H	H	H	M	M	M	M
CO2	-	H	H	M	L	-	L	M	L	-	M	-
CO3	L	L	M	H	H	-	M	-	-	M	H	L
CO4	L	L	M	L	-	M	H	H	M	L	L	L
CO5	M	M	H	L	-	M	H	H	M	L	M	L

BBA

Semester-

VI

BUSINESS ETHICS

Paper
MGTB601

LTPC

4 0 0 4

(40 HOURS)

Objectives

The basic objective of this paper is to make the students realize the importance of values and ethics in business. This course endeavors to provide a background to ethics as a prelude to learn the skills of ethical decision-making and, then, to apply those skills to the real and current challenges of the information professions.

Curriculum

Unit I: Ethics (8 Hours)

Management Process and Ethics, Ethical Decision Making, Ethical Issues, Ethos of Vadanta in Management, Relevance of Ethics and Values in Business

Unit II: Knowledge and Wisdom (8 Hours)

Meaning of Knowledge and Wisdom, Difference between Knowledge and Wisdom, Knowledge Worker versus Wisdom Worker, Concept of Knowledge Management and Wisdom management, Wisdom Based Management.
Stress Management: Meaning, Sources and Consequences of Stress, Stress Management and Detached Involvement.

Unit III: Understanding Progress, and Success - Results & Managing Transformation: (8 Hours)

Progress and Results Definition, Functions of Progress, Transformation, Need for Transformation, Process & Challenges of Transformation.
Understanding Success: Definitions of Success, Principles for Competitive Success, Prerequisites to Create Blue Print for Success. Successful Stories of Business Gurus.

Unit IV: Corporate Social Responsibility & Corporate Governance: (8 Hours)

Corporate Responsibility of Business: Employees, Consumers and Community, Corporate Governance, Code of Corporate Governance, Consumer Protection Act, Unethical issues in Business

Unit V (8 Hours)

Cases of corruption, corporate Scandals, Whistle Blowing, Insider Trading, Discrimination, Advertising, Consumer Rights etc.

Reference books:

- Fernando, A.C., (2009), Business Ethics, 1st edition, Pearson education.
- Hartman,Laura and Chatterjee, Abha, (2006), Perspectives in Business Ethics, 3rd Edition, McGraw Hill Education.
- Dr.F.C.Sharma, Business Values & Ethics – Shree Mahavir Book Depot, Nai Sarak, New Delhi.
- C.S.V Murthy – Business Ethics, Himalya Publishing House.
- Shina Parkashan – Managerial Ethics – Rajat Publications.
- C.L.Dave – Social Accounting – Renuka Publishers, Jodhpur

Mapping of CO'S and PO'S

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	M	M	M	L		M	M					
CO2		M	M						H	M	M	M
CO3		M	M	M	H	M	M	H				
CO4					1		M	M	M	M		M
CO5	H	H	H	H	H	H	H	H	H	H	H	H

FINANCIAL MARKETS AND SERVICES

Paper MGTB601

LTPC

4 0 0 4

(40 Hours)

Objectives

The focus in this paper would be on issues related to the financial markets & instruments along with different financial services and current scenario of Indian financial system & markets. This paper provides an introduction to the financial markets products and services, markets and market participants. The objective of this course is to familiarize the student with the operations of Indian financial markets and basic concepts of different financial services along with the banking system.

Course Learning Outcomes

CLO1) Analyze various financial instruments and their characteristics, including stocks, bonds, derivatives, and commodities, to make informed investment decisions.
CLO2) Evaluate the impact of economic indicators, central bank policies, and geopolitical events on financial markets and their implications for portfolio management.
CLO3) Develop a comprehensive understanding of risk management techniques and strategies to protect and optimize investment portfolios in volatile markets.
CLO4) Demonstrate proficiency in financial analysis tools and techniques to assess the financial health and performance of corporations and investment opportunities.
CLO5) Examine the regulatory framework governing financial markets and services, including the role of government agencies, and assess their impact on market stability and investor protection.

Content

Unit I: Introduction to the Financial System (8 HOURS)
Nature and role of financial system, financial system and financial markets, government intervention in the financial system, informal and formal financial system, components of formal financial system- institutions, intermediaries, markets and services, functions and weaknesses of Indian Financial System.

Unit II: Introduction to Financial Markets (8 HOURS)
Money market and Capital market, money market instruments- T Bills, CPs & CDs. Capital Market-primary and secondary, methods of raising capital, Derivative concepts, Role of SEBI.

Unit III: Introduction to Financial services (8 HOURS)
Fund based and Fee based service. Conceptual aspect of factoring, forfeiting, credit rating, bill discounting, leasing, securitization and consumer finance. Evaluation of strategic decisions regarding factoring, leasing and merger & acquisitions.

Unit IV: Insurance and Mutual funds (8 HOURS)
Basic concepts of insurance and mutual funds, role of IRDA and AMFI

Unit V: Introduction to Banking (8 HOURS)
An overview of the different activities performed by a bank. Retail Banking: Concepts, forms and products of retail banking. Corporate Banking: meaning, nature, functions and products.

Recommended books:

- "Financial Markets and Services" E. Gordon & K. Natarajan, Himalaya Publishing House

Reference books:

- "Financial Markets, Institutions and Financial Services" Clifford Gomez, Prentice Hall of India
- "Financial Markets and Institutions-An Introduction to the Risk Management Approach" A. Saunders & M. M. Cornett. Tata McGraw Hills Publication
- "Indian Financial System" Bharti Pathak, Pearson Education.
- "Financial Institutions and Markets- structure, growth and innovations" L. M. Bhole & Jitendra Mahakud. Tata McGraw Hills Publication

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	L	L	L	L	L	L	L	L	H	M	L
CO2	M	L	L	L	L	L	L	L	L	M	M	L
CO3	L	L	L	L	L	L	L	L	L	L	L	L
CO4	M	L	L	L	L	L	L	L	L	M	L	L
CO5	L	L	L	L	L	L	L	L	L	L	L	L

INDUSTRIAL RELATIONS

Paper MGTB601

LTPC

4 0 0 4

(40 Hours)

Objective:

To acquaint the student to develop an understanding of the industrial relations and the legal framework of industrial and labor laws. The objective of this course is to impart the students with the knowledge of laws and how law affects the industry and labor.

Course Learning Outcomes

CLO1) Analyze the historical development and evolution of industrial relations, tracing the key milestones and shifts in labor-management dynamics.
CLO2) Evaluate the impact of labor laws and regulations on workplace relations, including the ability to interpret and apply relevant legal frameworks.
CLO3) Demonstrate proficiency in negotiation and conflict resolution techniques within the context of labor disputes, fostering effective communication and problem-solving skills.
CLO4) Assess the role of labor unions and employer organizations in shaping industrial relations, including their functions, structures, and strategies.
CLO5) Examine contemporary issues in industrial relations, such as globalization, technological advancements, and diversity, and their effects on workforce dynamics and service delivery.

Curriculum

Unit I (8 Hours)

- Industrial Relations- Definition, importance and scope.
- ILO, Ministry of Labor, Commissions, National Conferences.

Unit II (8 Hours)

- Workers Participation in Management- Concept, forms of participation, benefits, of WPM.
- Trade Union Act.

Unit III (8 Hours)

- Service Conditions
- The Factories Act, 1948.
- Work Discipline, Standing Order Act.

Unit IV (8 Hours)

- Industrial Disputes- Nature, Causes, Types of conflict Resolution, Collective Bargaining.
- Industrial Dispute Act, 1946

- Strike & lockout, Lay-off and Retrenchment
- Grievance Redressal Machinery

Unit V (8 Hours)

- The Contract Labor (Regulation & Abolition Act, 1970.
- Payment of Wages Act.

Recommended Book:

- P. N. Singh, Neeraj Kumar, Employee Relations Management, Pearson.
- P.L. Malik, Handbook of Labour and Industrial Law, 5e, Eastern Book Company.

Reference Books:

- S. P. Jain, Industrial & labour laws.
- Kochan T.A. & Katz Henry 2nd, Collective Bargaining.
- P.C.Shejwalkar,S.B.Malegaonkar, Personnel Management & Industrial Relations.
- P. C. Tripathi, Industrial Relations and Personnel Management.

Mapping of CO'S and PO'S

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	L	L	L	L	L	L	L	L	L	L	H
CO2	L	M	L	L	L	L	L	L	L	L	L	H
CO3	L	H	L	M	L	L	M	L	L	L	L	L
CO4	L	L	L	L	L	L	L	L	L	L	L	L
CO5	L	L	L	L	L	L	L	L	L	L	L	L

PERFORMANCE MANAGEMENT
Paper MGTB602

LTPC
4 0 0 4

(40 HOURS)

Objective

To acquaint the student to develop an understanding of the performance management of employees and its implications. Study of performance management that aid in motivation, employee development and productivity improvement to meet organization goals.

Course Learning Outcomes

CLO1) Demonstrate an understanding of performance management principles and frameworks, including key concepts such as goal setting, feedback, and performance appraisal.
CLO2) Analyze and evaluate various performance management systems and tools used in organizations to measure employee performance and provide recommendations for improvement.
CLO3) Develop effective communication and feedback skills to facilitate productive performance discussions and address performance issues constructively.
CLO4) Identify and apply strategies for aligning individual and team goals with organizational objectives, fostering a culture of performance excellence.
CLO5) Create and implement performance improvement plans to enhance individual and team performance, utilizing data-driven decision-making and performance metrics.

Curriculum

Unit I

Introduction to Performance Management, Definition, nature, scope, importance, Business and sub functional Performance Management, Performance Management as a management Tool, Performance objectives and standards, Standards of Performance. Performance Domains and dimensions.

Unit II

Performance Planning Process, Contents of Performance Plan, 8 Step Model, Individual and Group Performance Planning, Role clarity and Job description.
Meaning of Performance appraisal, methods and approaches to performance appraisal, Obstacles in appraisal, Designing appraisal for better results, Performance Appraisal Interview, Potential Appraisal.

Unit III

Introduction, Definition, Purpose and Role of appraisal in Performance Management, Methods and Steps in Performance Appraisal. Why Appraisal Fail, Types of Appraisal, Approaches and Design, MBO, 360*, Potential Appraisal, Performance Review, Performance counseling/ Mentoring. Team Performance Appraisal.

Unit IV

Introduction to PMS, Importance, Features, Process of Building PMS, PMS Dimensions, Conceptual Framework. 4 pillars of PMS, PMS Prism, Strategic Performance Management, Performance and Strategy linkage, Components of SPM, SPM- Balanced Score Card, SPM

and Metrix, SPM Environment teatre and Risks.

Unit V

Competency Based Performance Management System, Performance Measurement, Performance Measurement through BSC, Performance and Succession Plan/ Career Development, International Performance Management, Performance Audit, Human Resource Valuation accounting and Audit.

Recommended Book:

- D. K. Bhattacharya, Performance Management Systems and Strategies- Text book, Pearson.

Reference Books:

- Aquinis, Performance Management, Pearson.
- Chadha, Performance Management, Macmillan.
- Armstrong, Michael, Baron, Jaico, Performance Management.
- Cardy, Performance Management, PHI.
- Kohli, Deb, Performance Management, Oxford.
- D Sharma, Performance Management, HPH.
- R.K. Sahu, Performance Management System, EB.
- TV Rao, Performance Management and Appraisal, Sage.

Mapping of CO'S and PO'S

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	M	L	L	H	L	M	L	L	L	H	M
CO2	M	L	L	H	H	L	L	H	H	M	H	M
CO3	M	H	L	L	H	L	H	L	H	M	H	M
CO4	H	M	L	M	H	L	L	L	L	L	H	L
CO5	M	L	L	L	H	L	L	L	L	L	H	L

GOODS AND SERVICES TAX (GST)
Paper MGTB602

LTPC
4 0 0 4

Course Objective

To provide basic knowledge and equip students with application of principles and provisions of GST, Central Excise, and Customs Laws. Expected learning outcome: Students will gain a working knowledge regarding computation of tax liability pertaining to these laws.

Course Learning Outcomes

CLO1) Demonstrate a comprehensive understanding of the GST framework, its principles, and its significance in the context of taxation and economic policies.
CLO2) Analyze the various components of GST, including Input Tax Credit (ITC), tax rates, exemptions, and threshold limits, and apply this knowledge to calculate GST liabilities and refunds accurately.
CLO3) Evaluate the impact of GST on businesses and consumers, assessing its implications on pricing, supply chains, and compliance requirements.
CLO4) Interpret and navigate the GST legal and regulatory framework, including the GST Act, rules, and procedures, to ensure compliance and minimize the risk of penalties.
CLO5) Develop effective strategies for GST compliance and optimization, enabling businesses to streamline their operations, minimize tax liabilities, and enhance their competitive advantage in the marketplace.

Curriculum

Unit I: Introduction of Indirect Tax

- Historical background of Indirect Tax in India.
- Introduction of GST Act in India,
- Commodities not falling under GST in India and Provision of tax on the same.
- Computation of tax on such commodities.

Unit II: GST

- Recognize the applicability of SGST, CGST and IGST,
- Define the concept of supply, Differentiate between taxable and nontaxable supply, Define the taxable event with respect to supply of goods,
- Identify the place of supply so as to decide the applicability of the tax, Define what is meant by the location of supplier of goods.

Unit III: GST

- List down the registration process for single or separate business, Goods and Services Tax (GST) Accounts Assistant, Note down the details to be furnished during the registration, Differentiate between taxable person verses registered person,
- Understand the benefits of registration, Register an Assessee under GST Independently.

- Identify instances for eligibility of input credit, Identify set-offs under GST wherever applicable.
- Identify in detail carry over credit, capital goods credit, embedded credits etc, Differentiate between consideration and valuation.

Unit IV: Customs laws

- Maintain the different types of ledgers, Prepare different types of periodic returns to be filed, File Returns Online, List the different types of payment, due dates, modes of payment with rules and collection of tax, penalties etc.,
- Differentiate on TDS versus, Calculate the amount of tax payable, Make the payment online.
- Basic concepts of customs law, Territorial waters, high seas
- Types of custom duties
- Basic, Countervailing & Anti- Dumping Duty, Safeguard Duty,
- Valuation of Custom Duty.

Unit V: Customs Procedures

- Import and Export Procedures, Baggage, Exemptions
- Provision related to Prohibited goods, Notified goods, Special goods, illegal importation/exportation of goods .
- Search, Seizer, and Arrest; Offences; Penalties; Confiscation and Prosecution.

Reference books:

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- GST Law Manual 4th Edition (November 18, 2017) Paperback – 2017 by R. K. Jain
- GST Tariff (Set of 2 Volumes) with GST Rate Reckoner Paperback – 2017 by Taxmann (Author)
- GST Acts with Rules & Forms(Incorporating Notifications Issued till 17-11-2017) (Bare Act) Paperback – 2017 by Taxmann (Author)
- V.S. Datey. Indirect Tax Law and practice, Taxmann Publications Pvt. Ltd., Delhi, Latest edition
- S. S. Gupta. Service Tax -How to meet your obligation Taxmann Publications Pvt. Ltd., Delhi, Latest edition.

Mapping of CO'S and PO'S

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	M	M	L	L	H	L	M	L	H	H	H	M
CO2	M	L	L	H	H	L	L	H	H	H	H	M
CO3	H	H	L	L	H	L	H	L	H	M	H	M
CO4	H	M	L	M	H	L	L	L	L	L	H	L
CO5	H	H	H	H	H	H	H	H	H	H	H	H

CONSUMER AFFAIRS AND CUSTOMER CARE

Paper MGTB602

LTPC

4 0 0 4

Course Objective:

This paper seeks to familarise the students with Basics of consumer affairs and behaviours their rights as a consumer, the social framework of consumer rights and legal framework of protecting consumer rights. The firm needs to know who buys their product. How they buy? When and where they buy? Why they buy? How they respond to marketing stimuli. What is Consumer Behavior about? How, why, where and when consumers make purchase decisions? Considers who influences the decisions? What is Consumer Behavior about?

It also provides an understanding of the procedure of redress of consumer complaints, and the role of different agencies in establishing product and service standards.

All these are important questions, which are to be known to the students and companies so that they can design, and implement marketing strategies to satisfy the customers.

Course Learning Outcomes

CLO1) Students will demonstrate an understanding of consumer rights and responsibilities in various industries and legal frameworks.

CLO2) Learners will develop effective communication and interpersonal skills to engage with customers professionally and empathetically.

CLO3) Participants will analyze case studies and real-world scenarios to identify common consumer issues and implement appropriate resolution strategies.

CLO4) Students will explore the impact of technology on consumer interactions, including online reviews, social media, and e-commerce platforms.

CLO5) Learners will gain knowledge of ethical considerations and best practices in customer service, promoting customer satisfaction and loyalty.

Unit 1: Conceptual Framework: Consumer affairs and Behaviour
Consumer and Markets: Concept of Consumer, Nature of markets, Concept of Price in Retail and Wholesale, Maximum Retail Price (MRP) and Local Taxes, Fair Price, labeling and packaging Experiencing and Voicing Dissatisfaction: Consumer Satisfaction/dissatisfaction-Grievances complaint, Consumer Behavior and its Application, Development of the Marketing Concept'. A Model of Consumer Decision Making.
STP Process and strategies, A Simple Frame work of CB, Consumer Behavior Roles.
Unit 2: Consumer Decision:
Dynamic Process of CB, Pre- purchase, purchase and post-purchase issues of Consumers and challenges to marketers.
Individual Decision Making, Buying and Disposing, Organizational and Household Decision Making

Unit 3: Factors Influencing Consumer Behavior:
Family Influence on CB, Family Life Cycle, Cultural and social influence on Consumer decision making process, Reference Groups and Social Influences.
Unit 4: The Consumer Protection Act, 1986 (CPA) & Grievance Redress Mechanism under the Consumer Protection Act, 1986:
Objectives and Basic Concepts: Consumer, goods, service, defect in goods, deficiency in service, spurious goods and services, unfair trade practice, restrictive trade practice.
Who can file a complaint? Grounds of filing a complaint; Limitation period; Procedure for filing and hearing of a complaint; Disposal of cases, Relief/Remedy to be be provided; Temporary Injunction, Enforcement of order, Appeal, frivolous and vexatious complaints; Offences and penalties.
Unit 5: Industry Regulators and Consumer Complaint Redress Mechanism

i. Banking: RBI and Banking Ombudsman
ii. ii. Insurance: IRDA and Insurance Ombudsman
iii. iii. Telecommunication: TRAI
iv. iv. Food Products: FSSAI (an overview)
v. v. Electricity Supply: Electricity Regulatory Commission
vi. vi. Advertising: ASCI
vii. Consumer Protection in India

Reference Books:

1. Hawkins, Best, Coney, Consumer Behavior, (Latest Edition) Tata McGraw Hill
2. David L Loudon and Albert J Della Bitta, Consumer Behaviour (Latest Edition), Tata McGraw Hill.
3. Roger D. Black Well et al, Consumer Behaviour, Thomson, (Latest Edition)

Suggested Readings:
1. Khanna, Sri Ram, Savita Hanspal, Sheetal Kapoor, and H.K. Awasthi. Consumer Affairs" (2007) Delhi University Publication. 334 pp.
2. Aggarwal, V. K. (2003). Consumer Protection: Law and Practice. 5th ed. Bharat Law House, Delhi, or latest edition.
3. Girimaji, Pushpa (2002). Consumer Right for Everyone Penguin Books.
4. Nader, Ralph (1973). The Consumer and Corporate Accountability. USA, Harcourt Brace

Jovanovich, Inc.
5. Sharma, Deepa (2011).Consumer Protection and Grievance-Redress in India: A Study of Insurance Industry (LAP LAMBERT Academic Publishing GmbH & Co.KG, Saarbrucken, Germany. 263 pp.
6. Empowering Consumers e-book, www.consumeraffairs.nic.in
7. ebook, www.bis.org 8. The Consumer Protection Act, 1986

Articles

1. Verma, D. P. S. (2002). Developments in Consumer Protection in India. Journal of Consumer Policy. Vol. 25. No. pp 107 –123.
2. Verma, D.P.S. (2002). Regulating Misleading Advertisements, Legal Provisions and Institutional Framework. Vikalpa. Vol. 26. No. 2. pp. 51-57.
3. Ralph L. Day and Laird E. Landon, Jr. (1997). Towards a Theory of Consumer Complaining Behaviour. Ag Woodside, et al. (eds.). Consumer and Industrial Buying Behaviour. New York; North Holland pp. 425-37.
4. George, S. Day and A. Aaker (1970). A Guide to consumerism. Journal of Marketing. Vol. 34. pp 12-19.
5. Sharma, Deepa (2003).New measures for Consumer Protection in India. The Indian Journal of Commerce. Vol.56. No.4. pp. 96-106
6. Sharma, Deepa (2011).Consumer Grievance Redress by Insurance Ombudsman. BIMAQUEST.Vol.11. pp.29-47.

Mapping of CO'S and PO'S

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	M	H	L	H	H	L	M	L	L	H	H	M
CO2	M	H	L	H	H	L	L	H	L	H	H	M
CO3	H	H	L	H	H	L	H	L	M	M	H	M
CO4	H	H	L	H	H	L	L	L	L	L	H	L
CO5	H	H	H	H	H	H	H	H	H	H	H	H

INTERNATIONAL BUSINESS

Paper MGTB603

LTPC

4 0 0 4

(40 Hours)

Course Learning Objective (CO):

CO1: To Create an environment of learning the basic concepts of International Business.

CO2: To Apply the knowledge gained in studying the Organizational Structure for Global business,

CO3: To Understand the Indian export documentation Process.
CO4: To Analyze the implications of global trade for India.

Course Learning Outcomes (CLOs): On completion of this course, the students will be able to:

CLO1: Understand the basic concepts of International Business. **Apply** the trends of global business and its impact on different economies. **Analyze** the impact of government policies in relation to the other developed economies of the world.

CLO2: Remember the trends of business around the world, **Understand** the role of international organizations in impacting the growth of business. **Analyze** the trade figures and to Evaluate the future expectations.

CLO3:Evaluate and Contrast between domestic and international markets. **Apply** the advantage of gaining knowledge of international markets to grow the national markets. **Analyze** the different types of international market intermediaries around the world

CLO4: Understand the role of international financial organization. **Evaluate** the concept of different marketing concept., **Analyze** the role of government and the basic structure of international business along with its organization to boost the business from the country.

Unit I (8 Hours)

Introduction to International Business: Globalization and its growing importance in world economy; Impact of globalization; International business contrasted with domestic business - complexities of international business; Modes of entry into international business. International Business Environment: National and foreign environments and their components - economic, cultural and political-legal environments; Global trading environment - recent trends in world trade in goods and services; Trends in India‟s foreign trade.

Unit II (8 Hours)

Theories of International Trade – an overview; Commercial Policy, Instruments - tariff and non-tariff measures; Balance of payment account and its components .International Organizations and Arrangements: WTO – Its objectives, principles, organizational structure and functioning; An overview of other organizations – UNCTAD, World Bank and IMF; Commodity and other trading agreements.

Unit III (8 Hours)

Regional Economic Co-operation: Forms of regional groupings; Integration efforts among countries in Europe, North America and Asia. International Financial Environment: International financial system and institutions; Foreign exchange markets and risk management; Foreign investments - types and flows; Foreign investment in Indian perspective.

Unit IV (8 Hours)

Organizational structure for international business operations; Key issues involved in making international production, finance, marketing and human resource decisions; International business negotiations. Developments and Issues in International Business: Outsourcing and its potentials for India; Strategic alliances, mergers and acquisitions; Role of IT in international business; International business and ecological considerations.

Unit V (8 Hours)

Foreign Trade promotion measures and organizations in India; Special economic zones (SEZs) and 100% export-oriented units (EOUs); Measures for promoting foreign investments into and from India; Indian joint ventures and acquisitions abroad. Financing of foreign trade and payment terms.

Recommended Books:

- Charles, W.L. Hill and Jain, Kumar, Arun. International Business. New Delhi: Tata McGraw-Hill.

Reference Books:

- Johnson, Derbe., and Colin Turner. International Business - Themes & Issues in the Modern Global Economy. London: Roultedge.
- Cherunilam, Francis. International Business: Text and Cases. Prentice Hall of India Ltd.
- Daniels John, D. Lee H. Radenbaugh and David P. Sullivan. International Business. Pearson Education (Singapore) Pvt. Ltd.
- Justin, Paul. International Business. Prentice Hall of India Ltd.
- Michael R. Czinkota. et al. International Business. Fortforth: The Dryden Press.
- RBI. Report on Currency & Finance, various issues.
- Griffin, Ricky W. and Michael W. Pustay. International Business - A Managerial Perspective. Prentice Hall.

- Bennett, Roger. International Business. Delhi: Pearson.
- UNCTAD Reports.
- WTO, Annual Report, various issues.

Mapping of CLOs with PLOs & PSOs

Course Learning Outcomes	Program Learning Outcomes (PLOs)												Program Specific Outcomes (PSOs)		
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12	PSO1	PSO2	PSO3
CLO1	H	M	M	M	H	M	H	M	H	H	M	M	H	M	M
CLO2	H	M	M	M	H	M	H	M	H	H	M	M	H	M	M
CLO3	H	M	M	M	H	M	H	M	H	H	M	M	H	M	M
CLO4	H	M	M	M	H	M	H	M	H	H	M	M	H	M	M

H: High M: Medium L: Low

OPERATION MANAGEMENT
Paper MGTB604

Course Obectives

CO1) To Explain an understanding of how the operations, have strategic importance and can provide a competitive advantage in the workplace and techniques of location and facility planning.

CO2) To provide students with the basic concepts related to the Work Study, Method Study and Work Measurement.

CO3) To Illustrate the Materials Management function starting from Demand Managementthrough Inventory Management.

CO4) To explain the concept and core values of Quality Management (QM).To Determine the voice of the customer and the impact of quality on economic performance and long-term businesssuccess of an organization.

Course Learning Outcomes (CLOs): On completion of this course, the students will be able to:

CLO1) To identify the elements of operations management and various transformation processesto enhance productivity and competitiveness. Explain the techniques of location and facility planning.

CLO2) To Analyze and Make use of various methods of work study, method study and work measurement.

CLO3) To define and examine the materials management function starting from demand management through Inventory Management.

CLO4) Apply various Statistical Quality Control tools including the analysis of various Quality costs and quality circles. Explain the concept of TQM.

Unit-I:

Operations management - meaning, definitions, scope and objectives- interaction of operations management with other areas - manufacturing and non-manufacturing operations and
their characteristics.

Unit-II:

Facilities planning - plant location - factors determining plant location - plant layout— process layout and product layout - materials handling – MRP - Principle equipment's.

Unit-III:

Capacity planning - estimation of capital requirements - maintenance management— types of maintenance -work study - time and method study - work measurement, meaning, scope
and importance.

Unit-IV:

Operations planning and control - Objectives of Operations planning— planning procedure - Operations planning categories.

Unit-V:

Operations control - Meaning, Importance and objectives - Techniques of operations control.

References:

1. Russell, Roberta S, and Bernard W.Taylor, Operations Management, Pearson Education, New

Delhi 2004.
2. Chase :Operations Management for Competitive Advantage, Tata McGraw Hill, New Delhi.
3. Buffa, E.S., 'Modern Production Management', New York, John Wiley, 1987.
4. Adam, E.E. and Ebert, R.J., 'Production and Operations Management' Prentice Hall of India, New Delhi 1995.
5. Chary, S .N., Production and Operations Management', Tata McGraw Hill, New Delhi 1989

Mapping of CLOs with PLOs & PSOs

Course Learning Outcomes	**Program Learning Outcomes (PLOs)**												**Program Specific Outcomes (PSOs)**		
	PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**	**PLO9**	**PLO10**	**PLO11**	**PLO12**	**PSO1**	**PSO2**	**PSO3**
CLO1					H				H		H	H		M	M
CLO2	H		H	H	M				M				H	H	H
CLO3			M		H					H		H	L	M	M
CLO4	H		M											M	H
CLO5	M			H								H	M	M	H

H: High M: Medium L: Low

RESEARCH PROJECT REPORT

Paper MGTB605

LTPC

0 0 0 6

Objective

Student has to undergo a practical training of minimum forty five days after second semester. BBA being professional course it is essential for each student to practically apply or

understand theoretical concepts what he/she learn during the course. During the training programme student is expected to collect vital information through internal and external source so as to reach concrete conclusions on the given subject. Student has to prepare the project report under the guidance of internal teacher. Director/Principal of the institution/college will decide the last date of submission of final copy. Student should submit two typed copies to the Institute. One copy for the institute and another copy for his/her personal record. Students may prepare additional copies for the organization, guide etc.

A viva-voce examination will be conducted before the Semester IV examination. A viva-voce committee of minimum two members will be appointed by the university.

Guidelines for the project report

Declaration from the student that the research work is not copied from any other existing reports. Certificate of the guide.- Guide should certify that the research work is original and completed satisfactorily under his guidance.

The Chapter scheme for the project report will be as follows-.

CHAPTER NO-I – Introduction to the study.

1.1 Introduction
1.2 Objectives and importance of the study
1.3 Scope and limitations of study
1.4 Research Methodology

CHAPTER NO.II – Introduction to the organisation

2.1 Introduction to the industry
2.2 Brief History of organisation
2.3 Subsidiaries, Associates of the company
2.4 Departments / Manufacturing process
2.5 Important statistical information
2.6 Future prospect
2.7 Organisation Structure

CHAPTER – III - Theoretical Background

Basic concepts
Necessary theoretical inputs may be added to support the research work.

CHAPTER –IV – Data Analysis and Interpretation

Data should be analyzed with help of various tools studied in the Subject "Application of Research Methods in Management".

CHAPTER-V Findings / Observations

CHAPTER VI- Suggestions / Conclusion

Appendix

Questionnaire / Charts / Data / Diagrams / Tables / etc.

Bibliography

The above guidelines are not the prescription on writing the project report but can be used as milestones while writing the Project Report. The guide has the every discretion to change the chapter scheme as per the requirement

Note

1. There should be proper linkage between objectives, data analysis and interpretation, findings and suggestions.
2. Student should not use logos and name of company on the project report pages. Header and Footer shall consist of university name and institute name respectively. Noother information should be included in the Header and Footer.
3. Use of colors in text matter should be avoided.

RAFFLES UNIVERSITY

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ALAB.COMR SCHOOL OF MANAGEMENT
RAFFLES UNIVERSITY, NEEEMRANA

Bachelor of Business Administration (B.COM 3 Years)

Programme Objectives (PO)

The objectives of B.COM Programme are:

PO1: To remember the conceptual knowledge with an integrated approach to various functionsof management.
PO2: To develop leadership and communication skills to become successful business leadersand managers.
PO3: To encourage and develop critical thinking, analysis and initiative ability skills.
PO4: To develop problem-solving skills through experiential learning and innovative pedagogy to ensure utilization of knowledge in professional careers.
PO5: To apply the various concepts, theories and models in the area of HR, Marketing, Finance.
PO6: To develop a positive attitude and life skills to become a multi facet personality with a sense of environmental consciousness and ethical values.

Programme Learning Outcomes (PLO)

The expected outcomes after completing the program would be:

PLO1: Management knowledge: Acquire adequate knowledge through principles, theory and models of business management, Accounting, Marketing, Finance, IT, Operations and Human Resource.

PLO2: Communication: Demonstrate proficiency for Business Communication for effective and professional business management.
PLO3: Technical Knowledge: Acquire employability skills through practical exposure of IT and its usage in management.

PLO4: Investigation of Business Problems: Analyze and comprehend the applicability of management principles in solving complex business issues.
PLO5: Entrepreneurial Perspective: Develop entrepreneurial skills to become an entrepreneur.

PLO6: Environment and Sustainability: To build perspective about global environment including cultural, social and sustainability issues.

PLO7: Leadership Skills: Ability to develop group behavior and lead a team to achieve the individual, group and organizational goals.

PLO8: Ethics: Understand importance of ethics in business decision-making and inculcate the spirit of social responsibility.

PLO9: Global Perspective: Comprehend the applicability of management principles in the situations pertaining to global business world.

PLO10: Area Specific Expertise: Apply various concepts, theories and models in the functional areas of business like Marketing, HR and Finance in the Organizations.
PLO11: C**ross-Disciplinary Integration and Strategic Perspective**: Acquire and apply knowledge of economics, mathematics, statistics and production and operation management and its integration relevant to business decisions.

PLO12: Legal Knowledge: Obtain legal knowledge of various business operations for effective decision-making.

Program Specific Outcomes (PSO)

PSO1 Acquire Practical learning through summer internship, industrial visit and Business Plan etc.
PSO2 Demonstrate analytical and problem-solving skills through core elective area of specialization in Finance, Human Recourse, and Marketing to solve the business issues.
PSO3 Understand and develop the new dimensions of knowledge through open electives to cater the need of the industry.

B.COM

I Year: I Semester

S. No.	Subject Code	Subject	L	T	P	CIE	ESE	Total	C
	CORE								
1.	COM -103	Management Process	4	0	0	60	40	100	4
2.	COM -104	Business Organization and Environment	4	0	0	60	40	100	4
3.	COM -105	Principles of Accounting	4	0	0	60	40	100	4
4.	COM -106	Business Mathematics	4	0	0	60	40	100	4
AECC									
5.	COM -101	English Language-I	2	0	0	30	20	50	2
SEC									
6.	COM -102	Constitution of India and Human Rights	4	0	0	60	40	100	4
GE									
7.	COM -107	Fundamentals Computer and IT	3	0	1	60	40	100	4
		Total	**25**	**0**	**1**	**390**	**260**	**650**	**26**

B.COM

[Effective from the Session 2019-20]

I Year: II Semester

S. No.	Subject Code	Subject	L	T	P	CIE	ESE	Total	C
	CORE								
1.	COM -203	Business statistics	4	0	0	60	40	100	4
2.	COM -204	Cost Accounting	4	0	0	60	40	100	4
3.	COM -205	Organization Behavior	4	0	0	60	40	100	4
AECC									
4.	COM -201	English Language-II	3	0	0	30	20	50	2
SEC									
5.	COM -202	Environmental Studies	4	0	0	60	40	100	4
		Total	**19**	**0**	**0**	**270**	**180**	**450**	**18**

B.COM

Year: III Semester

S. No.	Subject Code	Subject	L	T	P	CIE	ESE	Total	C
	CORE								
1.	COM- 302	Business Economics	4	0	0	60	40	100	4
2.	COM- 303	Corporate Accounting	4	0	0	60	40	100	4
3.	COM- 304	Human Resource Management	4	0	0	60	40	100	4
4.	COM- 305	Rural Management	4	0	0	60	40	100	4
5.	COM- 306	Comprehensive Viva Voce	0	0	0			100	4
SEC									
6.	COM -301	Cyber Phenomenon & Law	3	0	0	60	40	100	4
		Total	**19**	**0**	**0**	**300**	**200**	**600**	**24**

B.COM

Year: IV Semester

S. No.	Subject Code	Subject	L	T	P	CIE	ESE	Total	C
	CORE								
1.	COM-402	Financial Management	3	0	0	60	40	100	4
2.	COM- 403	Direct Tax	4	0	0	60	40	100	4
3.	COM- 404	Management Accounting	4	0	0	60	40	100	4
4.	COM- 405	E- Business	4	0	0	60	40	100	4
5.	COM- 406	Business Research Methods	4	0	0	60	40	100	4
SEC									
6.	COM -401	Business Communication	4	0	0	60	40	100	4
		Total	**23**	**0**	**0**	**360**	**240**	**600**	**24**

B.COM

Year: V Semester

S. No.	Subject Code	Subject	L	T	P	CIE	ESE	Total	C
CORE									
1.	COM -501	Marketing Management	3	0	0	60	40	100	4
2.	COM -502	Human Resource Planning and Development	4	0	0	60	40	100	4
3.	COM -505	Summer Internship & Project	4	0	0			100	4
DSE(Choose any one**)**									
4.	COM -503	Investment Management Entrepreneurial c. Management Advertising	4	0	0	60	40	100	4
5.	COM -504	International Finance Accounting Information System c. Labour Law	**4**	**0**	**0**	60	40	100	4
		Total	**22**	**0**	**0**	**240**	**160**	**500**	**20**

B.COM
III Year: VI Semester

S. No.	Subject Code	Subject	L	T	P	CIE	ESE	Total	C
	CORE								
1.	COM- 603	International Business	4	0	0	60	40	100	4
2.	COM- 604	Operation Management	4	0	0	60	40	100	4
3.	COM- 605	Research Project Report	4	0	0			100	6
DSE(Choose any one**)**									
4.	COM- 601	a. Business Ethics b. Financial Market Institutions, and Services c.Industrial Relation	4	0	0	60	40	100	4
5.	COM- 602	Performance Management Goods and Services Tax Consumer Affairs and Customer care	4	0	0	60	40	100	4
		Total	**20**	**0**	**0**	**240**	**160**	**500**	**22**

B.COM

Syllabus
B.COM
I Semester

ENGLISH LANGUAGE

COM-101

L T P C

2 0 0 2

B.COM: Semester-I

Course Objective

Teaching English to students of Management is to prepare them with an adequate knowledge of communication in English in the periphery of business world. Students should feel comfortable and easy to communicate in English with others. They have learnt some basic grammatical usage and in this upcoming semester they will learn to communicate to each other with role play conversation. The course contents will, bring a lot of changes in their soft skills and personal development which are very essential for each of them. This syllabus is only for the second semester which will help them to communicate comfortably to others with general English in business field. The following contents are enlisted for the students of B.COM/B.Com in the second semester.

Course Learning Outcomes

After completing the course, the student shall be able to:

CO1: To make effective and impressive communication.
CO2: To make communication in ethical manner.
CO3: Capable to make persuasive digital communication.
CO4: Capable to make abstract & summaries of proposals.
CO5: Better presentation and communication using proper body language.

Course Contents

Unit I: Introduction to Communication

Meaning and Definition - Process - Functions - Objectives - Importance - Essentials of good communication - Communication barriers - Overcoming communication barriers

Unit II: Reported Speech

What is reported speech, where to use, how to report the speech of second person to others, words used for reported speech, etc.

Unit III: Oral Communication

Meaning, nature and scope - Principles of effective oral communication - Techniques of effective speech - Media of oral communication (Face-to-face conversation - Teleconferences - Press Conference – Meetings - Rumour -
Demonstration and Dramatization - Public address system - Group Discussion - Oral report - Closed circuit TV). The art of listening - Principles of good listening.
Jam sessions – Debates etc.

Unit IV: Business Letters

Need and functions of business letters - Planning & layout of business letter - Kinds of business letters - Essentials of effective correspondence
Drafting of business letters, Enquiries and replies - Placing and fulfilling orders - Complaints and follow-up - Sales letters -Circular letters - Application for employment and resume - Report

writing - Notices, Agenda and Minutes of the Meetings – Memos – cover letters – resume/ cv drafting.

Unit V: Basic Grammar

Aids to correct writing- Tenses, Modals, Subject-verb agreement, common errors.

Suggested Readings:

Bovee, and Thill, Business Communication Essentials, Pearson Education

Shirley Taylor, Communication for Business, Pearson Education

Locker and Kaczmarek, Business Communication: Building Critical Skills, McGraw Hill Education

Herta A Murphy, Herbert W Hildebrandt, Jane P. Thomas, Effective Business Communication (SIE), McGraw Hill Education

Dona Young, Foundations of Business Communication: An Integrative Approach, McGraw Hill Education

Raymond V. Lesikar, Marie E. Flatley, Kathryn Rentz, Paula Lentz, and Neerja Pande, Business Communication: Connecting in a Digital World (SIE), McGraw Hill Education

Course Learning Outcomes	Program Learning Outcomes(PLOs) COM-101												Program Specific Outcomes(PSOs)		
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12	PSO1	PSO2	PSO3
CLO1	L	H		M	L		H	L		L		L	H	M	
CLO2	M	L		L			M			L	L	H	M	M	
CLO3	M			M			L			M			M	L	L
CLO4	L			M									L	L	

Mapping of CLOs with PLOs and PSOs

H: High -3

M:Medium -2

L:Low-1

MANAGEMENT PROCESS
COM-103
L T P C
4 0 0 4
40 HOURS

Course Objective

CO1) To introduce students to the core concepts and principles of management.
CO2) To provide a foundational understanding of the role and importance of management in organizations.
CO3) To teach students how to develop and implement effective planning processes and to enable students to make informed and strategic decisions by applying various decision-making techniques.
CO4) To introduce the principles of staffing, including recruitment, selection, training, and performance appraisal and to understand the importance of human resource management in achieving organizational goals.
CO5) To analyze current trends and challenges in management, such as globalization, technology, sustainability, and diversity and to encourage critical thinking and adaptability in a rapidly changing business environment.

Course Learning Outcomes

After completing the course, the student shall be able to:

CO1: Evaluate the global context for taking managerial actions of planning, organizing and controlling
CO2: Assess global situation, including opportunities and threats that will impact management of an organization
CO3: Integrate management principles into management practices.
CO4: Assess managerial practices and choices relative to ethical principles and standards.
CO5: Specify how the managerial tasks of planning, organizing, and controlling can be executed in a variety of circumstances.
CO6: Determine the most effective action to take in specific situations.
CO7: Evaluate approaches to addressing issues of diversity.

Course Contents

Unit I: Introduction to Management(8 HOURS)

Nature of Management- Meaning, Definition, it's nature purpose, importance & Functions. Evolution of Management Thoughts- Contribution of F.W.Taylor, Henri Fayol ,Elton Mayo , Chester Barnard & Peter Drucker to the management thought. Various approaches to management (i.e. Schools of management thought)Indian Management Thought.

Unit II: Planning and Decision Making (8 HOURS)

Planning - Meaning - Need & Importance, types levels - advantages & limitations.
Forecasting - Need & Techniques
Decision making - Types - Process of rational decision making & techniques of decision making.

Unit III: Organizing and Directing(8 HOURS)

Organizing - Elements of organizing & processes: Types of organizations, Delegation of authority - Need, difficulties in delegation – Decentralization.
Directing- Introduction, Principles and Elements of Direction; Supervision, Traditional vs. Development Supervision.

Unit IV: Controlling and Coordination (8 HOURS)

Controlling- Concept, Importance, Process & Types of Controlling, Contemporary Issues in Control, Entrepreneurs and Control. Operations Management- Importance, Service and Manufacturing Firms, Project Management Tools & Techniques.
Coordination- Coordination- Definition, Characteristics, Objectives, Techniques.

Unit V: Contemporary Management Issues (8 HOURS)

Management in the International Area.
Change and Organizational Development.
Ethics, Corporate Governance and Social Responsibilities.

Recommended book

L. M. Prasad: Principles and Practice of Management, (2016): Sultan Chand & Sons Publications,. New Delhi
V.S.P. RAO: Principles of Management text and cases

Reference books

Robbins, De Cenzo, Bhattacharya and Agarwal, (2009): Fundamentals of Management- Essential Concepts & Applications 6e, India, Pearson
Hellriegel, Jackson and Sloceum, (2008): Management- A Competency Based Approach 10e, India, South- Western Cengage Learning.
Stoner, Freeman, Gilbert, Jr., (2006), Management 6e, India, Prentice- Hall

Mapping of CLOs with PLOs & PSOs

Course Learning Outcomes	**Program Learning Outcomes(PLOs) COM-103**												**Program Specific Outcomes (PSOs)**		
	PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**	**PLO9**	**PLO10**	**PLO11**	**PLO12**	**PSO1**	**PSO2**	**PSO3**
CLO1	M		L							M				L	
CLO2	H		M							H				L	
CLO3	H		H	L	L					H		L		H	
CLO4	H		H	L	L					H		L		H	

H: High M: Medium L: Low

Business Organization And Environment
COM-104
L T P C
4 0 0 4
40 HOURS

Course Objective

CO10 This module provides students with an elaborative understanding of organizational behavior, its key principles, concepts & theories.
CO2) The range of concepts & theories that students will be introduced includes foundation of individual behavior, groups & group dynamics, motivation, leadership, organization design, organization structure, work stress, organization culture, organization change.
CO3) By the end of the module, students will be fully equipped with the knowledge and skills required to understand & deal human behavior in the organization as individual, group member & organization as a whole.

Course Learning Outcomes

After completing this course, the students will be able to:
Identify and evaluate social, cultural, legal and technical factors in business environment.
Describe the various economic system and sectors.
Discuss economic planning and policies of Indian economy.
Apply ethical values and social responsibilities in business.
Explain International economic grouping and organisations.

Course Contents

Unit I: Foundations of Individual Behavior (8 Hours)

Introduction and Conceptual framework of OB- Nature & Scope of Organizational Behavior.
The organization and the individual.
Personality: Determinants and Attributes, Big Five Model
Major Personality Attributes: Locus of Control, Machiavellianism, Self Esteem, Self-Monitoring, Type A & B personality, Risk taking ability.
Learning and Learning Theories: Concept, Law of Effect, Classical Conditioning, Operant Conditioning, Social Learning Theory. Reinforcement Theory and OB Modification Process and its Advantages.
Attitudes: Concept, its components and various job related attitudes, Job satisfaction and its impact on OB.
Values: Concept, types of values, Robbin's Dominant Work Values today, Hofstede's Values Across Cultures, Javidan & House's The G.L.O.B.E. Findings.
Perception: Definition, factors affecting individual perception, Perceptual Selectivity.

Unit II: Motivation and Leadership(8 Hours)

Motivation: Definition and concept, different types of motives.
Theories of motivation: Maslow's Hierarchy of Needs, Herzberg's Two Factor theory, ERG theory, Vroom's Expectancy theory, Equity theory, Reinforcement theory and Behavior Modification.

Leadership: Nature and Significance of leadership, Trait theory of leadership.
Behavioral theories of leadership- Ohio State Studies, Michigan Studies, and Managerial Grid.
Contingency theories - Fiedler's model, Hersey and Blanchard's situational theory, leader-member exchange theory, path goal theory, Charismatic leadership.

Unit III: Foundations of Group Behavior(8 Hours)
Group: Definition, Classification of Groups, stages of group development, Group Structure, Group Processes, Strength and weakness of group over individuals.
Team: Concept of team, Group v/s Team, Team Effectiveness, Different types of teams, how to convert an individual into team player.
Conflict and Collaboration: Transitions in Conflict Thought, Functional versus Dysfunctional Conflict, Conflict Process.
Conflict Management: Techniques, Negotiation process, Bargaining strategies, Global implications.

Unit IV: Structural & Cultural Dimensions of OB(8 Hours)
Organization Structure: Definition, Elements of Organization Structure, Common Organization Designs: simple Structure, Bureaucratic Structure, Matrix Structure.
New Designs Option: Team Structure, Virtual Structure, Boundaryless Organization Structure; Factors affecting choice of different organization designs.
Organization Culture: Meaning of Organizational Culture, Creating and Sustaining Culture, Countries and Culture, Employee Acculturation Process.
Organizational Climate: Concept and How to build a more positive and employee centered climate.

Unit V: Organizational Change and Stress Management(8 Hours)
Organizational Change: Change Concept, Forms of Change, Sources of Resistance to Change, Tactics to deal with resistance.
Approaches/ Models to Managing Change: Lewin's Change Model and Nadler's Organizational Model, Action Research: Steps in action Research and Change agents.
Stress Management: Work Stress, types of stress, stages of stress, causes of stress: extra-organizational, organizational, group and individual; Strategies to cope with stress: individual strategies and organizational strategies.

Recommended Book
Robbins, Judge & Sanghi, (2009): Organizational Behavior 13e, India, Pearson, Prentice Hall

Reference Book
L. M. Prasad, (2011): Organizational Behavior, India, Sultan Chand & Sons
Hersey, Blanchard & Johnson, (2009), India, Pearson/ Prentice Hall
Keith Davis: Organizational Behavior: Human Behavior at Work, McGraw Hill Book Co

Course Learning Outcomes (CLOs): On completion of this course, the students willbe able to:

Course Learning Outcomes	Program Learning Outcomes(PLOs) COM-104												Program Specific Outcomes (PSOs)		
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12	PSO1	PSO2	PSO3
CLO1	M		L			L				M				L	
CLO2	H		M				L			H				L	
CLO3	H		H	L	L		M			H		L		H	
CLO4	H		H	L	L		M			H		L		H	

Mapping of CLOs with PLOs & PSOs

H: High M: Medium L: Low

Principles of Accounting
COM-105
L T P C
4 0 0 4
40 HOURS

Course Objective

This course provides conceptual knowledge of financial accounting and the techniques for preparing accounts in different types of business organisations.

Course Learning Outcomes

After completing the course, the student shall be able to:

CO1: understand the theoretical framework of accounting and to prepare financial statements
CO2: explain and determine depreciation and value of inventory
CO3: learn accounting for hire purchase transactions, leases, branches and departments
CO4: understand the concepts of partnership firm and prepare accounts for dissolution of a partnership firm
CO5: develop the skill of preparation of trading and profit and loss account and balance sheet using computerized accounting.

Course Contents

Unit-1: Introduction(8 HOURS)

Conceptual Framework: Accounting principle, Concepts and Conventions Introduction to Accounting Standards and Indian Accounting Standards (AS & Ind AS), Accounting Process: Journal, ledger, Trial Balance, Financial Statements (overview) Capital Expenditure (and Receipts), Revenue Expenditure (and Receipts) and Deferred Revenue Expenditure. Preparation of Financial Statements of a profit making sole proprietorship trading firm with additional information, Preparation of Financial Statements of a not for profit organisations.

Unit-2: Depreciation Accounting and Inventory Valuation(8 HOURS)

Accounting for Plant Property and Equipment & Depreciation: Meaning of Depreciation, Depletion and amortization, Objective and Methods of depreciation (Straight line, Diminishing Balance), Change of Method, Inventory Valuation: Meaning, Significance of Inventory Valuation, Inventory Record System-Periodic and Perpetual, Methods of Inventory Valuation-FIFO, LIFO and Weighted Average
(Relevant accounting Standards as applicable)

Unit-3: Special types of Accounting(8 HOURS)

Hire Purchase Accounting: Calculation of Interest, Partial and Full Repossession, profit Computation (Stock & Debtors System only)**,** Accounting for Leases: Concept, Classification of leases (Simple practical problems)**,** Accounting for Branches (excluding foreign branches): Dependent branches (‘Debtors system’ and ‘Stock & debtors System’) and overview of

Independent branches. Departmental Accounting: Concept, Type of departments, Basis of allocation of departmental expenses, Methods of departmental accounting (excluding memorandum stock and memorandum mark-up account method)
(Relevant accounting Standards as applicable)

Unit-4: Accounting for Partnership Firm(8 HOURS)

Partnership accounts: Fundamentals, Admission, Retirement and Death of a partner (only an overview)**,** Accounting for Dissolution of Partnership Firm: Dissolution of Partnership Firm including Insolvency of partners (excluding sale to a limited company), Gradual realization of assets and piecemeal payment of liabilities

Unit-5: Computerized Accounting System(8 HOURS)

Computerized Accounting System: Computerized accounts by using any popular accounting software: Creating a company; Configure and Features settings; Creating Accounting Ledgers and Groups, Creating Stock Items and Groups; Vouchers Entry; Generating Reports – Cash Book, Ledger Accounts, Trail Balance, Profit and Loss Account, Balance Sheet, Funds Flow Statement, Cash Flow Statement, Selecting and Shutting a Company; Backup and Restore of Data of a Company
Note: Latest Accounting Standards to be followed

References

Goyal, Bhushan Kumar and H.N. Tiwari, Financial Accounting , Taxmann
Kumar, Alok. Financial Accounting, Singhal Publication.
Lt Bhupinder. Financial Accounting – Concepts and Applications, Cengage
Monga, J R. Financial Accounting: concept and Applications. Mayur paper Backs, New Delhi
Sehgal, Ashok & Deepak Sehgal. Fundamentals of Financial Accounting, Taxmann
Tulsian, P C. Financial Accounting, Tata McGraw Hill New Delhi
Lal, Jawahar, Seema Srivastava & Abrol, Shivani. Financial Accounting Text and problems, Himalaya Publishing House, New Delhi.

Course Learning Outcomes	Program Learning Outcomes (PLOs)												Program Specific Outcomes(PSOs)		
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12	PSO1	PSO2	PSO3
CLO1	M			H		L		M	L	M	H		L	H	L
CLO2	M	L	L	H	H	L		M	L		H		L	H	L
CLO3		L	L	H	H	L		M		M	H		L	H	L
CLO4				H	H	L		M			H		L	H	L

Matching of PLOs and CLOs:

H: High M: Medium L: Low

Business Mathematics
COM-106
L T P C
4 0 0 4
40 HOURS

Course Objective

Business mathematics is used by commercial enterprises to record and manage business operations. Commercial organizations use mathematics in accounting, inventory management, marketing, sales forecasting, and financial analysis. Mathematics typically used in commerce includes elementary arithmetic, elementary algebra, statistics and probability. Business management can be made more effective in some cases by use of more advanced mathematics such as calculus, matrix algebra and linear programming.

Course Learning Outcomes

After completing the course, the student shall be able to:

CO1: comprehend the concept of systematic processing and interpreting the information in quantitative terms to arrive at an optimum solution to business problems.
CO2: develop proficiency in using different mathematical tools (matrices, calculus, linear programming, and mathematics of finance) in solving daily life problems.
CO3: acquire competence to use computer for mathematical computations, especially with Big data.
CO4: obtain critical thinking and problem-solving aptitude.
CO5: evaluate the role played by mathematics in the world of business and economy.

Course Contents

UNIT I : Basics of Business Mathematics(8 HOURS)
Ratio and proportion
Indices
Logarithms

UNIT II : Equations (8 HOURS)
Linear – simultaneous linear equations up to three variables,
Quadratic and cubic equations in one variable,
Equations of a straight line,
Intersection of straight lines,
Graphical solution to linear equations.

Inequalities
Graphs of inequalities in two variables
Feasible & Infeasible solutions

UNIT III(8 HOURS)

Simple and Compound Interest including annuity – Applications
Basic concepts of Permutations and Combinations

UNIT IV(8 HOURS)
Sequence and Series – Arithmetic and geometric progressions
Sets, Functions and Relations

UNIT V(8 HOURS)
Limits and Continuity – Intuitive Approach
Basic concepts of Differential and Integral Calculus (excluding trigonometric functions)

Recommended book:

R S Agarwal, Quantitative Aptitude, S. Chand Publishing, 17th Edition, 2012

Reference books:

Abhijit Guha, Quantitative Aptitude, Tata McGraw - Hill Education, 4th Edition, 2010
P.Gupta, Quantitative Aptitude, Unique Publisher
Zameerudin, Qazi, V.K. Khanna & S.K. Bhambri, Business Mathematics, Vikas Publishing House Pvt. Ltd, New Delhi.

Mapping of CLOs with PLOs & PSOs

Course Learning Outcomes	**Program Learning Outcomes(PLOs)**												**Program Specific Outcomes (PSOs)**		
	PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**	**PLO9**	**PLO10**	**PLO11**	**PLO12**	**PSO1**	**PSO2**	**PSO3**
CLO1	L									M			L		
CLO2		M								M				M	
CLO3			H							M					M
CLO4	L									M	H				L

H:High M: Medium L: Low

Fundamentals of computers
COM-107
L T P C
3 0 1 4
40 HOURS

Course Objective

Computers have become an integral part of work life of every individual. Today's pace of corporate functioning cannot even be thought of without computers. Keeping into mind such a necessity, this paper is introduced to help the students learn the basic skills of operating a computer and office automation.

Course Learning Outcomes

After completing the course, the student shall be able to:

CO1: Understand the concept of input and output devices of Computers and how it works.
CO2: Understand the concepts, structure, types and design of operating Systems.
CO3: Understand the concept of Data Communication, its Modes, its Forms and Data Communication Channels
CO4: Understand evolution of internet, its application and its basic services.
CO5: Recognize when to use each of the Microsoft Office programs to create professional and academic documents
CO6: Create and design a word document for general office use.
CO7: Students will have a working knowledge of paragraph formatting, macro and mail-merge in MS-Word.

Course Contents

Unit I: Introduction to Computers(8 Hours)
Computer defined, Classification of computers, Basic computer organization, Input devices, Output devices, Primary Memory (ROM, RAM), Secondary Memory, Binary digit system, Bits, Bytes, Other units of memory, Software (Application software, Operating Software).

Unit II: Microsoft Word(8 Hours)
Introduction to Toolbars, Menus, Ribbons, Text formatting, Finding and replacing text, Inserting illustrations (picture, clipart, shapes, Smartart, Chart), Headers, Footers, Text box, Word art, Symbols, Page setup, Watermark, Page border, Paragraph formatting, grouping, ungrouping, Mail merge, Spell check, Word count, Zoom, Save, Save as, Printing documents, Print preview

Unit III: Microsoft Excel(8 Hours)
Introduction to components of Excel window interface, Toolbars, Worksheet concept, Cell address, Formatting, Cell alignment, Conditional formatting, Inserting, Deleting and formatting cell, Autosum, Sorting & Filtering, Inserting illustrations (picture, clipart, Shapes, Smartart),

Inserting and formatting charts, Text box, Header & Footer WordArt, Object, Symbol, page layout, Basic formulas (sum, multiplication, average, maximum, minimum, percentage), Spellcheck, Inserting & editing comment, Save, Save as, Printing, Print preview, Page break view.

Unit IV: Microsoft PowerPoint(8 Hours)
Introduction to components of PowerPoint window interface, Toolbars, Slide layout, design, Slide formatting, arranging and ordering, Inserting tables, Illustrations (Picture, Clipart, Shapes, Smartart, Chart, Text box, Header & Footer, WordArt, Movie, Sound, Slide animation, Slide transition, Slide show basics, Slides handout, Slides sorter, Printing handouts, Print preview.

Unit V: Networking and Internet(8 Hours)
Computer networking basics, Network topology (Star, Ring, Bus, Hybrid, LAN, WAN, MAN, Internet surfing, Internet browsers (Mozilla, Internet explorer, Chrome, Opera), Opening & operating email accounts, Dropbox, Instant messaging, Search engines

Recommended Readings
Sinha, P.K. and Sinha, Priti, Computer fundamentals, BPB Publications, New Delhi, Sixth Edition, 2011.
Peter Norton, Introduction to Computers, Tata McGraw Hill, Sixth Edition, 2009.
Behrouz Forouzan, Data Communication and networking, TMH

Mapping of CLOs with PLOs & PSOs

Course Learning Outcomes	**Program Learning Outcomes (PLO's)**														
	PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**	**PLO9**	**PLO10**	**PLO11**	**PLO12**	**PSO1**	**PSO2**	**PSO3**
CLO1		M		M		M	M		M	M			M	M	
CLO2		H		M		M	H	M	M	M		H	M	M	
CLO3	M	H		H		M	H	M	M	M		H	M	M	
CLO4	H	M		M		M	H	M	M	M		H	M	M	

H: High M: Medium L: Low

Constitution of India and Human Rights
COM-102
L T P C
4 0 0 4
40 HOURS

Course Objective

To bring about aware among students about our constitution and human rights

Course Learning Outcomes

After completing the course, the student shall be able to:

CO1: Understand the emergence and evolution of Indian Constitution.
CO2: Understand the structure and composition of Indian Constitution
CO3: Understand and analyse federalism in the Indian context.
CO4: Analyse Panchayathi Raj institutions as a medium of decentralization.
CO5: Evaluate the Indian Political scenario amidst the emerging challenges.
CO6: Evaluate Indian foreign relations under cold war and post-cold war era.

Course Contents

Unit I: Indian Constitutional Philosophy (10 HOURS)
a) Features of the Constitution and Preamble
b) Fundamental Rights and Fundamental Duties
c) Directive Principles of State Policy

Unit II Union and State Executive, Legislature and Judiciary (10HOURS)
a) Union Parliament and State Legislature: Powers and Functions
b) President, Prime Minister and Council of Ministers
c) State Governor, Chief Minister and Council of Ministers
d) The Supreme Court and High Court: Powers and Functions

Unit III: Concept and Development of Human Rights (10HOURS)
a) Meaning Scope and Development of Human Rights
b) United Nations and Human Rights – UNHCR
c) UDHR 1948, ICCPR 1996 and ICESCR 1966

Unit IV: Human Rights in India (10 HOURS)
a) Protection of Human Rights Act, 1993 (NHRC and SHRC)
b) First, Second and Third Generation Human Rights
c) Judicial Activism and Human Rights

Suggested Readings:

Durga Das Basu, Introduction to the Constitution of India, Prentice – Hall of India Pvt. Ltd..

New Delhi
SubashKashyap, Indian Constitution, National Book TrustJ.A. Siwach, Dynamics of Indian Government & Politics
D.C. Gupta, Indian Government and Politics , Vikas Publishing House Pvt Ltd (1 July 1973)
H.M.Sreevai, Constitutional Law of India, 4th edition in 3 volumes (Universal Law Publication)

Mapping of CLOs with PLOs & PSOs

Course Learning Outcomes	**Program Learning Outcomes (PLO's)**														
	PLO 1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**	**PLO9**	**PLO10**	**PLO11**	**PLO12**	**PSO1**	**PSO2**	**PSO3**
CLO1	L	H	M	H	H	H	M	H	H	H	M	M	H	M	M
CLO2	L	H	M	H	H	M	M	H	M	H	M	M	H	M	M
CLO3	L	H	M	H	H	M	H	H	H	H	M	M	H	M	H
CLO4	M	H	L	H	H	H	H	H	H	H	M	M	H	M	H
CLO5	M	L	H	M	H	H	H	M	M	H	H	M	H	M	M

H: High M: Medium L: Low

B.COM Semester: II

Business Statistics
COM-203

L T P C
4 0 0 4
40 HOURS

Objective

The objective of this course is to familiarize students with the basic statistical tools used to summarize and analyze quantitative information for decision making.

Curriculum

Unit I (8 HOURS)

Probability: introduction, basic terminology, Types of probability, Probability rules, posterior probability.

Unit II(8 HOURS)

Probability distribution: Introduction, random variables, use of expected value in decision making, normal distribution, binomial distribution.

Unit III (8 HOURS)

Sampling and Sampling distribution: introduction, random sampling, sampling distribution, relationship between sample size and standard error.

Unit IV (8 HOURS)

Estimation: introduction, point estimate, interval estimate, confidence interval, sample size in estimation.

Unit V (8 HOURS)

Testing Hypothesis: introduction, basic concept, testing procedure, testing hypothesis, measuring the power of hypothesis test. Testing of proportion.

Reference books:

Vohra, N.D., (2009) Quantitative Techniques in Management, 4th edition, McGraw Hill Education.
Vishwanathan, P.K., (2008) Business Statistics and Applied Orientation, 1st edition, Pearson Education.
Rajagopalan, S. and Sattanathan, R., (2009) Business Statistics & Operations Research, 2nd Edition, McGraw Hill Education.
Sharma, J.K., (2009) Operations Research: Problems & Solutions, 2nd edition, Macmillan India Ltd.

Taha, Hamdy, (2008) Operations Research: An Introduction, 8th edition, Pearson Education.
Render, Barry, Stair, R.M., Hanna, M.E., and Badri, (2009) Quantitative Analysis for Management, 10th edition, Pearson Education
Richard l. Levin and Devid S. Rubin, Statics for management, Pearson

Mapping of CLOs with PLOs & PSOs

COURSE LEARN--ING OUT-COMES	**Program Learning Outcomes (PLOs)**												**Program Specific Outcomes (PSOs)**		
	PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**	**PLO9**	**PLO10**	**PLO11**	**PLO12**	**PSO1**	**PSO2**	**PSO3**
CLO1	M			H									H		
CLO2		L		H							H			H	
CLO3											H			H	
CLO4	M			H						H				H	H

H: High M: Medium L: Low

COST ACCOUNTING
COM-204

L	T	P	C
4	0	0	4

(40 Hours)

Objective

The subject of Management Accounting is basicaliiy Designed to equip the Student with tools for analysing financial and non financial information which will help them in decision-making planing and control.

Aim: To acquaint the students with basic concepts used in cost accounting and various methods involved in cost ascertainment systems.

Curriculum

Unit I: Introduction(8 HOURS)

Meaning, objectives and advantages of cost accounting, Difference between cost accounting and financial accounting. Cost concepts and classifications, Elements of cost. Installation of a costing system. Role of a cost accountant in an organization.

Unit II: Cost concept(8 HOURS)

Types of cost, Cost Accumulations, cost objects , cost classifications, cost applications, cost behavior,Techniques of Costing.

Unit III: Overhead(8 HOURS)

Classification, allocation, apportionment and absorption of overhead.Under- and over-absorption. Capacity costs. Treatments of certain items in costing, like interest on capital, packing expenses, debts, research and development expenses, Bad Activity – based cost allocation.

Unit IV Methods of Costing(8 HOURS)

Unit costing, Job costing. Contract Costing. Process costing (process losses, valuation of work in progress, joint and by-products) Service costing (only transport).

Unit V:Cost -Volume -Profit Analysis(8 HOURS)

The Reletionship of cost and profit with volume, use of CVP Analysis, Marginal Costing and Absorption costing, Breakeven point, contribution marginal Approach, Use of Break even analysis.

Recommended Book

Lal, Jawahar. Cost Accounting. Tata McGraw Hill Publishing Co., New Delhi

Reference Book

Nigam, B.M. Lall and I.C. Jain. Cost Accounting: Principles and Practice. Prentice Hall of India, New Delhi.
Mittal, D.K. and Luv Mittal. Cost Accounting. Galgotia Publishing Co., New Delhi.
Arora, M.N.Cost Accounting–Principles and Practice. Vikas Publishing House, New Delhi.
Shukla, M.C., T.S. Grewal and M.P. Gupta. Cost Accounting: Text and Problems.

S. Chand & Co. Ltd., New Delhi.

Course Learning Outcomes	Program Learning Outcomes (PLOs)												Program Specific Outcomes (PSOs)		
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12	PSO1	PSO2	PSO3
CLO1	H									M				M	L
CLO2	H									M				M	L
CLO3	H			L						M				M	L
CLO4	H			L						M				M	L

Mapping of CLO with PLOs and PSOs

-H igh, M-Medium, L-Low

ORGANIZATIONAL BEHAVIOR

COM-205
L T P C
4 0 0 4
40 HOURS

Course Objective

CO1.) This module provides students with an elaborative understanding of organizational behavior, its key principles, concepts & theories.
CO2.) The range of concepts & theories that students will be introduced includes foundation of individual behavior, groups & group dynamics, motivation, leadership, organization design, organization structure, work stress, organization culture, organization change.
CO3.) By the end of the module, students will be fully equipped with the knowledge and skills required to understand & deal human behavior in the organization as individual, group member & organization.

Course Learning Outcomes:

CLO1) Students will demonstrate an understanding of the factors that influence individual behavior in organizational settings, including personality, motivation, perception, and attitudes.
CLO2) They will demonstrate the ability to work effectively in teams, manage conflicts, and contribute positively to group decision-making processes.

CLO3) They will be able to assess and apply effective leadership and management practices to improve organizational performance and employee satisfaction.

CLO4) Students will analyze the concept of organizational culture and its impact on employee behavior and organizational success.

Curriculum

Unit I: Foundations of Individual Behavior (8 HOURS)

Introduction and Conceptual framework of OB- Nature & Scope of Organizational Behavior. The organization and the individual.
Personality: Determinants and Attributes, Big Five Model
Major Personality Attributes: Locus of Control, Machiavellianism, Self Esteem, Self Monitoring, Type A & B personality, Risk taking ability.
Learning and Learning Theories: Concept, Law of Effect, Classical Conditioning, Operant Conditioning, Social Learning Theory. Reinforcement Theory and OB Modification Process and its Advantages.
Attitudes: Concept, its components and various job related attitudes, Job satisfaction and its impact on OB.
Values: Concept, types of values, Robbin's Dominant Work Values today, Hofstede's Values Across Cultures, Javidan & House's The G.L.O.B.E. Findings.
Perception: Definition, factors affecting individual perception, Perceptual Selectivity.

Unit II: Motivation and Leadership(8 HOURS)

Motivation: Definition and concept, different types of motives.
Theories of motivation: Maslow's Hierarchy of Needs, Herzberg's Two Factor theory, ERG theory, Vroom's Expectancy theory, Equity theory, Reinforcement theory and Behavior

Modification.
Leadership: Nature and Significance of leadership, Trait theory of leadership.
Behavioral theories of leadership- Ohio State Studies, Michigan Studies, and Managerial Grid.
Contingency theories - Fiedler's model, Hersey and Blanchard's situational theory, leader-member exchange theory, path goal theory, Charismatic leadership.

Unit III: Foundations of Group Behavior(8 HOURS)
Group: Definition, Classification of Groups, stages of group development, Group Structure, Group Processes, Strength and weakness of group over individuals.
Team: Concept of team, Group v/s Team, Team Effectiveness, Different types of teams, how to convert an individual into team player.
Conflict and Collaboration: Transitions in Conflict Thought, Functional versus Dysfunctional Conflict, Conflict Process.
Conflict Management: Techniques, Negotiation process, Bargaining strategies, Global implications.

Unit IV: Structural & Cultural Dimensions of OB(8 HOURS)
Organization Structure: Definition, Elements of Organization Structure, Common Organization Designs: simple Structure, Bureaucratic Structure, Matrix Structure.
New Designs Option: Team Structure, Virtual Structure, Boundaryless Organization Structure; Factors affecting choice of different organization designs.
Organization Culture: Meaning of Organizational Culture, Creating and Sustaining Culture, Countries and Culture, Employee Acculturation Process.
Organizational Climate: Concept and How to build a more positive and employee centered climate.

Unit V: Organizational Change and Stress Management (8 HOURS)
Organizational Change: Change Concept, Forms of Change, Sources of Resistance to Change, Tactics to deal with resistance.
Approaches/ Models to Managing Change: Lewin's Change Model and Nadler's Organizational Model, Action Research: Steps in action Research and Change agents.
Stress Management: Work Stress, types of stress, stages of stress, causes of stress: extra-organizational, organizational, group and individual; Strategies to cope with stress: individual strategies and organizational strategies.

Recommended Book
Robbins, Judge & Sanghi, (2009): Organizational Behavior 13e, India, Pearson, Prentice Hall

Reference Book
L. M. Prasad, (2011): Organizational Behavior, India, Sultan Chand & Sons
Hersey, Blanchard & Johnson, (2009), India, Pearson/ Prentice Hall
Keith Davis: Organizational Behavior
Fred Luthans: Organizational Behavior

Course Learning Outcomes	Program LearningOutcomes (PLOs)												Program Specific Outcomes (PSOs)		
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12	PSO1	PSO2	PSO3
CLO1	H	H		H			M		H	M	H		L	H	
CLO2	H	H	M	H	H		M		H	M	H	M	L	H	
CLO3	H	H	M	H	H		M		H	M	H	M	L	H	
CLO4	H		M	H	H		M		H	M	H		L	H	

Mapping of CLOs with PLOs & PSOs

: High M: Medium L: Low

ENVIRONMENT STUDIES
COM-202

L	T	P	C
4	0	0	4

(40 Hours)

Objective
To bring awareness about our environment in management students

Unit I: The multidisciplinary nature of environmental studies
Definition,
Scope and importance
Need for public awareness

Unit II: Natural Resources:
Renewable and non-renewable resources:
Natural resources and associated problems.
Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.
Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.
Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.
Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources, case studies.
Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification.
Role of an individual in conservation of natural resources.
Equitable use of resources for sustainable lifestyles.

Unit III: Ecosystems
Concept of an ecosystem
Structure and function of an ecosystem
Producers, consumers and decomposers
Energy flow in the ecosystem
Ecological succession
Food chains, food webs and ecological pyramids
Introduction, types, characteristic features, structure and function of the following ecosystem:
Forest ecosystem
Grassland ecosystem
Desert ecosystem
Aquatic ecosystems (ponds, streams, lakes, rivers, ocean estuaries)

Unit IV: Biodiversity and its conservation
Introduction – Definition: genetic, species and ecosystem diversity
Biogeographical classification of India

Value of biodiversity: consumptive use, productive use, social, ethical aesthetic and option values
Biodiversity at global, national and local levels
India as a mega-diversity nation
Hot-spots of biodiversity
Threats to biodiversity: habitat loss, poaching of wildlife, man wildlife conflicts
Endangered and endemic species of India
Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity

Unit V: Environmental Pollution
Definition
Causes, effects and control measures of:
Air pollution
Water pollution
Soil pollution
Marine pollution
Noise pollution
Thermal pollution
Nuclear pollution
Solid waste management: Causes, effects and control measures of urban and industrial wastes.
Role of an individual in prevention of pollution
Pollution case studies
Disaster management: floods, earthquake, cyclone and landslides
Matching of PLOs and CLOs:

Course Specific Outcomes(CLO)	**Programme Learning Outcomes (PLO)**												**Programme Specific Outcomes (PSO)**		
	PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**		**PLO8 PLO9**	**PLO10**	**PLO11**	**PLO12**	**PSO1**	**PSO2**	**PSO3**
CLO1	M	M	H	M	L	M	H	M	-	M	-	M	M	-	-
CLO2	M	H	H	M	L	M	H	L	H	M	M	-	-	H	M
CLO3	M	M	H	-	-	H	M	L	M	H	M	M	M	H	M
CLO4	-	-	L	H	H	-	H	-	M	H	M	M	-	-	H

H:High; M:Medium; L:Low

B.COM Semester: III

CYBER PHENOMENON LAW
Paper COM-301

L T P C
3 0 0 4

(40 HOURS)

Course Objectives:
In recent times the Cyber law has emerged as medium for growth with immense potentials for solving many new and interesting challenges. Both the personal and professional worlds are extremely dependent today on the Cyber World. The world is increasingly dependent on networked information and communication technologies (ICT). However, with growing dependency, new threats to network and information security have emerged and there is ever-growing vulnerability to Cyber Crime. Thus, an effort to spread awareness of Cyber Security is the need of the hour and particularly among the law fraternity as these are the persons who must handle the cases of cybercrime.

Course Learning Outcomes
After completing the course, the student shall be able to:
CO1: Describe cyber organized crime and criminal groups that engage in cyber organized crime
CO2: Identify and discuss the structures and characteristics of organized criminal groups that engage in cyber organized crime
CO3: Identify different types of cyber organized crime
CO4: Explain and analyse the ways in which information and communication technology is used to commit cyber organized crime
CO5: Critically evaluate the measures used to counter cyber organized crime

CO5: understand the fundamentals of E-commerce and silent features of the same.

Course Contents

Unit I (8 HOURS)
Introduction to Cyber space, Need for Cyber Law. Cyber Jurisprudence at International and Indian Level. Cyber Law - International Perspectives-UN & International Telecommunication Union (ITU) Initiatives, Council of Europe - Budapest Convention on Cybercrime, Asia-Pacific Economic Cooperation (APEC), Organization for Economic Co-operation and Development (OECD), World Bank, Commonwealth of Nations

Unit II: (8 HOURS)
Constitutional & Human Rights Issues in Cyberspace-Freedom of Speech and Expression in Cyberspace. Right to Access Cyberspace – Access to Internet. Right to Privacy. Right to Data Protection

Unit III: (8 HOURS)

Cyber Crimes & Legal Framework-Cyber Crimes against Individuals, Institution and State, Hacking, Digital Forgery, Cyber Stalking/Harassment, Cyber Pornography, Identity Theft & Fraud, Cyber terrorism, Cyber Defamation, Different offences under IT Act, 2000.

Unit IV: (8 HOURS)

Cyber Torts-Cyber Defamation, Different Types of Civil Wrongs under the IT Act, 2000. Intellectual Property Issues in Cyber Space. Interface with Copyright Law. Interface with Patent Law. Trademarks & Domain Names Related issues

Unit V: (8 HOURS)

E Commerce-Concept, E-commerce-Salient Features, Online approaches like B2B, B2C & C2C.Online contracts, Click Wrap Contracts, Applicability of Indian Contract Act, 1872. Dispute Resolution in Cyberspace-Concept of Jurisdiction, Indian Context of Jurisdiction and IT Act, 2000. International Law and Jurisdictional Issues in Cyberspace. Dispute Resolutions

Textbook

Chris Reed & John Angel, Computer Law, OUP, New York, (2007).
Justice Yatindra Singh, Cyber Laws, Universal Law Publishing Co, New Delhi, (2012).
Verma S, K, Mittal Raman, Legal Dimensions of Cyber Space, Indian Law Institute, New Delhi, (2004)

References

Jonthan Rosenoer, Cyber Law, Springer, New York, (1997).
Sudhir Naib, The Information Technology Act, 2005: A Handbook, OUP, New York, (2011)
S. R. Bhansali, Information Technology Act, 2000, University Book House Pvt. Ltd., Jaipur (2003).
Vasu Deva, Cyber Crimes and Law Enforcement, Commonwealth Publishers, New Delhi, (2003).

Note: Latest edition of readings may be used

Mapping of CLOs with PLOs & PSOs

Course Learning Outcomes	Program Learning Outcomes (PLOs)												Program Specific Outcomes(PSOs)		
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12	PSO1	PSO2	PSO3
CLO1	H	M		H			M			H		L			
CLO2	H	M		M						H		M			

CLO3	H	M		H		L	L		L	M		M			
CLO4	H	M		H		H	L		H	M		M			

H: High M: Medium L: Low

BUSINESS ECONOMICS
Paper COM-302

L T P C
4 0 0 4

(40 Hours)

Course Objective

Economics is the study of how individuals and societies make rational choices when confronted with scarce resources and an uncertain environment. Economic theory aims at the construction of models which describe the economic behavior of individual units (Consumers, Firms, and Government Agencies). Microeconomics studies the economic phenomenon at the micro level i.e. at the individual level. Microeconomics studies how consumers and producers make their choices; how their decisions and choices affect the demand and supply conditions and how consumers and producers interact to settle the prices of goods and services in the market.

Course Learning Outcomes

Upon successful completion of the course a student will be able to

CO1: Understand how households (demand) and businesses (supply) interact in various market structures to determine price and quantity of a good produced.
CO2: Understand the links between household behavior and the economic models of demand.
CO3: Represent demand, in graphical form, including the downward slope of the demand curve and what shifts the demand curve.
CO3: Understand the links between production costs and the economic models of supply.
CO4: Apply the concept of opportunity cost
CO5: Analyze operations of markets under varying competitive conditions

Course Contents

Unit I (8 Hours)

Introduction to Economics:

Nature, Scope, Definition of Managerial Economics, Difference between Managerial Economics & Economics, Micro and Macro Economics Opportunity cost.

Demand and supply: Demand & supply curves, Measurement of elasticity of demand, factors

affecting elasticity of demand, income elasticity of demand, cross elasticity of demand, advertising elasticity of demand.
Demand forecasting: need, objective & methods (in brief)

Unit II (8 Hours)

Consumer Behavior: Cardinal Utility Approach: Diminishing Marginal Utility, Law of Equi-Marginal Utility. Ordinal Utility Approach.
Indifference Curves, Marginal Rate of Substitution, Budget Line and Consumer Equilibrium.

Unit III (8 Hours)

Theories of Production: Meaning & concept of Production, Factors of Production, Production functions, Iso-quants, Fixed & Variable factors of production. Law of variable proportions (Short run production analysis), Law of returns to a scale (long run production analysis).

Unit IV (8 Hours)

Cost analysis & Price output decision in different market: Concept of Cost, Cost Function, Short Run Cost, Long Run Cost, Economics and Diseconomies of Scale. Explicit Cost and Implicit Cost, Profit maximization, equality of marginal cost and marginal revenue.

Unit V (8 Hours)

Pricing Under Perfect Competition, Pricing Under Monopoly, Control of Monopoly, Price Discrimination, Pricing Under Monopolistic Competition, Pricing Under Oligopoly.

REFERENCES

1. Samuelson, P & Nordhaus, W. (2009) Economics, 18th Edition, McGraw Hill Education.
2. Dwivedi, D.N.(2008) Managerial Economics, 7th edition, Vikas Publishing House.
3 Salvatore, D. ((2006)) Managerial Economics in a Global Economy, 6th edition, Oxford UniversityPress.
4. Kreps, D.(2009). MicroEconomics for Managers, 1st edition, Viva Books Pvt. Ltd.
5. Peterson, L. and Jain ((2006)) Managerial Economics, 4th edition, Pearson Education.
6. Colander, D, C (2008) Economics, McGraw Hill Education.
7. Managerial Economics: H.L Ahuja, Sultan Chand & Sons
Note: Latest edition of readings may be used

Mapping of CLOs with PLOs & PSOs

Course Learning Outcomes	**Program Learning Outcomes (PLOs)**	**Program Specific Outcomes (PSOs)**

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12	PSO1	PSO2	PSO3
CLO1	H		H	H						L	H			H	
CLO2	H		M	H	H		L			L	H	M		H	
CLO3	H		M	H	H		L			L	H	M		H	
CLO4	H		H	H	H		L			L	H			H	

Mapping of CLOs with PLOs & PSOs

H: High M: Medium L: Low

CORPORATE ACCOUNTING
Paper COM-303

L T P C
4 0 0 4

(8 Hours)

Course Objective

To acquire the conceptual knowledge of corporate accounting and to understand the various techniques of preparing accounting and financial statements

Course Learning Outcomes
After completing the course, the student shall be able to:

CO1: develop an understanding of accounting for share capital and debentures
CO2: prepare financial statements of a company

CO3: understand the accounting for amalgamation
CO4: prepare consolidated balance sheet for Holding company
CO5: develop an understanding of cash flow statements

Course Contents

Unit 1. Accounting for Share Capital & Debentures
Issue, forfeiture and reissue of forfeited shares: concept & process of book building; Issue of rights and bonus shares; Buy back of shares; Redemption of preference shares; Issue and Redemption of Debentures

Unit 2. Final Accounts
Preparation of profit and loss account and balance sheet of corporate entities, excluding calculation of managerial remuneration, Disposal of company profits. Valuation of Goodwill and Valuation of Shares--Concepts and calculation: simple problem only

Unit 3. Amalgamation of Companies
Concepts and accounting treatment as per Accounting Standard: 14 (ICAI) (excluding intercompany holdings). Internal reconstruction: concepts and accounting treatment excluding scheme of reconstruction.

Unit 4. Accounts of Holding Companies/Parent Companies
Preparation of consolidated balance sheet with one subsidiary company; Relevant provisions of Accounting Standard: 21 (ICAI).

Unit 5. Accounting for Cash Flow Statement
Cash Flow Statement-Concept of funds, Preparation of cash flow statement as per Indian Accounting Standard (Ind-AS3 revised):
Note:
1. The relevant Indian Accounting Standards in line with the IFRS for all the above topics should be covered.
2. Any revision of relevant Indian Accounting Standard would become applicable immediately.

References:
1. J.R. Monga, *Fudamentals of Corporate Accounting*. Mayur Paper Backs, New Delhi.
2. M.C. Shukla, T.S. Grewal, and S.C. Gupta. *Advanced Accounts*. Vol.-II. S. Chand & Co., New Delhi.
3. S.N. Maheshwari, and S. K. Maheshwari. *Corporate Accounting*. Vikas Publishing House, New Delhi.
4. Ashok Sehgal, Fundamentals of *Corporate Accounting*. Taxman Publication, New Delhi.
5. V.K. Goyal and Ruchi Goyal**,**. *Corporate Accounting*. PHI Learning.
6. Jain, S.P. and K.L. Narang. *Corporate Accounting*. Kalyani Publishers, New Delhi.
7. Bhushan Kumar Goyal, *Fundamentals of Corporate Accounting*, International Book House
8. P. C. Tulsian and Bharat Tulsian, Corporate Accounting, S.Chand
9. Compendium of Statements and Standards of Accounting. The Institute of Chartered

Accountants of India, New Delhi.
Note: Latest edition of readings may be used

Teaching Learning Process

Theory/ numerical with examples

Assessment Methods

Class participation, Presentation, Viva/ test, End Semester Exam

Keywords
Shares, Financial Statements, Cash Flow, Amalgamation, Liquidation, Purchase Consideration, Holding Company

Course Learning Outcomes	**Program Learning Outcomes (PLOs)**												**Program Specific Outcomes (PSOs)**		
	PLO1	**PLO2**	**PLO3**	**PLO4**	**PLO5**	**PLO6**	**PLO7**	**PLO8**	**PLO9**	**PLO10**	**PLO11**	**PLO12**	**PSO1**	**PSO2**	**PSO3**
CLO1	H		H			L		L		H		H			
CLO2	H	H	H	M	L					H		H			
CLO3	M		H	M	L				L						
CLO4	M	M	H						L						

HUMAN RESOURCE MANAGEMENT
Paper COM-304

LTPC
4 0 0 4

(40 HOURS)
Course Objective

This module introduces the students with the key concepts, theories, tools & techniques of human resource management. The range of concepts that students will be introduced to include philosophy of HRM, human resource planning, job analysis, recruitment & selection, training & development, compensation & labor relation. By the end of the module, students will be fully equipped with the skills & techniques required to plan & manage the human resource in the organization.

Course Learning Outcomes
After completing the course, the student shall be able to:

CO1: understand basic nature and importance of human resource management.
CO2: analyze the current theory and practice of recruitment and selection.
CO3: realize the importance of performance management system in enhancing employee performance.
CO4: recommend actions based on results of the compensation analysis and design compensation schemes that are cost effective, that increase productivity of the workforce, and comply with the legal framework.
CO5: understand role of modern HRM in meeting challenges of changing business environment.

Course Contents

Unit I: (8 HOURS)
Introduction to Human Resource Management

Definition and concept of HRM and personnel Management, Importance of HRM, Activities and functions of HRM, Organization of H.R.M. department, Role of HRM Department, Limitations of HRM, Challenges before HRM.

Unit II: (8 HOURS)
Human Resource Planning (HRP)

Definition and objectives of Human Resource Planning, Process of Human Resource Planning, Factors influencing estimation of Human Resources. Concept of Recruitment, Recruitment policy, Sources of Recruitment, Selection and its procedure.

Unit III: (8 HOURS)
Performance Appraisal

Concept and objectives of Performance Appraisal, Process of Performance Appraisal, Methods of Performance Appraisal, Uses and limitations of Performance Appraisal.

Unit IV: (8 HOURS)
Training & Development

Meaning and Definition of Training; need, objectives and importance of Training, Training Methods, Evaluation of Training Programme. Concept of Management Development, Management
Development Process and methods, Evaluation of Management Development Programme.

Unit V: (8 HOURS)
Wage and Salary Administration
Methods of wage payments, Employee Remuneration, factors determining the level of remuneration, Profit sharing, Fringe Benefits and Employee services, Wages & Salary Administration

Recommended book:
K. Aswathappa, (2009): Human Resource Management- Text & Cases 5e, India, McGraw Hill.

Reference books:
Dessler & Varkkey, (2010): Human Resource Management 11th ed., Prentice Hall of India.
Decenzo & Robbins, (2006): Fundamentals of Human Resource Management, Wiley.
Dipak Kr. Bhattacharyya, (2010): Human Resource Management 2e, India, Excel Books.
Bernardin, (2007): Human Resource Management- An Experimental Approach, India, TATA McGraw Hill.
Snell & Bohlander, (2008): Human Resource Management, India, South- Western Cengage Learning
Latest editions of the books may be used.

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	M	M	M		M	M	M		H	M	H
CO2	M	M	H	M	M	H	H	H	H	H	H	M
CO3	H	M	H	L	H	M	M		M	M	M	M
CO4	M			H	H	L	H	H	H	M	M	M
CO5		H	M	M	L	M		M	H	L		

Rural Management
Paper COM-305

LTPC
4 0 0 4

(40 HOURS)

Course Objective

To help the students develop a general understanding of the various aspects of rural management.

Course Learning Outcomes
After completing the course, the student shall be able to:

CO1: join in NGOs, CBOs, Projects of Funding Agencies (UNDP, World Bank, JICA, DFID,CARE,CRY,USAID,Action Aid),CSR Units of Corporate/Business houses.
CO2: join in Rural Development Organizations / Institutions as Social Worker, Community Mobilizer.
CO3: set up Small Scale Industry in rural areas supported by State govt. institutions like ORMAS, DDUGKY (Aajeebika), Indian Red Cross Society, District Rural Development Agency (DRDA) or District Industry Centre (DIC) of any district.
CO4: join in State /National Livelihoods Mission under Panchayati Raj Dept / Rural Development Dept. of the State / Nation as Manager or Programme Coordinator.
CO5: start a Non- Governmental Organisation or Voluntary agency to serve for the welfare of the rural poor. Currently NGOs play a very crucial role in rural development, by organizing poor people in villages. The funds for running of such NGOs will be available from both Central and State governments on the basis of the projects and requirements of theNGOs.

Course Contents

Unit I: Introduction (8 HOURS)
Definition of Rural Area, Meaning and concept of rural development, nature and scope of rural development in India. Demographic structure of rural India; Trends in population growth, composition of rural work force.
Unit II: Rural development(8 HOURS)

Concepts, Principles and Approaches: of rural management. Indicators of development; Conceptual framework, Strategies; Rural development in India:
Unit III: Policies and Programs: (8 HOURS)

A retrospective; Policies, Programs: Techniques of planning: Detail steps in district and block level planning: Area Development Planning: Definition, purpose, Area development plans.
Unit IV: Rural Administration: (8 HOURS)

Panchayati Raj & Rural Administration, Natural Resources Development & Management,

Unit V: Rural Marketing(8 HOURS)

Rural Marketing: Rural production and products: agricultural and non-agricultural products; types of rural production and products; Market functionaries: Concept of supply chain management and Value Addition; Problems of marketing; Role of co-operative agencies in marketing of agricultural and non-agricultural product.

References:

1. Rural Management by KB Gupta, Faizia Sidiqui, and Iftikhar Alam; CBS Publication
2. Rural marketing: Challenges and opportunities. by Dinesh Kumar and Punam Gupta; SAGE text
3. Rural Development: Principles, Policies and Management by Katar Singh; SAGE text
4. Rural Marketing by Pradeep Kashyap; Pearson Publication

Note: Latest edition of readings may be used

.

Comprehensive Viva-voce
Paper COM-306

LTPC
0 0 0 4

Course Objective

A viva-voce of all the subjects of semester-III shall be conducted in front of a constituted committee of academicians/experts (internal and external)

Course Learning Objectives (CO):

CO1. To prepare comprehensively about the concept and overall knowledge of all courses.CO2. To gain confidence and develop interpersonal skills in the relevant field.
CO3. To acquaint the students with the overall framework of management concepts in business administration.CO4. To build professional conduct within any team activities.

Course Learning Outcomes (CLOs): On completion of this course, the students will be able to:

CLO1. The students will be able to understand the concept of management principles and various dimensions.
CLO2. The students will be able to Develop problem solving skills by gathering and assessing

appropriate managementinformation.
CLO3. The students will be able to Assess management concepts, plans and decision in business administration.CLO4. The students will be able to Analyze and build professional conduct within any team activities.

Methodology:

The confidence level, presentation and communication skills, decision-making ability and a comprehensiveunderstanding will be assessed.

The viva voce is of 100 marks and is to be conducted by the external examiners appointed by theUniversity. A weightage of 4 credits has been given to this to highlight its importance.

Course Learning Outcom Es	Program Learning Outcom es (PLOs)												Program Specific Outcom es (PSOs)			
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12	PSO1	PSO2	PSO3	PSO4
CLO1	H	M	M	M	M	H	M	H	M	H	M	M	H	H	M	
CLO2	H	M	M	M	M	M	H	M	M	M	M	H	M	M	H	
CLO3	H	H	M	H	H	M	H	M	M	M	M	M	M	M	M	
CLO4	H	H	M	H	H	H	H	H	M	H	M	M	L	M	M	

B.COM-SEMESTER-IV

BUSINESS COMMUNICATION
Paper COM-401

LTPC
4 0 0 4

(40 HOURS)
Course Objective

To develop the skills of the professional undergraduate students for proper self-expression, social communication, spoken English, correct pronunciation, voice modulation and business etiquettes.

Course Learning Outcomes (CLOs): On completion of this course, the students will be able to:

CLO1. Understand the basic concepts of communication and help them to transform their communicationabilities.
CLO2. To develop the students to acquire necessary skills of Business Etiquettes for handling day-to-day managerial responsibilities and evaluate the facilitators of business Communication. **CLO3. To** choose their body language more correctly and impressively in accordance with anorganizational requirement and international standards
CLO4. To analyze the forms of Communication and make the students to understand the verbaland non-verbal Communication and to design impressive documents.
CLO5. The students will illustrate the correct practices of the strategies of Effective business writing

Curriculum

Unit I (8 HOURS)
Essentials of Business communication: Introduction, Basic Patterns of Business Messages: Writing process, Directness and Indirectness in new s and messages of all types, sales Massages, Persuasion.

Unit-II (8 HOURS)

Writing a Project Report: Basics, writing Reports on Field Work visits to Industries/Business Concerns etc.; Business-Negotiations.

Unit-III (8 HOURS)

E-Correspondence

Unit-IV (8 HOURS)

Spoken English for Business-communication: Presentation of Plans, Objectives; speech: Preparation, Mode of delivery presentation; Addressing the Audience. Oral Talking. Strategies to overcome Barriers in Address, speech.

Unit-V (8 HOURS)

Business Etiquettes and Public Speaking:
Business Manners. Body Language Gestures, Email and Net Etiquettes, Etiquette of the Written Word, Etiquettes on the Telephone, Handling Business Meetings; Introducing Characteristic, Model Speeches, Role Play on Selected Topics with Case Analysis and Real Life Experiences.

Reference books:

- Dr.Preeti Shukla, Business Communications, Shree Mahavir Book depot., Nai Sarak, New Delhi.
- A.Kumar, Effective Business Communications, Khanna Book Publishing Co..P, Ltd.
- John.M.Penrose, Robert W. Rosberry, Robert J. Myers, Advanced Business Communications, Thomsan South Western.
- Urmila Rai, S.M.Rai – Business Communication – Himalya Publishing House. 1. Boove, C.L., 5. Thill, J.V., and Chaturvedi, M., (2009) Business Communication Today, Pearson Education.

Mapping of CLOs with PLOs & PSOs

Course Learning Outcomes	Program Learning Outcomes(PLOs)												Program Specific Outcomes (PSOs)		
	PLO	PLO	PLO	PLO	PLO	PLO	PLO	PLO	PLO	PLO1	PLO1	PLO1	PSO	PSO	PSO 3
CLO1	M	M	L				M						L		
CLO2		M	M		M		L		M	L	L				
CLO3		L	L	M	M		M	M		L			L	M	
CLO4					L				L	L					
CLO5	L	M						L	L	M	M				

H: High M: Medium L: Low

FINANCIAL MANAGEMENT

Paper COM-402

L T P C
3 0 0 4

(40 HOURS)

Course Objective

The focus in this paper would be on issues related to financial management in the Indian Corporate Sector. The contents are related to the practices observed in Indian Corporate Sector. The objective is to enable and equip the future managers with basic tools for applying financial analysis.

Course Learning Outcomes

CO1: Define the concepts, vital tools and techniques applicable forfinancial decision making by a business firm.

CO2: Explain the functions of Finance in organization and methods inmanaging funds for business

CO3: Apply the concepts of budgeting, working capital, cost of capitalincluding the choice of source of funds.

CO4: Analyse the practical problems relating to the financing of fundsincluding pricing and dividend theories.

CO5: Select the methods and techniques for analysing the data forfinancial decision making.

Curriculum

Unit I: Introduction to Financial Management (8 hours)

Meaning, objectives and scope, conflicts in profit versus wealth or value maximization principle, Time value of money.

Unit II: Investment Decisions (8 hours)

Capital budgeting techniques-Net Present Value Method, Internal Rate of Return Method. Cost of Capital-equity and debt.

Unit III: Financing Decisions (8 hours)

Leverage- operating, financial and composite leverage, Capital structure- theory and policy, Dividend policy, Asset based financing- lease and hire purchase.

Unit IV: Short term financing (8 hours)

Management of Working Capital, Cash management, Inventory Management, Receivables Management, working capital leverage.

Unit V: Risk and Return (8 hours)

Calculating risk and return for individual securities, Beta estimation, overview of capital market theory.

Recommended book:

- I. M. Pandey, (2010): Financial Management, Vikas Publishing House

Reference books:

- M Y Khan & P K Jain, Financial Management- Text, problems and cases, Tata McGraw Hills
- Dr. R. P. Rustagi (2011): Financial Management- Theory, concept and problems, Taxman Publications

Mapping of CO'S and PO'S

11003001	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	2	2	2	2	2	2	2			3	3
CO2	2	2	2	2	3		2	2	3	3	2	3
CO3	1		2	2	3	3	3		2		2	3
CO4			2	2	3	2		2			2	3
CO5	3	3	3	3	3	3	3	3	3	3	3	3

DIRECT TAX

Paper COM-403

LTPC

4004

(40 hours)

Objective

To provide basic knowledge and equip students with application of principles and provisions Income-tax Act, 1961.

Expected learning outcome: Students will gain a working knowledge regarding computation of taxable income and tax liability pertaining to individuals/firms.

Course Learning Outcomes

CO1: What are the fundamental provisions of the concept of Direct tax planning and to equip with a reasonable knowledge of tax planning devices?

CO2: Understand the intricacies relating to the filling of various forms and returns & to understand the relevance of GST in present Indian TaxScenario.

CO3: Applying the concepts of taxation to the corporate tax planning.

CO4: Analysing the skill of independent thinking and creativity in the field of direct tax law & evaluate the impact of laws on companies and on individuals & also, to make capable to understand amendments made from time to time in Acts related to the Tax.

CO5: Measure the tax liability of an individual or organisation.

Curriculum

Unit I (8 hours)

Basic concept: Income, agricultural income, person, assessee, assessment year, previous year, gross total income,

total income, maximum marginal rate of tax.

Unit II (8 hours)

Residential status Scope of total income on the basis of residential status Exempted income under section .

Unit III (8 hours)

Salaries.

Unit IV (8 hours)

Income from house property and Profits and gains of business or profession.

Unit V (8 hours)

Capital gains and Income from other sources.

Recommended Book:

- Singhania, Vinod K. and Monica Singhania. Students‟ Guide to Income Tax.Taxmann Publications Pvt. Ltd., New Delhi.

Reference Books:

- Ahuja, Girish and Ravi Gupta. Systematic Approach to Income Tax. Bharat Law House, Delhi.
- Chandra, Mahesh., S.P. Goyal and D.C. Shukla. Income Tax Law and Practice.Pragati Prakashan, Delhi.
- Pagare, Dinkar. Law and Practice of Income Tax. Sultan Chand and Sons, New Delhi.
- Mehrotra, H.C. Income Tax Law. Sahitya Bhawan, Agra.
- Lal, B.B. Income Tax Law and Practice. Konark Publications, New Delhi.
- Singhania, Vinod K. and Kapil Singhania. Tax Computation on CD. Taxmann Publications Pvt. Ltd., New Delhi.

Mapping of CO'S and PO'S

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	H	L	-	H	L	H	H	H	L	L	H
CO2	-	-	H	M	L	H	M	M	M	-	H	H
CO3	H	M	H	M	-	L	L	M	-	H	M	H
CO4	M	M	-	H	H	M	H	M	1	M	M	H
CO5	H	H	H	H	M	H	M	H	M	H	H	H

MANAGEMENT ACCOUNTING

Paper COM-404

LTPC

4004

(40 hours)

Objective

The subject of Management Accounting is basically Designed to equip the Student with tools for analyzing financial and non-financial information which will help them in decision-making planning and control.
Aim: To acquaint the students with basic concepts used in cost accounting and various methods involved in cost ascertainment systems.

Course Learning Outcomes

CLO1) Develop the ability to analyze financial data and use it for making informed decisions related to budgeting, cost control, pricing, and resource allocation within an organization.

CLO2) Acquire skills to identify and analyze different types of costs (e.g., variable, fixed, direct, indirect) and implement strategies to control and reduce these costs effectively.

CLO3) Gain proficiency in designing and using performance measurement tools and key performance indicators (KPIs) to assess an organization's financial performance and track progress towards its goals.

CLO4) Learn to create budgets, financial forecasts, and perform variance analysis, enabling effective planning, resource allocation, and adaptation to changing business conditions.

CLO5) Develop the ability to integrate management accounting information into the strategic decision-making process, including evaluating investment opportunities, assessing project financial viability, and aligning financial strategies with the organization's goals.

Curriculum

Unit I: Introduction (8 HOURS)

Meaning, objectives and advantages of cost accounting, Difference between cost accounting and financial accounting. Cost concepts and classifications, Elements of cost. Installation of a costing system. Role of a cost accountant in an organization.

Unit II: Cost concept (8 HOURS)

Types of cost, Cost Accumulations, cost objects, cost classifications, cost applications, cost behavior, Techniques of Costing.

Unit III: Overhead (8 HOURS)

Classification, allocation, apportionment and absorption of overhead. Under- and over-absorption. Capacity costs. Treatments of certain items in costing, like interest on capital, packing expenses, debts, research and development expenses, Bad Activity – based cost allocation.

Unit IV Methods of Costing (8 HOURS)

Unit costing, Job costing. Contract Costing. Process costing (process losses, valuation of work in progress, joint and by-products) Service costing (only transport).

Unit V: Cost -Volume -Profit Analysis (8 HOURS)

The Relationship of cost and profit with volume, use of CVP Analysis, Marginal Costing and Absorption costing,

Breakeven point, contribution marginal Approach, Use of Breakeven analysis.

Recommended Book

- Lal, Jawahar. Cost Accounting. Tata McGraw Hill Publishing Co., New Delhi

Reference Book

- Nigam, B.M. Lall and I.C. Jain. Cost Accounting: Principles and Practice. Prentice Hall of India, New Delhi.
- Mittal, D.K. and Luv Mittal. Cost Accounting. Galgotia Publishing Co., New Delhi.
- Arora, M.N. Cost Accounting – Principles and Practice. Vikas Publishing House,
- New Delhi.
- Shukla, M.C., T.S. Grewal and M.P. Gupta. Cost Accounting: Text and Problems.
- S. Chand & Co. Ltd., New Delhi.
- Maheshwari, S.N. and S.N. Mittal. Cost Accounting: Theory and Problems. Shri
- Mahabir Book Depot, New Delhi.
- Jain , S.P. and K.L. Narang. Cost Accounting: Principles and Methods. Kalyani
- Publishers, Jalandhar.

Mapping of CO'S and PO'S

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	M	M	H	M	M	L	M	M	-	M	M
CO2	M	M	M	-	M	H	M	M	M	-	M	H
CO3	M	M	H	H	H	M	M	-	-	-	M	M
CO4	H	H	L	M	L	M	M	-	-	M	M	H
CO5	H	H	M	H	H	M	H	M	H	-	M	H

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E-BUSINESS

Paper COM-405

LTPC
4004

Objective

To enable the student to become familiar with the mechanism for conducting business transactions through electronic means

Course Learning Outcomes

CLO1) Demonstrate proficiency in online marketing strategies and tactics, including search engine optimization (SEO), social media marketing, email marketing, and pay-per-click advertising, to effectively promote products and services in the digital marketplace.

CLO2) Analyze and interpret data from web analytics tools to make informed decisions about website and online store performance, user behavior, and customer preferences, leading to optimization of the online customer experience.

CLO3) Apply principles of e-commerce security and privacy to protect sensitive customer data and ensure secure transactions, safeguarding the integrity and reputation of the e-business.

Develop and implement an effective e-business strategy, incorporating aspects such as market CLO4) research, competitive analysis, and business model innovation, to gain a competitive edge and maximize online profitability.

CLO5) Collaborate with cross-functional teams, including web developers, designers, and IT professionals, to effectively manage the technical aspects of e-business operations, ensuring a seamless and user-friendly online presence for customers

Contents

Unit 1: Introduction:

Meaning, nature, concepts, advantages, disadvantages and reasons for transacting online, types of E-Commerce, e-commerce business models (introduction, key elements of a business model and categorizing major E-commerce business models), forces behind e-commerce.

Technology used in E-commerce: The dynamics of world wide web and internet (meaning, evolution and features); Designing, building and launching e-commerce website (A systematic approach involving decisions regarding selection of hardware, software, outsourcing vs. in-house development of a website)

Unit 2: Security and Encryption:

Need and concepts, the e-commerce security environment: (dimension, definition and scope of e security), security threats in the E-commerce environment (security intrusions and breaches, attacking methods like hacking, sniffing, cyber-vandalism etc.), technology solutions (Encryption, security channels of communication, protecting networks and protecting servers and clients),

Unit 3: IT Act 2000 and Cyber Crimes

IT Act 2000: Definitions, Digital signature, Electronic governance, Attribution, acknowledgement and dispatch of electronic records, Regulation of certifying authorities, Digital signatures certificates, Duties of subscribers, Penalties and adjudication, Appellate Tribunal, Offences and Cyber-crimes

Unit 4: E-payment System:

Models and methods of e–payments (Debit Card, Credit Card, Smart Cards, e-money), digital signatures (procedure, working and legal position), payment gateways, online banking (meaning, concepts, importance, electronic fund transfer, automated clearing house, automated ledger posting), risks involved in e-payments.

Unit 5: On-line Business Transactions:

Meaning, purpose, advantages and disadvantages of transacting online, E commerce applications in various industries like {banking, insurance, payment of utility bills, online marketing, e-tailing (popularity, benefits, problems and features), online services (financial, travel and career), auctions, online portal, online learning, publishing and entertainment} Online shopping (Amazon, Snapdeal, Alibaba, Flipkart, etc.)

Reference books:

1. Kenneth C. Laudon and Carlo Guercio Traver, *E-Commerce*, Pearson Education.
2. David Whiteley, *E-commerce: Strategy, Technology and Applications*, McGraw Hill Education
3. Bharat Bhaskar, *Electronic Commerce: Framework, Technology and Application, 4th Ed.*, McGraw Hill Education
4. PT Joseph, *E-Commerce: An Indian Perspective*, PHI Learning
5. KK Bajaj and Debjani Nag, *E-commerce,* McGraw Hill Education
6. TN Chhabra, *E-Commerce,* Dhanpat Rai & Co.
7. TN Chhabra, Hem Chand Jain, and Aruna Jain, *An Introduction to HTML*, Dhanpat Rai & Co.

Mapping of CO'S and PO'S

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	L	L	L	L	L	L	L	L	L	L	L
CO2	L	L	L	M	L	L	L	L	L	L	L	L
CO3	L	L	L	L	L	L	L	H	L	L	L	H
CO4	M	L	L	H	M	L	L	L	M	L	M	L
CO5	M	L	M	L	H	L	H	L	L	M	L	L

BUSINESS RESEARCH METHODS

Paper COM-406

LTPC
4 0 0 4

(40 HOURS)

Objective

Any body of knowledge cannot develop without the underlying research. This module introduces the fundamentals of research, its process and the way in which findings of a research initiative is presented and reported. It exposes the students to the various statistical tools being used to analyze data and draw inferences.

Course Learning Outcomes

CO1: Define & Show Critical Thinking in their working.

CO2: Interpret the primary data & relate the research articles with theirresearch.

CO3: Interview respondents for data collection & organize discussions and chatshows.

CO4: Analyse the primary & secondary data and will be able to prepare ameaningful interpretation

CO5: Explain critical thinking process and decide the right course of action.

Curriculum

Unit I: (8 HOURS)

Introduction to Research

Research: Meaning, types & process. Research methods versus methodology, Research problem & Research design. Basic concepts of research- variables, hypothesis & its types, sample & population, parameter & statistic, type-I & type-II errors, one tailed and two tailed testing of hypothesis.

Unit II: (8 HOURS)

Sampling and Data Collection

Sampling: Meaning, types and techniques of sampling. Types of data: Primary & secondary data.
Methods of data collection: Interview-structured and unstructured, questionnaire & interview schedule, observation-participative and non-participative, Delphi method, focus group, depth interview and survey method.

Unit III: (8 HOURS)

Descriptive Statistics & Hypothesis Testing

Measures of central tendency- mean, median & mode, Measures of Variability- Average Deviation, Standard Deviation & Quartile Deviation, Skewness & Kurtosis. Testing of Hypothesis-I: One tailed and Two tailed Parametric Test- z-test and t-test

Unit IV: (8 HOURS)

Non-Parametric Tests

Testing of Hypothesis-II: Non Parametric Tests- Sign Test, Median Test, Chi-Square Test, Mann-Whitney U Test, Run Test for Randomness. Analysis of Variance- One Way and Two Way

Unit V: (8 HOURS)

Report writing

Steps of writing research report, Report Layout: Preliminary pages, Main text, End matter, Mechanics of writing research report, Bibliography and references format, Precautions in writing research report.

Recommended Books:

- C. R. Kothari, Research Methodology Methods and Technique

Reference Books:

R. Panneerselvam, Research methodology, PHI

Mapping of CO'S and PO'S

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	H	-	H	-	H	M	H	M	-	H
CO2	-	H	-	H	M	H	H	H	-	H	H	H
CO3	M	H	H	H	-	H	-	H	H	-	H	H
CO4	H	M	H	M	H	M	H	-	M	H	H	H
CO5	M	H	M	M	M	M	-	M	M	M	M	H

B.COM-SEMESTER-V

MARKETING MANAGEMENT
Paper COM-501

LTPC
3 0 0 4

(40 HOURS)
Course Objective

The objective of this course is to provide basic knowledge of concepts, principles, tools and techniques of marketing.

Course Learning Outcomes

After completing the course, the student shall be able to:
CO1: learn the basic concepts and principles of marketing and to develop their conceptual skill to be able to manage marketing operations of a business firm.
CO2: understand the complexities involved in various targeting and positioning decisions.
CO3: take effective decisions for launching new products and to understand the implications of different pricing strategies.
C04: develop the skills to design the promotion-mix strategies
C05: familiarize about the current trends in marketing to take proactive measures while taking marketing decisions

Course Contents

Unit I: Introduction (8 Hours)

Marketing: Meaning, Nature, Scope and Importance; Marketing Philosophies; Marketing Mix; Marketing Environment- Concept and need for studying marketing environment; Micro environmental factors- company, suppliers, marketing intermediaries, customers, competitors, publics; Macro environmental factors– demographic, economic, natural, technological, politico-legal and socio-cultural.

Unit II: **Consumer behaviour and Market Selection (8 Hours)**

Need for studying consumer behaviour; Stages in Consumer buying decision process; Factors influencing consumer buying decisions. Market Segmentation- concept, importance, levels and bases of segmenting consumer markets. Market Targeting- concept and factors affecting the choices for market targeting. Product Positioning– concept and bases. Product differentiation- concept and bases.

Unit III: Product and Pricing Decisions (8 Hours)

Concept and classification; Levels of Product; Product-mix dimensions; Branding- concept,

functions and qualities of good brand name; Packaging and Labeling- concept and functions; Product support services; New product development process. Concept and objectives of pricing decisions; Factors affecting price of a product; Pricing methods; Pricing strategies.

Unit IV: Distribution and promotion Decisions (8 Hours)

Channels of distribution- meaning and importance; types of distribution channels and their functions; Factors affecting choice of distribution channel; Distribution logistics– concept, importance and major logistics decisions. Wholesaling and retailing. Nature and Importance of Promotion; Promotion mix concept and distinctive characteristics of advertising, personal selling, sales promotion, public relations, publicity and direct marketing; Factors influencing promotion mix decisions.

Unit V: Developments in Marketing (8 Hours)

Relationship Marketing; Sustainable Marketing; Rural marketing; Social marketing; Digital marketing; Legal Issues in marketing- The Consumer Protection Act, 1986; Ethical issues in marketing.

References

1. Kotler, P., Armstrong, G. and Agnihotri, P. (2018). *Principles of Marketing (17th edition)* Pearson Education. Indian edition.
2. Sharma, K., & Swati Aggarwal. (2018). Principles of Marketing. Taxmann's.
3. The Consumer Protection Act,1986.

Additional Resources

1. Etzel, M. J., Walker, B. J., Stanton, W. J., & Pandit, A. (2010). *Marketing (14th ed.).* Mc Graw Hill.
2. Grewal, D. & Levy, M. (2017). *Marketing (5th ed.).* McGraw-Hill Education.

Note: Latest editions of the books may be used.

Mapping of CO'S and PO'S

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	H	-	H	-	H	M	H	M	-	H
CO2	-	H	-	H	M	H	H	H	-	H	H	H
CO3	M	H	H	H	-	H	-	H	H	-	H	H
CO4	H	M	H	M	H	M	H	-	M	H	H	H

CO5	M	H	M	M	M	M	-	M	M	M	M	H

HUMAN RESOURCE PLANNING AND DEVELOPMENT
Paper COM-502

LTPC
4 0 0 4

(40 HOURS)

Course Objective

This paper has been designed keeping in mind the current need of organizations. Human resource planning has become a bigger challenge for organization due to growing globalization and emerging new trends specially because of changing environment. This paper addresses all those challenges and suggests ways to handle them efficiently. The objective of this paper is to develop a conceptual as well as a practical understanding of Human Resource Planning in organizations.

Course Learning Outcomes

After completing the course, the student shall be able to:

CO1: understand basic nature and importance of human resource management.

CO2: analyze the current theory and practice of recruitment and selection.

CO3: realize the importance of performance management system in enhancing employee performance.

CO4: recommend actions based on results of the compensation analysis and design compensation schemes that are cost effective, that increase productivity of the workforce, and comply with the legal framework.

CO5: understand role of modern HRM in meeting challenges of changing business environment.

Course Contents

Unit I

HR Planning: Conceptual framework, Definitions, Historical evolution, HR Planning levels,

Unit II

HR planning at Enterprise level, Need for systematic planning, Planning process, **Variables to be accounted for in planning process,** Operating Environment- Internal & External, Job description, Models & techniques of Manpower demand and Supply forecasting. Retention-Redeployment and Exit strategies

Unit III

Linkages with other HR business processes- Recruitment, Performance/ Productivity, Training and Development. Re-Engineering/ Organization Development etc

Unit IV

Study of HR Planning process Practices in select businesses, Ramp-up and scale down practices and tools, Research in HR Planning area, Career Planning and Succession Planning,

Unit V

Human Resource Information System- Concept, Objectives of HRIS, Types of information, Sources of Information, Method of Data collection, Procedure of maintaining HRIS at Micro & Macro level.

Recommended Book

1. Praveen Durai (2010), Human Resource Management, Pearson Education, South Asia
2. John Storey, Graeme Salaman, Christopher Mabey(1998): Strategic Human Resource Management: A Reader, SAGE Publications, 1998

Reference Books

1. Aloke K. Sen, Human Resource Development- Development Planing and Deployment- Asian Books
2. Christopher Mabey, Rosemary Thomson (2011): Developing Human Resources, Routledge, Taylor and francis group, New York, USA.
3. Dessler & Varkkey, (2010): Human Resource Management 11e, India, Prentice Hall
4. Richard D. Johnson, Michael J. Kavanagh, Mohan Thite (2011): Human Resource Information System 2e, SAGE Publications, 2011.

Latest editions of the books may be used.

Mapping of CO'S and PO'S

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	L	L	M	L	L	L	L	L	M	L	L
CO2	M	L	L	M	L	L	L	L	L	M	L	L
CO3	M	L	L	M	L	L	L	L	L	M	L	L
CO4	H	L	L	H	L	L	L	L	L	H	L	L
CO5	M	L	L	H	L	L	L	L	L	H	L	L

INVESTMENT MANAGEMENT
Paper COM-503

LTPC
4 0 0 4

(40 Hours)

Course Objective

The focus of this paper would be on the intricacies of security markets, construction of optimal portfolios and analysis of different investment options.
The basic objective of this course is to acquaint the student with the investment decisions related to financial assets, risks and returns involved, functioning of securities market and principles of security analysis along with the theories and concepts associated with portfolio management in order to be able to judge the competitive position of firms in capital market and review the related business decisions.

Curriculum

UNIT I: Introduction To Investment And Securities Market (8 Hours)

- Concept of investment-investment objectives and constraints-security and non security forms of investment, investment process. Securities markets: markets and their functions- development of stock market in India, regulation of securities market (SEBI).

UNIT II: Risk and Return (8 Hours)

- Types of risk-systematic and unsystematic, security returns-ex post and ex ante returns, portfolio return, concept of Beta-risk of individual security, portfolio risk.

UNIT III: Introduction To Portfolio Management(8 Hours)

- Diversification, construction of optimum portfolio- Markowitz risk return optimization, performance evaluation and revision- Sharpe's Ratio, Treynor's Ratio, Jenson's Alpha.

UNIT IV: Capital Market Theory (8 Hours)

- Capital Asset Pricing Model (CAPM), application of Capital Market Line and Security Market Line, Arbitrage Pricing Theory (APT).

UNIT V: Security Analysis (8 Hours)

- Fundamental analysis-economy, industry and company analysis, Technical Analysis- Efficient Market Hypothesis.

Recommended Books:

- Pandian, P., Security Analysis & Portfolio Management, Vikas Publishing House.

Reference Books:

- Fischer, E.D. & Jordan, R.J., Security Analysis & Portfolio Management, Pearson Education

- Khan & Jain, Financial Management, Tata McGraw Hills, 2008

Mapping of CO'S and PO'S

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	H	-	H	-	H	M	H	M	-	H
CO2	-	H	-	H	M	H	H	H	-	H	H	H
CO3	M	H	H	H	-	H	-	H	H	-	H	H
CO4	H	M	H	M	H	M	H	-	M	H	H	H
CO5	M	H	M	M	M	M	-	M	M	M	M	H

Entrepreneurial Management
Paper COM-503

LTPC
4 0 0 4

(40 Hours)

Course Objective

The purpose of this paper is to prepare a ground where the students view Entrepreneurship as a desirable and feasible career option. The paper seeks to build the necessary competencies and motivation for a career in Entrepreneurship. After studying this course, the students would be able to build on personal as well as external resources with a view to successfully launching and subsequently managing their enterprises. They would have not only a definite idea as to which support/ developmental agency to look up and for what purpose, but also the necessary know-how and wherewithal for accessing their help. They would have basic skills in operations, finance, and marketing and human resource management.

Course Learning Outcomes

After completing the course, the student shall be able to:

CO1: understand the concept of entrepreneurship in the context of Indian economic scenario.
CO2: link the individual's capability and strength as a guiding factor towards entrepreneurial orientation.
CO3: understand social support system for gaining strength towards entrepreneurial preferences.
CO4: understand entrepreneurial process for initiating new venture creation.
CO5: understand various dimensions of managing a business enterprise once it is formed.

Course Content

Unit I: **Entrepreneurship (8 Hours)**

Theories of Entrepreneurship

Role and Importance of Entrepreneur in Economic Growth.

Unit II: Entrepreneurial Behaviours

Entrepreneurial Motivation, Need for Achievement Theory

Risk Taking Behavior

Innovation and Entrepreneur

Unit III: Entrepreneurial Traint

Definitions, Characteristics of Entrepreneurial Types

Functions of Entrepreneur.

Unit IV: Entrepreneurial Development in India

History, Objectives, Stages of Growth

Target Group, Programmes

Govt. Policy towards SSI's

Unit V: Project Feasibility Analysis

Business Ideas – Sources, processing; Input requirements, Sources of Financing, Technical Assistance, Marketing Assistance

Preparation of Feasibility Reports, Legal Formalities and Documentation.

Recommended books:

1. McClelland, D.C. & Winter, W.G. : Motivating Economic Achievement, Free Press.
2. Pareek, U & Venkateswara Rao, T : Developing Entrepreneurship – A Handbook on Learning Systems, Learning Systems, New Delhi.
3. Desai, A.N. : Entrepreneur and Environment, Ashish, New Delhi.
4. Druckar, Peter : Innovation and Entrepreneurship, Heinemann.
5. Chakraborty, Tridib : Introducing Entrepreneurship Development, Modern Book Agency
6. Manimala, M.J. : Entrepreneurial Policies and Strategies,TMH

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Mapping of CO'S and PO'S

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	-	H	-	H	-	H	M	H	M	-	H
CO2	-	H	-	H	M	H	H	H	-	H	H	H
CO3	M	H	H	H	-	H	-	H	H	-	H	H

CO4	H	M	H	M	H	M	H	-	M	H	H	H
CO5	M	H	M	M	M	M	-	M	M	M	M	H

ADVERTISING
Paper COM-503

LTPC
4 0 0 4

(40 Hours)

Course Objective:

Advertisements are a vital component of the promotion mix, which enhance the awareness of a company and its products. It helps a company build image and position a product on its target segment. This course introduces the conceptual framework and functional aspects of the field of advertising management.

The core objective of the course is to help the students understand the concepts of advertising, its types and the different functional areas of advertising management.

Course Learning Outcomes

1. Understand the fundamental principles of advertising, including its history, evolution, and its role in modern marketing strategies.

2. Develop the ability to analyze target audiences, consumer behavior, and market trends to create effective advertising campaigns.

3. Acquire proficiency in various advertising mediums and channels, such as print, digital, social media, and broadcast, and demonstrate the ability to choose the most appropriate ones for specific campaigns.

4. Learn how to craft compelling advertising messages and visuals, taking into consideration branding, storytelling, and the use of persuasive techniques.

5. Demonstrate the capability to evaluate the success of advertising campaigns through key performance indicators (KPIs) and metrics, and make data-driven decisions for optimizing future advertising efforts.

Curriculum

Unit I: Introduction to Advertising & its management

- Advertising defined, Major Indian advertising & media agencies, Integrated Marketing Communication concepts, Merits & Demerits of advertising, Advertising agencies: Roles & Functions, 5-M model of advertising management, Career options in Advertising field.

Unit II: Classification of advertisements & campaign planning

- Types of advertising
- Advertising campaign planning
- Advertising budget

Unit III: Advertising message

- AIDA model
- Message design & Development
- Print Advertisement layout
- Advertisement appeals

Unit IV: Advertising Media

- Types of advertising media: Print media, Electronic media, Internet, Outdoor and transit media, Cinema
- Media selection, Planning, Scheduling and strategy

Unit V: Advertisement effectiveness & ethical issues

- Measuring advertisement effectiveness(pre-launch methods, post launch methods)
- Ethical issues of advertising

Recommended book:

- Chunawalla, S.A. and Sethia, K.C., *Foundations of Advertising Theory and Practice*, Himalaya Publishing House, Mumbai, 2009.

Reference books:

- Batra, Myers, Aaker, *Advertising Management*, Prentice Hall of India, New Delhi
- Mishra, M. N., *Sales Promotion and Advertising Management*, Himalaya Publishing House, Mumbai

Mapping of CO'S and PO'S

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	M	L	M	L	L	L	L	L	L	L	L
CO2	L	H	L	H	L	L	M	L	L	L	L	L
CO3	L	L	H	L	L	L	L	L	L	L	L	L
CO4	L	L	L	M	L	L	L	L	L	L	L	L
CO5	L	L	L	L	H	L	L	L	L	L	L	L

INTERNATIONAL FINANCE
Paper COM-504

LTPC
4 0 0 4

Course Objective

Liberalization and Globalization of Economies in the Recent years has increased the Prominence of International Finance and Trade, which Prompted the Finance Managers to concentrate on the International Perspective as well, and it is Vital for a Student learning Finance to know the Intricacies of the Foreign Exchange Market and the Methods to Combat the Forex Risk.

Aim of this Subject is to Develop a Body of Knowledge and Skills and Make it Available to the Students to make them Successful Managers in the New Era of liberalization and Globalization.

Course Learning Outcomes

After completing the course, the student shall be able to:

CO1: Demonstrate knowledge of basic theorems of exchange rate determination, interest rates and inflation and the role of arbitrage in keeping the foreign exchange market efficient.
CO2: Apply knowledge of foreign exchange hedging to identify and manage the foreign exchange risks faced by globally active firms.
CO3: Demonstrate the ability to select global financing strategies and propose solutions that will take advantage of opportunities in the global financial markets to the benefit of relevant stakeholders.
CO4: Demonstrate the ability to deliver an effective oral presentation with appropriate visuals.
CO5: Demonstrate the ability to produce a clear and concise written report that demonstrates higher order understanding of key concepts in international finance.

Curriculum

Unit I: Introduction to International Finance and Theory of International Trade:

Increasing interdependence in the global economy, trends in international trade and cross-border financial flow, recent developments in global financial markets, liberalization, Integration and Innovation, Challenges of International Financial Management, Theory of Absolute Advantage, Theory of Comparative advantage, Heckscher-Ohlin Model, Imitation - Gap Theory.

Unit II Balance of Payments

Concept of Economic transactions, Resident, General Government institution, principles of accounting, Components of the BOP Account, factor affecting the components of the Bop account, balance of payments compilation, BoP- The Indian Perspective, Importance and limitations of BoP Statistics.

Unit III Foreign Exchange Market and Exchange rate determination.

Structure and the Participants, Types of Transactions, Mechanics of Currency dealing, exchange rate quotations, arbitrage, forward rates evolution of Exchange control and the foreign exchange market in india, relation between forex and money market, covered interest arbitrage, covered parity theorem, option forwards, cancelation of forward contracts, purchasing power parity, interest rate parity.

Unit IV: Short Term Financial Management:

Short Term Funding and Investment, Centralized vs. Decentralized Cash Management, Netting, Pooling, Exposure Management, Offshore Invoicing Centers.

Unit V: Introduction to Trade block, WTO, GATT, EXIM POLICY:

Formation of Trade Blocks, OPEC, its Objective, Function of European Community(EC), Function and Structure of WTO Agreements, trade related Aspects of Intellectual Property Rights (TRIPS), trade related aspects of Investment Measures (TRIMS), General Agreement on Trade in Services (GATS), Trade Negotiations under GATT, EXIM Policy Historical Perspective, Objective.

Reference Books:

1. International Financial Management: P G APTE : The Mcgrow Hill Companies.
2. International Economics: Francis Cherunilam: The Mc Graw Hill Companies.
3. International Corporate Finance: JEFF MADURA:CENGAGE Learning.
4. International money and Finance: Michael Melvin: Pearson Education.

Note: Latest edition of readings may be used

Mapping of CO'S and PO'S

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	M		L						H			
CO2	M								H	L		
CO3	H								H		M	
CO4		H					H					
CO5		H		H							M	

LABOUR LAW
Paper COM-504

LTPC
4 0 0 4

Course Objective

Understanding of the legal framework is important for the efficient decision-making relating to management and employees relations. The course aims to provide an understanding, application and interpretation of the various labour laws and their implications for industrial relations and labour issues.

Course Learning Outcomes

CLO1) Understand the foundational principles and concepts of labor law, including the rights and obligations of both employers and employees.
CLO2) Analyze and apply relevant labor legislation and regulations to real-world workplace situations.
CLO3) Evaluate the impact of labor laws on employment relationships, collective bargaining, and labor disputes.
CLO4) Develop effective strategies for resolving labor disputes and conflicts in compliance with labor laws.
CLO5) Demonstrate knowledge of international labor standards and their relevance to domestic labor laws and practices.

Curriculum

Unit I: Labour Legislations in a Changing Context

- The Classification of Labour Laws
- The Factories Act, 1948
- The Shop and Establishments Act, 1953
- The Contract Labour (Regulation and Abolition) Act, 1970

Unit II: Social-Security Legislations

- Major Legislations
- The Employees' State Insurance Act, 1948
- Maternity Benefit Act, 1961
- The Workmen's Compensation Act, 1923
- The Payment of Gratuity Act, 1972
- Employees' provident Funds and Miscellaneous Provisions Act, 1952

Unit III: Wage Legislations

- The History of Wage legislations
- The Payment of Wages Act, 1936
- The Minimum Wages Act, 1948
- The Payment of Bonus Act, 1965

Unit IV: Other Recent Significant Legislations in India

Recommended Book

- P. N. Singh, Neeraj Kumar, Employee Relations Management, Pearson.
- P.L. Malik, Handbook of Labour and Industrial Law, 5e, Eastern Book Company.

Reference Books

- H.K. Saharay, . Industrial and Labour laws of India, Universal Law Publishing.
- S. P. Jain, Industrial & labour laws.
- Arun Monappa, Industrial Relations, Tata Mc Graw Hill.

Mapping of CO'S and PO'S

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	M	-	-	-	-	-	-	-	L	-	-	H
CO2	-	-	-	-	-	-	-	-	-	M	M	H
CO3	-	-	-	-	-		M	M	-	-	-	H
CO4	-	-	-	M	-	-	M	-	-	-	-	H
CO5	M	-	-	-	-	-	-	-	H	-	M	-

SUMMER INTERNSHIP &PROJECT
COM-505

LTPC
4 0 0 4

COURSE LEARNING OUTCOME

CO1: Understand the real-time working of organizations.

CO2: Demonstrate professional knowledge, skills and attitude along withthe experience needed to constitute a successful career.

CO3: Analyse career opportunities in their areas of interest.

CO4: Build aptitude for gaining supervised professional experiences.

CO5: Create a clear understanding of industry trends and advancements

Mapping of CO'S and PO'S

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	M	M	H	H	M	H	H	H	M	M	M	M
CO2	-	H	H	M	L	-	L	M	L	-	M	-
CO3	L	L	M	H	H	-	M	-	-	M	H	L
CO4	L	L	M	L	-	M	H	H	M	L	L	L
CO5	M	M	H	L	-	M	H	H	M	L	M	L

B.COM

Semester-

VI

BUSINESS ETHICS

Paper COM-601

LTPC

4 0 0 4

(40 HOURS)

Objectives

The basic objective of this paper is to make the students realize the importance of values and ethics in business. This course endeavors to provide a background to ethics as a prelude to learn the skills of ethical decision-making and, then, to apply those skills to the real and current challenges of the information professions.

Curriculum

Unit I: Ethics (8 Hours)

Management Process and Ethics, Ethical Decision Making, Ethical Issues, Ethos of Vadanta in Management, Relevance of Ethics and Values in Business

Unit II: Knowledge and Wisdom (8 Hours)

Meaning of Knowledge and Wisdom, Difference between Knowledge and Wisdom, Knowledge Worker versus Wisdom Worker, Concept of Knowledge Management and Wisdom management, Wisdom Based Management.
Stress Management: Meaning, Sources and Consequences of Stress, Stress Management and Detached Involvement.

Unit III: Understanding Progress, and Success - Results & Managing Transformation: (8 Hours)

Progress and Results Definition, Functions of Progress, Transformation, Need for Transformation, Process & Challenges of Transformation.
Understanding Success: Definitions of Success, Principles for Competitive Success, Prerequisites to Create Blue Print for Success. Successful Stories of Business Gurus.

Unit IV: Corporate Social Responsibility & Corporate Governance: (8 Hours)

Corporate Responsibility of Business: Employees, Consumers and Community, Corporate Governance, Code of Corporate Governance, Consumer Protection Act, Unethical issues in Business

Unit V (8 Hours)

Cases of corruption, corporate Scandals, Whistle Blowing, Insider Trading, Discrimination, Advertising, Consumer Rights etc.

Reference books:

- Fernando, A.C., (2009), Business Ethics, 1st edition, Pearson education.
- Hartman,Laura and Chatterjee, Abha, (2006), Perspectives in Business Ethics, 3rd Edition, McGraw Hill Education.
- Dr.F.C.Sharma, Business Values & Ethics – Shree Mahavir Book Depot, Nai Sarak, New Delhi.
- C.S.V Murthy – Business Ethics, Himalya Publishing House.
- Shina Parkashan – Managerial Ethics – Rajat Publications.
- C.L.Dave – Social Accounting – Renuka Publishers, Jodhpur

Mapping of CO'S and PO'S

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	M	M	M	L		M	M					
CO2		M	M						H	M	M	M
CO3		M	M	M	H	M	M	H				
CO4					1		M	M	M	M		M
CO5	H	H	H	H	H	H	H	H	H	H	H	H

FINANCIAL MARKETS AND SERVICES

Paper COM-601

LTPC

4 0 0 4

(40 Hours)

Objectives

The focus in this paper would be on issues related to the financial markets & instruments along with different financial services and current scenario of Indian financial system & markets. This paper provides an introduction to the financial markets products and services, markets and market participants. The objective of this course is to familiarize the student with the operations of Indian financial markets and basic concepts of different financial services along with the banking system.

Course Learning Outcomes

CLO1) Analyze various financial instruments and their characteristics, including stocks, bonds, derivatives, and commodities, to make informed investment decisions.
CLO2) Evaluate the impact of economic indicators, central bank policies, and geopolitical events on financial markets and their implications for portfolio management.
CLO3) Develop a comprehensive understanding of risk management techniques and strategies to protect and optimize investment portfolios in volatile markets.
CLO4) Demonstrate proficiency in financial analysis tools and techniques to assess the financial health and performance of corporations and investment opportunities.
CLO5) Examine the regulatory framework governing financial markets and services, including the role of government agencies, and assess their impact on market stability and investor protection.

Content

Unit I: Introduction to the Financial System (8 HOURS)

Nature and role of financial system, financial system and financial markets, government intervention in the financial system, informal and formal financial system, components of formal financial system- institutions, intermediaries, markets and services, functions and weaknesses of Indian Financial System.

Unit II: Introduction to Financial Markets (8 HOURS)

Money market and Capital market, money market instruments- T Bills, CPs & CDs. Capital Market-primary and secondary, methods of raising capital, Derivative concepts, Role of SEBI.

Unit III: Introduction to Financial services (8 HOURS)

Fund based and Fee based service. Conceptual aspect of factoring, forfeiting, credit rating, bill discounting, leasing, securitization and consumer finance. Evaluation of strategic decisions regarding factoring, leasing and merger & acquisitions.

Unit IV: Insurance and Mutual funds (8 HOURS)

Basic concepts of insurance and mutual funds, role of IRDA and AMFI

Unit V: Introduction to Banking (8 HOURS)

An overview of the different activities performed by a bank. Retail Banking: Concepts, forms and products of retail banking. Corporate Banking: meaning, nature, functions and products.

Recommended books:

- "Financial Markets and Services" E. Gordon & K. Natarajan, Himalaya Publishing House

Reference books:

- "Financial Markets, Institutions and Financial Services" Clifford Gomez, Prentice Hall of India
- "Financial Markets and Institutions-An Introduction to the Risk Management Approach" A. Saunders & M. M. Cornett. Tata McGraw Hills Publication
- "Indian Financial System" Bharti Pathak, Pearson Education.
- "Financial Institutions and Markets- structure, growth and innovations" L. M. Bhole & Jitendra Mahakud. Tata McGraw Hills Publication

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	L	L	L	L	L	L	L	L	H	M	L
CO2	M	L	L	L	L	L	L	L	L	M	M	L
CO3	L	L	L	L	L	L	L	L	L	L	L	L
CO4	M	L	L	L	L	L	L	L	L	M	L	L
CO5	L	L	L	L	L	L	L	L	L	L	L	L

INDUSTRIAL RELATIONS

Paper COM-601

LTPC

4 0 0 4

(40 Hours)

Objective:

To acquaint the student to develop an understanding of the industrial relations and the legal framework of industrial and labor laws. The objective of this course is to impart the students with the knowledge of laws and how law affects the industry and labor.

Course Learning Outcomes

CLO1) Analyze the historical development and evolution of industrial relations, tracing the key milestones and shifts in labor-management dynamics.
CLO2) Evaluate the impact of labor laws and regulations on workplace relations, including the ability to interpret and apply relevant legal frameworks.
CLO3) Demonstrate proficiency in negotiation and conflict resolution techniques within the context of labor disputes, fostering effective communication and problem-solving skills.
CLO4) Assess the role of labor unions and employer organizations in shaping industrial relations, including their functions, structures, and strategies.
CLO5) Examine contemporary issues in industrial relations, such as globalization, technological advancements, and diversity, and their effects on workforce dynamics and service delivery.

Curriculum

Unit I (8 Hours)

- Industrial Relations- Definition, importance and scope.
- ILO, Ministry of Labor, Commissions, National Conferences.

Unit II (8 Hours)

- Workers Participation in Management- Concept, forms of participation, benefits, of WPM.
- Trade Union Act.

Unit III (8 Hours)

- Service Conditions
- The Factories Act, 1948.
- Work Discipline, Standing Order Act.

Unit IV (8 Hours)

- Industrial Disputes- Nature, Causes, Types of conflict Resolution, Collective Bargaining.
- Industrial Dispute Act, 1946

- Strike & lockout, Lay-off and Retrenchment
- Grievance Redressal Machinery

Unit V (8 Hours)

- The Contract Labor (Regulation & Abolition Act, 1970.
- Payment of Wages Act.

Recommended Book:

- P. N. Singh, Neeraj Kumar, Employee Relations Management, Pearson.
- P.L. Malik, Handbook of Labour and Industrial Law, 5e, Eastern Book Company.

Reference Books:

- S. P. Jain, Industrial & labour laws.
- Kochan T.A. & Katz Henry 2nd, Collective Bargaining.
- P.C.Shejwalkar,S.B.Malegaonkar, Personnel Management & Industrial Relations.
- P. C. Tripathi, Industrial Relations and Personnel Management.

Mapping of CO'S and PO'S

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	L	L	L	L	L	L	L	L	L	L	H
CO2	L	M	L	L	L	L	L	L	L	L	L	H
CO3	L	H	L	M	L	L	M	L	L	L	L	L
CO4	L	L	L	L	L	L	L	L	L	L	L	L
CO5	L	L	L	L	L	L	L	L	L	L	L	L

PERFORMANCE MANAGEMENT
Paper COM-602

LTPC
4 0 0 4

(40 HOURS)

Objective

To acquaint the student to develop an understanding of the performance management of employees and its implications. Study of performance management that aid in motivation, employee development and productivity improvement to meet organization goals.

Course Learning Outcomes

CLO1) Demonstrate an understanding of performance management principles and frameworks, including key concepts such as goal setting, feedback, and performance appraisal.
CLO2) Analyze and evaluate various performance management systems and tools used in organizations to measure employee performance and provide recommendations for improvement.
CLO3) Develop effective communication and feedback skills to facilitate productive performance discussions and address performance issues constructively.
CLO4) Identify and apply strategies for aligning individual and team goals with organizational objectives, fostering a culture of performance excellence.
CLO5) Create and implement performance improvement plans to enhance individual and team performance, utilizing data-driven decision-making and performance metrics.

Curriculum

Unit I

Introduction to Performance Management, Definition, nature, scope, importance, Business and sub functional Performance Management, Performance Management as a management Tool, Performance objectives and standards, Standards of Performance. Performance Domains and dimensions.

Unit II

Performance Planning Process, Contents of Performance Plan, 8 Step Model, Individual and Group Performance Planning, Role clarity and Job description.
Meaning of Performance appraisal, methods and approaches to performance appraisal, Obstacles in appraisal, Designing appraisal for better results, Performance Appraisal Interview, Potential Appraisal.

Unit III

Introduction, Definition, Purpose and Role of appraisal in Performance Management, Methods and Steps in Performance Appraisal. Why Appraisal Fail, Types of Appraisal, Approaches and Design, MBO, 360*, Potential Appraisal, Performance Review, Performance counseling/ Mentoring. Team Performance Appraisal.

Unit IV

Introduction to PMS, Importance, Features, Process of Building PMS, PMS Dimensions, Conceptual Framework. 4 pillars of PMS, PMS Prism, Strategic Performance Management, Performance and Strategy linkage, Components of SPM, SPM- Balanced Score Card, SPM

and Metrix, SPM Environment teatre and Risks.

Unit V

Competency Based Performance Management System, Performance Measurement, Performance Measurement through BSC, Performance and Succession Plan/ Career Development, International Performance Management, Performance Audit, Human Resource Valuation accounting and Audit.

Recommended Book:

- D. K. Bhattacharya, Performance Management Systems and Strategies- Text book, Pearson.

Reference Books:

- Aquinis, Performance Management, Pearson.
- Chadha, Performance Management, Macmillan.
- Armstrong, Michael, Baron, Jaico, Performance Management.
- Cardy, Performance Management, PHI.
- Kohli, Deb, Performance Management, Oxford.
- D Sharma, Performance Management, HPH.
- R.K. Sahu, Performance Management System, EB.
- TV Rao, Performance Management and Appraisal, Sage.

Mapping of CO'S and PO'S

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	H	M	L	L	H	L	M	L	L	L	H	M
CO2	M	L	L	H	H	L	L	H	H	M	H	M
CO3	M	H	L	L	H	L	H	L	H	M	H	M
CO4	H	M	L	M	H	L	L	L	L	L	H	L
CO5	M	L	L	L	H	L	L	L	L	L	H	L

GOODS AND SERVICES TAX (GST)
Paper COM-602

LTPC
4 0 0 4

Course Objective

To provide basic knowledge and equip students with application of principles and provisions of GST, Central Excise, and Customs Laws. Expected learning outcome: Students will gain a working knowledge regarding computation of tax liability pertaining to these laws.

Course Learning Outcomes

CLO1) Demonstrate a comprehensive understanding of the GST framework, its principles, and its significance in the context of taxation and economic policies.
CLO2) Analyze the various components of GST, including Input Tax Credit (ITC), tax rates, exemptions, and threshold limits, and apply this knowledge to calculate GST liabilities and refunds accurately.
CLO3) Evaluate the impact of GST on businesses and consumers, assessing its implications on pricing, supply chains, and compliance requirements.
CLO4) Interpret and navigate the GST legal and regulatory framework, including the GST Act, rules, and procedures, to ensure compliance and minimize the risk of penalties.
CLO5) Develop effective strategies for GST compliance and optimization, enabling businesses to streamline their operations, minimize tax liabilities, and enhance their competitive advantage in the marketplace.

Curriculum

Unit I: Introduction of Indirect Tax

- Historical background of Indirect Tax in India.
- Introduction of GST Act in India,
- Commodities not falling under GST in India and Provision of tax on the same.
- Computation of tax on such commodities.

Unit II: GST

- Recognize the applicability of SGST, CGST and IGST,
- Define the concept of supply, Differentiate between taxable and nontaxable supply, Define the taxable event with respect to supply of goods,
- Identify the place of supply so as to decide the applicability of the tax, Define what is meant by the location of supplier of goods.

Unit III: GST

- List down the registration process for single or separate business, Goods and Services Tax (GST) Accounts Assistant, Note down the details to be furnished during the registration, Differentiate between taxable person verses registered person,
- Understand the benefits of registration, Register an Assessee under GST Independently.

- Identify instances for eligibility of input credit, Identify set-offs under GST wherever applicable.
- Identify in detail carry over credit, capital goods credit, embedded credits etc, Differentiate between consideration and valuation.

Unit IV: Customs laws

- Maintain the different types of ledgers, Prepare different types of periodic returns to be filed, File Returns Online, List the different types of payment, due dates, modes of payment with rules and collection of tax, penalties etc.,
- Differentiate on TDS versus, Calculate the amount of tax payable, Make the payment online.
- Basic concepts of customs law, Territorial waters, high seas
- Types of custom duties
- Basic, Countervailing & Anti- Dumping Duty, Safeguard Duty,
- Valuation of Custom Duty.

Unit V: Customs Procedures

- Import and Export Procedures, Baggage, Exemptions
- Provision related to Prohibited goods, Notified goods, Special goods, illegal importation/exportation of goods .
- Search, Seizer, and Arrest; Offences; Penalties; Confiscation and Prosecution.

Reference books:

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- GST Law Manual 4th Edition (November 18, 2017) Paperback – 2017 by R. K. Jain
- GST Tariff (Set of 2 Volumes) with GST Rate Reckoner Paperback – 2017 by Taxmann (Author)
- GST Acts with Rules & Forms(Incorporating Notifications Issued till 17-11-2017) (Bare Act) Paperback – 2017 by Taxmann (Author)
- V.S. Datey. Indirect Tax Law and practice, Taxmann Publications Pvt. Ltd., Delhi, Latest edition
- S. S. Gupta. Service Tax -How to meet your obligation Taxmann Publications Pvt. Ltd., Delhi, Latest edition.

Mapping of CO'S and PO'S

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	M	M	L	L	H	L	M	L	H	H	H	M
CO2	M	L	L	H	H	L	L	H	H	H	H	M
CO3	H	H	L	L	H	L	H	L	H	M	H	M
CO4	H	M	L	M	H	L	L	L	L	L	H	L
CO5	H	H	H	H	H	H	H	H	H	H	H	H

CONSUMER AFFAIRS AND CUSTOMER CARE

Paper COM-602

LTPC

4 0 0 4

Course Objective:

This paper seeks to familarise the students with Basics of consumer affairs and behaviours their rights as a consumer, the social framework of consumer rights and legal framework of protecting consumer rights. The firm needs to know who buys their product. How they buy? When and where they buy? Why they buy? How they respond to marketing stimuli. What is Consumer Behavior about? How, why, where and when consumers make purchase decisions? Considers who influences the decisions? What is Consumer Behavior about?

It also provides an understanding of the procedure of redress of consumer complaints, and the role of different agencies in establishing product and service standards.
All these are important questions, which are to be known to the students and companies so that they can design, and implement marketing strategies to satisfy the customers.

Course Learning Outcomes

CLO1) Students will demonstrate an understanding of consumer rights and responsibilities in various industries and legal frameworks.
CLO2) Learners will develop effective communication and interpersonal skills to engage with customers professionally and empathetically.
CLO3) Participants will analyze case studies and real-world scenarios to identify common consumer issues and implement appropriate resolution strategies.
CLO4) Students will explore the impact of technology on consumer interactions, including online reviews, social media, and e-commerce platforms.
CLO5) Learners will gain knowledge of ethical considerations and best practices in customer service, promoting customer satisfaction and loyalty.

Unit 1: Conceptual Framework: Consumer affairs and Behaviour
Consumer and Markets: Concept of Consumer, Nature of markets, Concept of Price in Retail and Wholesale, Maximum Retail Price (MRP) and Local Taxes, Fair Price, labeling and packaging Experiencing and Voicing Dissatisfaction: Consumer Satisfaction/dissatisfaction-Grievances complaint, Consumer Behavior and its Application, Development of the Marketing Concept'. A Model of Consumer Decision Making.
STP Process and strategies, A Simple Frame work of CB, Consumer Behavior Roles.
Unit 2: Consumer Decision:
Dynamic Process of CB, Pre- purchase, purchase and post-purchase issues of Consumers and challenges to marketers.
Individual Decision Making, Buying and Disposing, Organizational and Household Decision Making

Unit 3: Factors Influencing Consumer Behavior:
Family Influence on CB, Family Life Cycle, Cultural and social influence on Consumer decision making process, Reference Groups and Social Influences.
Unit 4: The Consumer Protection Act, 1986 (CPA) & Grievance Redress Mechanism under the Consumer Protection Act, 1986:
Objectives and Basic Concepts: Consumer, goods, service, defect in goods, deficiency in service, spurious goods and services, unfair trade practice, restrictive trade practice.
Who can file a complaint? Grounds of filing a complaint; Limitation period; Procedure for filing and hearing of a complaint; Disposal of cases, Relief/Remedy to be be provided; Temporary Injunction, Enforcement of order, Appeal, frivolous and vexatious complaints; Offences and penalties.
Unit 5: Industry Regulators and Consumer Complaint Redress Mechanism

i. Banking: RBI and Banking Ombudsman
ii. ii. Insurance: IRDA and Insurance Ombudsman
iii. iii. Telecommunication: TRAI
iv. iv. Food Products: FSSAI (an overview)
v. v. Electricity Supply: Electricity Regulatory Commission
vi. vi. Advertising: ASCI
vii. Consumer Protection in India

Reference Books:

1. Hawkins, Best, Coney, Consumer Behavior, (Latest Edition) Tata McGraw Hill
2. David L Loudon and Albert J Della Bitta, Consumer Behaviour (Latest Edition), Tata McGraw Hill.
3. Roger D. Black Well et al, Consumer Behaviour, Thomson, (Latest Edition)

Suggested Readings:
1. Khanna, Sri Ram, Savita Hanspal, Sheetal Kapoor, and H.K. Awasthi. Consumer Affairs" (2007) Delhi University Publication. 334 pp.
2. Aggarwal, V. K. (2003). Consumer Protection: Law and Practice. 5th ed. Bharat Law House, Delhi, or latest edition.
3. Girimaji, Pushpa (2002). Consumer Right for Everyone Penguin Books.
4. Nader, Ralph (1973). The Consumer and Corporate Accountability. USA, Harcourt Brace

Jovanovich, Inc.
5. Sharma, Deepa (2011).Consumer Protection and Grievance-Redress in India: A Study of Insurance Industry (LAP LAMBERT Academic Publishing GmbH & Co.KG, Saarbrucken, Germany. 263 pp.
6. Empowering Consumers e-book, www.consumeraffairs.nic.in
7. ebook, www.bis.org 8. The Consumer Protection Act, 1986

Articles

1. Verma, D. P. S. (2002). Developments in Consumer Protection in India. Journal of Consumer Policy. Vol. 25. No. pp 107 –123.
2. Verma, D.P.S. (2002). Regulating Misleading Advertisements, Legal Provisions and Institutional Framework. Vikalpa. Vol. 26. No. 2. pp. 51-57.
3. Ralph L. Day and Laird E. Landon, Jr. (1997). Towards a Theory of Consumer Complaining Behaviour. Ag Woodside, et al. (eds.). Consumer and Industrial Buying Behaviour. New York; North Holland pp. 425-37.
4. George, S. Day and A. Aaker (1970). A Guide to consumerism. Journal of Marketing. Vol. 34. pp 12-19.
5. Sharma, Deepa (2003).New measures for Consumer Protection in India. The Indian Journal of Commerce. Vol.56. No.4. pp. 96-106
6. Sharma, Deepa (2011).Consumer Grievance Redress by Insurance Ombudsman. BIMAQUEST.Vol.11. pp.29-47.

Mapping of CO'S and PO'S

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	M	H	L	H	H	L	M	L	L	H	H	M
CO2	M	H	L	H	H	L	L	H	L	H	H	M
CO3	H	H	L	H	H	L	H	L	M	M	H	M
CO4	H	H	L	H	H	L	L	L	L	L	H	L
CO5	H	H	H	H	H	H	H	H	H	H	H	H

INTERNATIONAL BUSINESS

Paper COM-603

LTPC

4 0 0 4

(40 Hours)

Course Learning Objective (CO):

CO1: To Create an environment of learning the basic concepts of International Business.

CO2: To Apply the knowledge gained in studying the Organizational Structure for Global business,

CO3: To Understand the Indian export documentation Process.
CO4: To Analyze the implications of global trade for India.

Course Learning Outcomes (CLOs): On completion of this course, the students will be able to:

CLO1: Understand the basic concepts of International Business. **Apply** the trends of global business and its impact on different economies. **Analyze** the impact of government policies in relation to the other developed economies of the world.

CLO2: Remember the trends of business around the world, **Understand** the role of international organizations in impacting the growth of business. **Analyze** the trade figures and to Evaluate the future expectations.

CLO3:Evaluate and Contrast between domestic and international markets. **Apply** the advantage of gaining knowledge of international markets to grow the national markets. **Analyze** the different types of international market intermediaries around the world

CLO4: Understand the role of international financial organization. **Evaluate** the concept of different marketing concept., **Analyze** the role of government and the basic structure of international business along with its organization to boost the business from the country.

Unit I (8 Hours)

Introduction to International Business: Globalization and its growing importance in world economy; Impact of globalization; International business contrasted with domestic business - complexities of international business; Modes of entry into international business. International Business Environment: National and foreign environments and their components - economic, cultural and political-legal environments; Global trading environment - recent trends in world trade in goods and services; Trends in India‟s foreign trade.

Unit II (8 Hours)

Theories of International Trade – an overview; Commercial Policy, Instruments - tariff and non-tariff measures; Balance of payment account and its components .International Organizations and Arrangements: WTO – Its objectives, principles, organizational structure and functioning; An overview of other organizations – UNCTAD, World Bank and IMF; Commodity and other trading agreements.

Unit III (8 Hours)

Regional Economic Co-operation: Forms of regional groupings; Integration efforts among countries in Europe, North America and Asia. International Financial Environment: International financial system and institutions; Foreign exchange markets and risk management; Foreign investments - types and flows; Foreign investment in Indian perspective.

Unit IV (8 Hours)

Organizational structure for international business operations; Key issues involved in making international production, finance, marketing and human resource decisions; International business negotiations. Developments and Issues in International Business: Outsourcing and its potentials for India; Strategic alliances, mergers and acquisitions; Role of IT in international business; International business and ecological considerations.

Unit V (8 Hours)

Foreign Trade promotion measures and organizations in India; Special economic zones (SEZs) and 100% export-oriented units (EOUs); Measures for promoting foreign investments into and from India; Indian joint ventures and acquisitions abroad. Financing of foreign trade and payment terms.

Recommended Books:

- Charles, W.L. Hill and Jain, Kumar, Arun. International Business. New Delhi: Tata McGraw-Hill.

Reference Books:

- Johnson, Derbe., and Colin Turner. International Business - Themes & Issues in the Modern Global Economy. London: Roultedge.
- Cherunilam, Francis. International Business: Text and Cases. Prentice Hall of India Ltd.
- Daniels John, D. Lee H. Radenbaugh and David P. Sullivan. International Business. Pearson Education (Singapore) Pvt. Ltd.
- Justin, Paul. International Business. Prentice Hall of India Ltd.
- Michael R. Czinkota. et al. International Business. Fortforth: The Dryden Press.
- RBI. Report on Currency & Finance, various issues.
- Griffin, Ricky W. and Michael W. Pustay. International Business - A Managerial Perspective. Prentice Hall.

- Bennett, Roger. International Business. Delhi: Pearson.
- UNCTAD Reports.
- WTO, Annual Report, various issues.

Mapping of CLOs with PLOs & PSOs

Course Learning Outcomes	Program Learning Outcomes (PLOs)												Program Specific Outcomes (PSOs)		
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12	PSO1	PSO2	PSO3
CLO1	H	M	M	M	H	M	H	M	H	H	M	M	H	M	M
CLO2	H	M	M	M	H	M	H	M	H	H	M	M	H	M	M
CLO3	H	M	M	M	H	M	H	M	H	H	M	M	H	M	M
CLO4	H	M	M	M	H	M	H	M	H	H	M	M	H	M	M

H: High M: Medium L: Low

OPERATION MANAGEMENT
Paper COM-604

Course Obectives

CO1) To Explain an understanding of how the operations, have strategic importance and can provide a competitive advantage in the workplace and techniques of location and facility planning.

CO2) To provide students with the basic concepts related to the Work Study, Method Study and Work Measurement.

CO3) To Illustrate the Materials Management function starting from Demand Managementthrough Inventory Management.

CO4) To explain the concept and core values of Quality Management (QM).To Determine the voice of the customer and the impact of quality on economic performance and long-term businesssuccess of an organization.

Course Learning Outcomes (CLOs): On completion of this course, the students will be able to:

CLO1) To identify the elements of operations management and various transformation processesto enhance productivity and competitiveness. Explain the techniques of location and facility planning.

CLO2) To Analyze and Make use of various methods of work study, method study and work measurement.

CLO3) To define and examine the materials management function starting from demand management through Inventory Management.

CLO4) Apply various Statistical Quality Control tools including the analysis of various Quality costs and quality circles. Explain the concept of TQM.

Unit-I:

Operations management - meaning, definitions, scope and objectives- interaction of operations management with other areas - manufacturing and non-manufacturing operations and
their characteristics.

Unit-II:

Facilities planning - plant location - factors determining plant location - plant layout— process layout and product layout - materials handling – MRP - Principle equipment's.

Unit-III:

Capacity planning - estimation of capital requirements - maintenance management— types of maintenance -work study - time and method study - work measurement, meaning, scope
and importance.

Unit-IV:

Operations planning and control - Objectives of Operations planning— planning procedure - Operations planning categories.

Unit-V:

Operations control - Meaning, Importance and objectives - Techniques of operations control.

References:

1. Russell, Roberta S, and Bernard W.Taylor, Operations Management, Pearson Education, New

Delhi 2004.
2. Chase :Operations Management for Competitive Advantage, Tata McGraw Hill, New Delhi.
3. Buffa, E.S., 'Modern Production Management', New York, John Wiley, 1987.
4. Adam, E.E. and Ebert, R.J., 'Production and Operations Management' Prentice Hall of India, New Delhi 1995.
5. Chary, S .N., Production and Operations Management', Tata McGraw Hill, New Delhi 1989

Mapping of CLOs with PLOs & PSOs

Course Learning Outcomes	Program Learning Outcomes (PLOs)												Program Specific Outcomes (PSOs)		
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11	PLO12	PSO1	PSO2	PSO3
CLO1					H				H		H	H		M	M
CLO2	H		H	H	M				M				H	H	H
CLO3			M		H					H		H	L	M	M
CLO4	H		M											M	H
CLO5	M			H								H	M	M	H

H: High M: Medium L: Low

RESEARCH PROJECT REPORT

Paper COM-605

LTPC

0 0 0 6

Objective

Student has to undergo a practical training of minimum forty five days after second semester. B.COM being professional course it is essential for each student to practically apply or

understand theoretical concepts what he/she learn during the course. During the training programme student is expected to collect vital information through internal and external source so as to reach concrete conclusions on the given subject. Student has to prepare the project report under the guidance of internal teacher. Director/Principal of the institution/college will decide the last date of submission of final copy. Student should submit two typed copies to the Institute. One copy for the institute and another copy for his/her personal record. Students may prepare additional copies for the organization, guide etc.

A viva-voce examination will be conducted before the Semester IV examination. A viva-voce committee of minimum two members will be appointed by the university.

Guidelines for the project report

Declaration from the student that the research work is not copied from any other existing reports. Certificate of the guide.- Guide should certify that the research work is original and completed satisfactorily under his guidance.

The Chapter scheme for the project report will be as follows-.

CHAPTER NO-I – Introduction to the study.

1.1 Introduction
1.2 Objectives and importance of the study
1.3 Scope and limitations of study
1.4 Research Methodology

CHAPTER NO.II – Introduction to the organisation

2.1 Introduction to the industry
2.2 Brief History of organisation
2.3 Subsidiaries, Associates of the company
2.4 Departments / Manufacturing process
2.5 Important statistical information
2.6 Future prospect
2.7 Organisation Structure

CHAPTER – III - Theoretical Background

Basic concepts
Necessary theoretical inputs may be added to support the research work.

CHAPTER –IV – Data Analysis and Interpretation

Data should be analyzed with help of various tools studied in the Subject "Application of Research Methods in Management".

CHAPTER-V Findings / Observations

CHAPTER VI- Suggestions / Conclusion

Appendix

Questionnaire / Charts / Data / Diagrams / Tables / etc.

Bibliography

The above guidelines are not the prescription on writing the project report but can be used as milestones while writing the Project Report. The guide has the every discretion to change the chapter scheme as per the requirement

Note

1. There should be proper linkage between objectives, data analysis and interpretation, findings and suggestions.
2. Student should not use logos and name of company on the project report pages. Header and Footer shall consist of university name and institute name respectively. No other information should be included in the Header and Footer.
3. Use of colors in text matter should be avoided.

Raffles University, Neemrana
Alabbar School of Management

Master of Commerce (M. COM.)
Session: 2022-23

Description of the Course

The program Master of Commerce (M. Com.) entails a total of 80 spread over two years in 4 semesters. The program total credit is distributed as 20 credit scores in each of the four semesters.

The first year called part-I is divided in two semesters (Semester I and II) consists of 5 general/core courses in each semester. The second year is also divided in two semesters (Semester III and IV) consists of 2 general/core courses along with 2 major and 1 minor courses from the list of elective groups.

The programme shall be governed by the Alabbar School of Management, Raffles University, Neemrana-301705.

- There will be 4 lecture hours of teaching per week for each paper.
- Duration of examination of each paper shall be 3 hours.
- Each paper will be of 100 marks out of which 20 marks shall be allocated for mid-term exam, 40 marks for end-term semester exam and 40 marks for internal assessment.

Total courses to be cleared by a candidate:

Type of courses	**No. of Courses**
Core course	14
Specialization Course:	---
Major Group	4
Minor Group	2
Skill Course	1
Total	**21**

Specialization Area / Elective Groups:

Major Groups	**Minor Groups**

• Group A: Finance	• Group A: Taxation
• Group B: Marketing	• Group B: Law
• Group C: Human Resource Management	• Group C: Accounting
	• Group D: International Business

Admission eligibility criterion to the program:

- Candidate having minimum three-year Bachelor's Degree from a recognized University and fulfill the AICTE norms.
- Candidate who has appeared in the final year of the qualifying Examination, whose result is awaited, will be admitted provisionally by paying requisite fee for admission as per fee Schedule. Such candidate should produce their result by a cutoff date indicated at the time of admission failing which their admission will be cancelled.
- Regular admission will be done strictly on merit basis through an open Counseling conducted by the University. MAT/CAT/C-MAT Scores or any other common entrance Exam or the entrance test conducted by the University may be considered as merit for admission.
- Candidates should verify the requisite qualification and eligibility criteria before applying for admission.
- In case the total admitted candidates to the Program are less than 10% of number of seats declared available for the Program at the time of admission, the University through its Academic Council reserves the right to cancel all the admissions to the Program and discontinue the program.
- Candidate has to be declared medically fit by a Resident Medical Officer (RMO) and should attach a fitness certificate along with the application.

Course Duration: Two Year (Four Semesters).

Programme Outcomes (PO) for M.Com.

PO No.	Upon completion of the M.Com. Degree programme, the graduates will be able to:
PO1	Acquire a comprehensive level of knowledge in the field of Commerce and gain wisdom in the art of business dealings.
PO2	Be aware of the higher values in undertaking Commercial ventures.
PO3	Develop a wide range of analytical skills in the light of the demands of market and industry.
PO4	Train themselves into great business leaders contributing to the growth of the Nation.
PO5	Cultivate potentials to find gainful employments and develop entrepreneurial zeal.

PO6	Foster a great deal of interest in research related to business or industry.

Programme Specific Outcomes (PSO) for M.Com.

PSO No.	Upon completion of M.Com. Degree programme, the graduates will be able to:
PSO1	Cultivate the broad knowledge of business namely, Financial, taxation, managerial, marketing and legal issues.
PSO2	Understand the business practices and principles relating to Financial, Cost, Management and Corporate Accounting
PSO3	Develop the skills required for Corporate Businesses, Professional Practices and Entrepreneurial initiatives.
PSO4	Be knowledgeable and skillful in launching independent enterprises in adherence to sound ethical values of business.
PSO5	Involve in socially relevant researches to solve complex problems in future business endeavours.

Master of Commerce (M. COM.)
Session: 2022-23
Course Structure

Part I: Semester I

SN	Paper Code	Course Title	Periods			Evaluation Scheme					Credits
			L	T	P	Sessional Exams			ETE	Total	
						MT	TA	Total			
1	MCOM-101	Organisational Theory and Behaviour	4	0	0	20	40	60	40	100	4
2	MCOM-102	Business Statistics and Analytics for Decision Making	4	0	0	20	40	60	40	100	4
3	MCOM-103	Managerial Accounting	4	0	0	20	40	60	40	100	4
4	MCOM-104	Financial Planning	4	0	0	20	40	60	40	100	4
5	MCOM-105	Managerial Economics	4	0	0	20	40	60	40	100	4
Total										**500**	**20**

List of Course offered in M.Com Semester I

Sl.No.	Subject Title	Subject Code
1	Organizational Theory and Behaviour	MCOM-101
2	Business Statistics and Analytics for Decision Making	MCOM-102
3	Managerial Accounting	MCOM-103
4	Financial Planning	MCOM-104
5	Managerial Economics	MCOM-105

Code	**MCOM-101**				
Title	**ORGANISATIONAL THEORY AND BEHAVIOUR**				
Degree	M.Com.	**Year**	I	**Hours per Week**	4
Branch(s)	Commerce	**Type**	Core	**Hours per Semester**	45
Semester	I	**Credit**	4	**Hours per Unit**	9

CO. No.	Upon completion of the course, the students will be able to:

CO1	Understand organizational dynamics
CO2	Understand theories of motivation and leadership
CO3	Gain insights into team dynamics and communication
CO4	Develop decision making and problem solving
CO5	Understand factors affecting employee engagement and job satisfaction

Code	**MCOM-102**				
Title	**BUSINESS STATISTICS AND ANALYTICS FOR DECISION MAKING**				
Degree	M.Com.	**Year**	I	**Hours per Week**	4
Branch(s)	Commerce	**Type**	Core	**Hours per Semester**	45
Semester	I	**Credit**	4	**Hours per Unit**	9

CO. No.	**Upon completion of the course, the students will be able to:**
CO1	Understand statistical concept
CO2	Understand data collection and management
CO3	Comprehend descriptive analytics
CO4	Understand and apply regression analysis
CO5	Explore data analysis

Code	**MCOM-103**				
Title	**MANAGERIAL ACCOUNTING**				
Degree	M.Com.	**Year**	I	**Hours per Week**	4
Branch(s)	Commerce	**Type**	Core	**Hours per Semester**	45
Semester	I	**Credit**	4	**Hours per Unit**	9

CO. No.	**Upon completion of the course, the students will be able to:**
CO1	Understand managerial accounting principles
CO2	Analyse classification of cost analysis
CO3	Understand budgeting and planning of organizational activities
CO4	Comprehend product costing and pricing strategies

CO5	Analysis of cost-volume Profit method

Code	**MCOM-105**				
Title	**FINANCIAL PLANNING**				
Degree	M.Com.	**Year**	I	**Hours per Week**	4
Branch(s)	Commerce	**Type**	Core	**Hours per Semester**	45
Semester	I	**Credit**	4	**Hours per Unit**	9

CO. No.	**Upon completion of the course, the students will be able to:**
CO1	Understand financial planning principles
CO2	Comprehend assessment of risk management
CO3	Analyse investment planning
CO4	Understand tax laws and regulations
CO5	Comprehend debt management and credit planning

Code	**MCOM-106**				
Title	**MANAGERIAL ECONOMICS**				
Degree	M.Com.	**Year**	I	**Hours per Week**	4
Branch(s)	Commerce	**Type**	Core	**Hours per Semester**	45
Semester	I	**Credit**	4	**Hours per Unit**	9

CO. No.	**Upon completion of the course, the students will be able to:**
CO1	Understand economic fundamentals
CO2	Analyse cost and production decisions
CO3	Analyse market and price strategies
CO4	Understand marginal analysis and decision making
CO5	Comprehend forecasting and demand estimation

MCOM- 101	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3					
CO2			3			
CO3			2	3		
CO4					3	
CO5	2				2	3
MCOM- 102	PO1	PO2	PO3	PO4	PO5	PO6
CO1	2		3			
CO2	3		3			
CO3	3		3			
CO4	3		3		2	
CO5	2		3		2	
MCOM-103	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3					
CO2			2			
CO3	3					
CO4						
CO5			2			

MCOM-104	PO1	PO2	PO3	PO4	PO5	PO6
CO1	2					
CO2	2					
CO3	2		3			
CO4	2					
CO5	2		3			

MCOM-105	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3		3			
CO2	3		3			
CO3	3		3			
CO4	2		3			
CO5	2		3			

Part I: Semester II

SN	Paper Code	Course Title	Periods			Evaluation Scheme					Credits
			L	T	P	Sessional Exams			ETE	Total	
						MT	TA	Total			
1	MCOM-201	Operations research	4	0	0	20	40	60	40	100	4
2	MCOM-202	Financial management	4	0	0	20	40	60	40	100	4

		and Policy									
3	MCOM-203	Marketing Management	4	0	0	20	40	60	40	100	4
4	MCOM-204	Legal Aspects of Business	4	0	0	20	40	60	40	100	4
5	MCOM-205	International Business	4	0	0	20	40	60	40	100	4
Total										**500**	**20**

Code	**MCOM-201**				
Title	**OPERATION RESEARCH**				
Degree	M.Com.	**Year**	I	**Hours per Week**	4
Branch(s)	Commerce	**Type**	Core	**Hours per Semester**	45
Semester	II	**Credit**	4	**Hours per Unit**	9

CO. No.	**Upon completion of the course, the students will be able to:**
CO1	Understand research principles
CO2	Comprehend design and plan of research
CO3	Explore literature review and its synthesis
CO4	Understand data collection method
CO5	Determine sampling techniques and sample size

Code	**MCOM-202**				
Title	**FINANCIAL MANAGEMENT AND POLICY**				
Degree	M.Com.	**Year**	I	**Hours per Week**	4
Branch(s)	Commerce	**Type**	Core	**Hours per Semester**	45
Semester	II	**Credit**	4	**Hours per Unit**	9

CO. No.	**Upon completion of the course, the students will be able to:**
CO1	Understand financial statement and analysis
CO2	Evaluate capital budgeting and investment analysis
CO3	Understand cost of capital and capital structure
CO4	Comprehend working capital management

CO5	Comprehend financial planning and forecasting

Code	**MCOM-203**				
Title	**MARKETING MANAGEMENT**				
Degree	M.Com.	**Year**	I	**Hours per Week**	4
Branch(s)	Commerce	**Type**	Core	**Hours per Semester**	45
Semester	II	**Credit**	4	**Hours per Unit**	9

CO. No.	**Upon completion of the course, the students will be able to:**
CO1	Understand marketing fundamentals
CO2	Comprehend consumer behaviour analysis
CO3	Explore market research and analysis
CO4	Understand product development and management
CO5	Comprehend pricing strategies and tactics

Code	**MCOM-204**				
Title	**LEGAL ASPECTS OF BUSINESS**				
Degree	M.Com.	**Year**	I	**Hours per Week**	4
Branch(s)	Commerce	**Type**	Core	**Hours per Semester**	45
Semester	II	**Credit**	4	**Hours per Unit**	9

CO. No.	**Upon completion of the course, the students will be able to:**
CO1	Understand legal systems and sources
CO2	Comprehend business structure and formation
CO3	Explore contract law and negotiations
CO4	Understand intellectual property and innovation
CO5	Explore employment and labour law

Code	**MCOM-205**				
Title	**INTERNATIONAL BUSINESS**				
Degree	M.Com.	**Year**	I	**Hours per Week**	4
Branch(s)	Commerce	**Type**	Core	**Hours per Semester**	45
Semester	II	**Credit**	4	**Hours per Unit**	9

CO. No.	Upon completion of the course, the students will be able to:
CO1	Understand global business environment
CO2	Analyze cross cultural awareness and communication
CO3	Comprehend global market entry strategies
CO4	Analyze international trade and investment
CO5	Understand global supply chain management

MCOM- 201	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3		3			3
CO2	3		3			3
CO3	3					3
CO4	2		3		2	2
CO5	2		3		2	2
MCOM- 202	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
CO1	3		2		2	
CO2	3		2			
CO3	2		3			
CO4	2		2			
CO5	2		2			
MCOM-203	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
CO1	3		2	3		
CO2	3		2			
CO3	3		2			
CO4	3		2			
CO5	3		2			

MCOM-204	PO1	PO2	PO3	PO4	PO5	PO6
CO1			2			3
CO2	2			3		
CO3			2		3	
CO4	2					3
CO5	2					

MCOM-205	PO1	PO2	PO3	PO4	PO5	PO6
CO1	2					
CO2			3			
CO3			3			
CO4			3			
CO5						2

Part II: Semester III

SN	Paper Code	Course Title	Periods			Evaluation Scheme					Credits
			L	T	P	Sessional Exams			ETE	Total	
						MT	TA	Total			
1	MCOM-301	Entrepreneurship	4	0	0	20	40	60	40	100	4
2	MCOM-302	Human Resource Management	4	0	0	20	40	60	40	100	4
3	MCOM-303	Teaching Learning Practices	0	0	4	0	50	0	0	50	2
4	-----	Major Group (Paper 1)	4	0	0	20	40	60	40	100	4
5	-----	Major Group (Paper 2)	4	0	0	20	40	60	40	100	4
6	------	Minor Group (Paper 1)	4	0	0	20	40	60	40	100	4
Total										**550**	**22**

List of Course offered in M.Com Semester III

Sl.No.	Subject Title	Subject Code
1	Entrepreneurship	MCOM-301
2	Human Resource Management	MCOM-302
3	Teaching Learning Practices	MCOM-303
4	Financial Institutions and Market	MJ301
5	Security Analysis and Portfolio Management System	MJ302
6	International Marketing	MJ311
7	Advertising And Sales Management	MJ312
8	Performance Appraisal and Evaluation	MJ321
9	Management of Industrial Relations	MJ322
10	Minor Group (Principles and practices of taxation and Indian tax system	MN331
11	Minor Group (Corporate Law)	MN341

12	Minor Group (Strategic Cost Management)	MN351
13	Minor Group (India's foreign trade and investment)	MN361

Code	MCOM-301				
Title	ENTREPRENEURSHIP				
Degree	M.Com.	Year	II	Hours per Week	4
Branch(s)	Commerce	Type	Core	Hours per Semester	45
Semester	III	Credit	4	Hours per Unit	9

CO. No.	Upon completion of the course, the students will be able to:
CO1	Acquire knowledge and techniques for successful entrepreneurship.
CO2	Efficiently plan, organise and execute a project or a new venture.
CO3	Gain more knowledge about subsidies and incentives provided by central and state governments.
CO4	Be informed about various institutions that promote entrepreneurships.
CO5	Understand more about self-help groups and their role in economic development.

Code	MCOM-302				
Title	HUMAN RESOURCE MANAGEMENT				
Degree	M.Com.	Year	II	Hours per Week	4
Branch(s)	Commerce	Type	Core	Hours per Semester	45
Semester	III	Credit	4	Hours per Unit	9

CO. No.	Upon completion of the course, the students will be able to:
CO1	Be an expert in Human resource management.
CO2	Effectively plan the Human Resource
CO3	Know the methods of Job analysis and evaluation.
CO4	Determine the appropriate training for the employees.
CO5	Promote better Industrial relations and understand the role of Trade Unions.

Code	MCOM-303				
Title	TEACHING LEARNING PRACTICES				
Degree	M.Com.	Year	II	Hours per Week	4

Branch(s)	Commerce	Type	Core	Hours per Semester	45
Semester	III	Credit	2	Hours per Unit	9

CO. No.	Upon completion of the course, the students will be able to:
CO1	Understand material and enhanced critical thinking skills
CO2	Understand increased participation
CO3	Application of knowledge in real world situations
CO4	Identifying student engagement and learning environment
CO5	Comprehend effective teaching for learning and lifelong curiosity

Code	MJ311				
Title	INTERNATIONAL MARKETING				
Degree	M.Com.	Year	II	Hours per Week	4
Branch(s)	Commerce	Type	Elective	Hours per Semester	45
Semester	III	Credit	4	Hours per Unit	9

CO. No.	Upon completion of the course, the students will be able to:
CO1	Study international marketing environment.
CO2	Market Indian Products at the global level.
CO3	Understand the International pricing strategy.
CO4	Identify the channels to sell products at the international level.
CO5	Analyse the global market complexities.

Code	MJ 301				
Title	FINANCIAL INSTITUTIONS AND MARKETS				
Degree	M.Com.	Year	II	Hours per Week	4
Branch(s)	Commerce	Type	Elective	Hours per Semester	45
Semester	III	Credit	4	Hours per Unit	9

CO. No.	Upon completion of the course, the students will be able to:

CO1	Know the concepts of Financial Services.
CO2	Understand the Merchant banking concept.
CO3	Gain knowledge about the instruments for financial services.
CO4	Be aware of the Leasing concepts.
CO5	Analyse the role of Mutual Funds in India.

Code	**MJ302**				
Title	**SECURITY ANALYSIS AND PORTFOLIO MANAGEMENT**				
Degree	M.Com.	**Year**	I	**Hours per Week**	4
Branch(s)	Commerce	**Type**	Core	**Hours per Semester**	45
Semester	III	**Credit**	4	**Hours per Unit**	9

CO. No.	**Upon completion of the course, the students will be able to:**
CO1	Assess the different avenues of investment.
CO2	Gain knowledge in Securities market.
CO3	Perform the fundamental financial analysis of an industry or a company.
CO4	Render technical analysis with the help of various scientific tools.
CO5	Know the concept of Portfolio Management.

Code	MJ312				
Title	ADVERTISING AND SALES MANAGEMENT				
Degree	M.Com.	Year	II	Hours per Week	4
Branch(s)	Commerce	Type	Elective	Hours per Semester	45
Semester	III	Credit	4	Hours per Unit	9

CO. No.	Upon completion of the course, the students will be able to:
CO1	Understand advertising principles
CO2	Comprehend sales management techniques
CO3	Analyse consumer behavior
CO4	Understand sales promotion strategies
CO5	Analyse market research

Code	MJ321				
Title	PERFORMANCE APPRAISAL AND EVALUATION				
Degree	M.Com.	Year	II	Hours per Week	3
Branch(s)	Commerce	Type	Elective	Hours per Semester	45
Semester	III	Credit	4	Hours per Unit	9

CO. No.	Upon completion of the course, the students will be able to:
CO1	Understand the concept of performance appraisal
CO2	Familiarize with the methods and tools of performance appraisal
CO3	Evaluate legal and ethical aspects
CO4	Explore performance improvement strategies
CO5	Understand communication and feedback of performance appraisal

Code	MJ322				
Title	MANAGEMENT OF INDUSTRIAL RELATIONS				
Degree	M.Com.	Year	II	Hours per Week	4
Branch(s)	Commerce	Type	Elective	Hours per Semester	45
Semester	III	Credit	4	Hours per Unit	9

CO. No.	Upon completion of the course, the students will be able to:
CO1	Be an expert in Human resource management.
CO2	Effectively plan the Human Resource.
CO3	Know the methods of Job analysis and evaluation.
CO4	Determine the appropriate training for the employees.
CO5	Promote better Industrial relations and understand the role of Trade Unions.

Code	MN331				
Title	PRINCIPLES AND PRACTICES OF TAXATION AND INDIAN TAX SYSTEM				
Degree	M.Com.	Year	II	Hours per Week	4
Branch(s)	Commerce	Type	Elective	Hours per Semester	45
Semester	III	Credit	4	Hours per Unit	9

CO. No.	Upon completion of the course, the students will be able to:
CO1	Understand the canons of Income tax.
CO2	Acquire the knowledge of calculating the period of Residence of an assessee.
CO3	Get hold of the mechanism of computation of salary income.
CO4	Compute the income from House Property and business or profession.
CO5	Identify the income accrued from Capital Gain and other sources.

Code	MN341				
Title	CORPORATE LAW				
Degree	M.Com.	Year	II	Hours per Week	4
Branch(s)	Commerce	Type	Elective	Hours per Semester	45

Semester	III	Credit	4	Hours per Unit	9

CO. No.	Upon completion of the course, the students will be able to:
CO1	Understand the legal structure of various contracts.
CO2	Be acquainted with the registration of a company.
CO3	Comprehend the mechanics of corporate governance.
CO4	Conduct company meetings and elections.
CO5	Professionally discharge corporate social responsibilities.

Code	MN351				
Title	STRATEGIC COST MANAGEMENT				
Degree	M.Com.	Year	II	Hours per Week	4
Branch(s)	Commerce	Type	Elective	Hours per Semester	45
Semester	III	Credit	4	Hours per Unit	9

CO. No.	Upon completion of the course, the students will be able to:
CO1	Understand cost identification and classification
CO2	Comprehend cost control and reduction
CO3	Analyse cost estimation and budgeting
CO4	Analyse activity based costing
CO5	Understand standard costing and variance analysis

Code	MN361				
Title	INDIA'S FOREIGN TRADE AND INVESTMENT				
Degree	M.Com.	Year	II	Hours per Week	4
Branch(s)	Commerce	Type	Elective	Hours per Semester	45
Semester	III	Credit	4	Hours per Unit	9

CO. No.	Upon completion of the course, the students will be able to:
CO1	Understand international business concept

CO2	Understand global trade and finance
CO3	Comprehend trade policies and regulations
CO4	Be familiar with global business strategy
CO5	Conduct international business research

MCOM- 301	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
CO1	3				2	
CO2	3			2		
CO3			2			
CO4		2				
CO5						
MCOM- 302	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
CO1					2	
CO2						
CO3			2			
CO4					2	
CO5			2			
MCOM-303	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
CO1			3			
CO2				3		
CO3	3				2	
CO4						
CO5		2				2

MJ311	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
CO1	2					
CO2	2					
CO3	2		3			
CO4	2		2	2		
CO5	2		3			

MJ301	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
CO1	3		2			
CO2	3		2			
CO3	3		3			
CO4	2					
CO5	2		2			

MJ322	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**

CO1						3
CO2						
CO3	2		2			3
CO4		2				
CO5				3		

MN331	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
CO1						
CO2			3			
CO3	3				3	
CO4	3					2
CO5	3					

MN341	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
CO1	2				3	
CO2	3				2	
CO3	3			2	2	
CO4				2		
CO5	2			2		

MN351	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
CO1	2		3			
CO2	2					
CO3	2		3			
CO4	2		3			
CO5	2		3			

MN361	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
CO1	3	2				
CO2	3			2	2	
CO3	3		3		2	
CO4	3	2	3		3	
CO5	3			3		3

Part II: Semester IV

SN	**Paper Code**	**Course Title**	**Periods**			**Evaluation Scheme**			**Credits**
			L	**T**	**P**	**Sessional**	**ET**	**Tot**	

						Exams			E	al	
						M T	T A	Tot al			
MCOM-401	Corporate Governance, Ethics and Social Responsibility of Business		4	0	0	20	40	60	40	100	4
MCOM-402	Business Research Methodology		4	0	0	20	40	60	40	100	4
-----	Major Group (Paper 3)		4	0	0	20	40	60	40	100	4
-----	Major Group (Paper 4)		4	0	0	20	40	60	40	100	4
------	Minor Group (Paper 2)		4	0	0	20	40	60	40	100	4
Total										**500**	**20**
GRAND TOTAL (4 Semesters)										**2050**	82

List of Course offered in M.Com Semester IV

Sl.No.	Subject Title	Subject Code
1	Corporate Governance,ethics and social responsibility of business	MCOM401
2	Business Research Methodology	MCOM402
3	Indian Financial System	MJ403
4	International Financial Management	MJ404
5	Consumer Behaviour	MJ413
6	Supply Chain Management	MJ414
7	Strategic human resource management	MJ423
8	Compensation management and employee welfare laws	MJ424
9	Minor Group (Corporate tax structure and planning)	MN432
10	Minor Group (Industrial Law)	MN442
11	Minor Group (Accounting theory and financial reporting)	MN452
12	Minor Group (Management of international business operations)	MN462

Code	MCOM-40				
Title	CORPORATE GOVERNANCE, ETHICS AND SOCIAL RESPONSIBILITY OF BUSINESS				
Degree	M.Com.	Year	II	Hours per Week	4
Branch(s)	Commerce	Type	Elective	Hours per Semester	45
Semester	IV	Credit	4	Hours per Unit	9

CO. No.	Upon completion of the course, the students will be able to:
CO1	Understand fundamentals of corporate governance
CO2	Analyze and recognize ethical decision making
CO3	Evaluate corporate codes of conduct and ethics
CO4	Understand stakeholder engagement and management
CO5	Familiarize with legal and regulatory compliance

Code	MCOM-402				
Title	BUSINESS RESEARCH METHODOLOGY				
Degree	M.Com.	Year	II	Hours per Week	4
Branch(s)	Commerce	Type	Core	Hours per Semester	45
Semester	IV	Credit	4	Hours per Unit	9

CO. No.	Upon completion of the course, the students will be able to:
CO1	Understand research fundamentals, terminology, and scientific methods
CO2	Comprehend research design and planning
CO3	Familiarize data collection methods
CO4	Comprehend questionnaire design and development
CO5	Comprehend survey development

Code	MJ403				
Title	INDIAN FINANCIAL SYSTEM				
Degree	M.Com.	Year	II	Hours per Week	4
Branch(s)	Commerce	Type	Electiv	Hours per Semester	45

			e		
Semester	IV	**Credit**	4	**Hours per Unit**	9

CO. No.	Upon completion of the course, the students will be able to:
CO1	Understand the theoretical and practical role of financial management in business concerns.
CO2	Show professionalism in the preparation of project reports.
CO3	Develop the blueprint of an ideal capital structure.
CO4	Gain knowledge on better dividend policy.
CO5	Make out the best capital expenditure decisions.

Code	**MJ404**				
Title	**INTERNATIONAL FINANCIAL MANAGEMENT**				
Degree	M.Com.	**Year**	II	**Hours per Week**	4
Branch(s)	Commerce	**Type**	Elective	**Hours per Semester**	45
Semester	IV	**Credit**	4	**Hours per Unit**	9

CO. No.	Upon completion of the course, the students will be able to:
CO1	Understand international financial market
CO2	Analyse the exchange rate system
CO3	Analyse international investment
CO4	Understand multinational capital budgeting
CO5	Comprehend global financial institutions

Code	**MJ413**				
Title	**CONSUMER BEHAVIOUR**				
Degree	M.Com.	**Year**	II	**Hours per Week**	4
Branch(s)	Commerce	**Type**	Elective	**Hours per Semester**	45
Semester	IV	**Credit**	4	**Hours per Unit**	9

CO. No.	Upon completion of the course, the students will be able to:
CO1	Understand consumer decision making
CO2	Comprehend consumer segmentation
CO3	Analyze market research skills
CO4	Explore consumer ethics and considerations
CO5	Evaluate consumer trends and innovation

Code	MJ414				
Title	SUPPLY CHAIN MANGEMENT				
Degree	M.Com.	Year	II	Hours per Week	4
Branch(s)	Commerce	Type	Elective	Hours per Semester	45
Semester	IV	Credit	4	Hours per Unit	9

CO. No.	Upon completion of the course, the students will be able to:
CO1	Understand the concepts of Logistics and its importance in business.
CO2	Administer the economical transport functionality.
CO3	Know about the International Logistics and the supply chain management.
CO4	Be acquainted with the international cargo insurance policies.
CO5	Evaluate both domestic and international transportation problems and find effective solutions.

Code	MJ423				
Title	STRATEGIC HUMAN RESOURCE MANAGEMENT				
Degree	M.Com.	Year	II	Hours per Week	4
Branch(s)	Commerce	Type	Elective	Hours per Semester	45
Semester	IV	Credit	4	Hours per Unit	9

CO. No.	Upon completion of the course, the students will be able to:
CO1	Understand human resource strategy

CO2	Evaluate talent acquisition and retention
CO3	Explore organizational development techniques
CO4	Evaluate compensation and benefits
CO5	Analyse employee relations

Code	**MJ424**				
Title	**COMPENSATION MANAGEMENT AND EMPLOYEE WELFARE LAWS**				
Degree	M.Com.	**Year**	II	**Hours per Week**	4
Branch(s)	Commerce	**Type**	Elective	**Hours per Semester**	45
Semester	IV	**Credit**	4	**Hours per Unit**	9

CO. No.	Upon completion of the course, the students will be able to:
CO1	Understand compensation principles
CO2	Explore the legal framework governing compensation
CO3	Evaluate salary and wage administration
CO4	Understand compliance and ethics considerations
CO5	Comprehend employee welfare laws

Code	**MN432**				
Title	**CORPORATE TAX STRUCTURE AND PLANNING**				
Degree	M.Com.	**Year**	II	**Hours per Week**	4
Branch(s)	Commerce	**Type**	Elective	**Hours per Semester**	45
Semester	IV	**Credit**	4	**Hours per Unit**	9

CO. No.	Upon completion of the course, the students will be able to:
CO1	Understand tax laws and regulations
CO2	Understand tax compliance and reportin
CO3	Comprehend taxation of business entities
CO4	Analyse tax planning and strategy formulation

CO5	Understand tax credits and incentives

Code	**MN442**				
Title	**INDUATRIAL LAW**				
Degree	M.Com.	**Year**	II	**Hours per Week**	4
Branch(s)	Commerce	**Type**	Elective	**Hours per Semester**	45
Semester	IV	**Credit**	4	**Hours per Unit**	9

CO. No.	**Upon completion of the course, the students will be able to:**
CO1	Understand labour law and regulation
CO2	Comprehend employment contracts and agreement
CO3	Analyse collective bargaining and unionization
CO4	Understand dispute resolution and grievance handling
CO5	Comprehend health, safety and welfare regulations

Code	**MN452**				
Title	**ACCOUNTING THEORY AND FINANCIAL REPORTING**				
Degree	M.Com.	**Year**	II	**Hours per Week**	4
Branch(s)	Commerce	**Type**	Elective	**Hours per Semester**	45
Semester	IV	**Credit**	4	**Hours per Unit**	9

CO. No.	**Upon completion of the course, the students will be able to:**
CO1	Understand accounting principles and concepts
CO2	Comprehend financial statement preparation
CO3	Understand financial reporting standards (GAAP,IFRS)
CO4	Comprehend accounting policies and estimates
CO5	Understand consolidated financial statements

Code	MN462				
Title	MANAGEMENT OF INTERNATIONAL BUSINESS OPERATIONS				
Degree	M.Com.	Year	II	Hours per Week	4
Branch(s)	Commerce	Type	Elective	Hours per Semester	45
Semester	IV	Credit	4	Hours per Unit	9

CO. No.	Upon completion of the course, the students will be able to:
CO1	Understand global business environment
CO2	Comprehend market entry strategies
CO3	Understand cross cultural management
CO4	Understand global human resource management
CO5	Analyse risk assessment and management in international operations

MCOM- 401	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3			2		
CO2		3		2		
CO3		3				
CO4	3		3			
CO5	2		2			
MCOM- 402	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
CO1			3			2
CO2			3			2
CO3			3			2
CO4			2			3
CO5			2			3
MJ403	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
CO1	3					
CO2	2					
CO3			3		2	
CO4			3			2
CO5			3			

MJ404	PO1	PO2	PO3	PO4	PO5	PO6
CO1	2		3	2		
CO2	2		3	2		
CO3	2		3	2		
CO4	2		3	2		

CO5	2		3	2		

MJ413	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
CO1	3				2	
CO2	3					
CO3	3		3		2	2
CO4	3	2				
CO5	3	2	2			2
MJ414	PO1	PO2	PO3	PO4	PO5	PO6
CO1	2		3			
CO2					2	
CO3	2					
CO4						
CO5	2		3		3	
MJ423	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3					
CO2					3	
CO3	2		2		2	
CO4	2		2		2	
CO5	2		2			
MJ424	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3		2			
CO2	2		2			
CO3			3	3		
CO4	2	3		2		
CO5		2				

MN432	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**
CO1	3					
CO2						
CO3				3		
CO4			3			
CO5			2			
MN442	PO1	PO2	PO3	PO4	PO5	PO6
CO1			3			
CO2	2			3		
CO3						
CO4	2				2	
CO5	2					
MN452	PO1	PO2	PO3	P O4	PO5	PO6
CO1	3					
CO2	3			2		
CO3	3		3			
CO4	2		3			
CO5	2			3		

MN462	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3				2	
CO2	3					
CO3	3			2		
CO4	3			2		
CO5	3		3			

CURRICULUM AND SYLLABI

(1st Semester)

LL.B
(Three-Year Program)

SCHOOL OF LAW

RAFFLES
UNIVERSITY

Japanese Zone, National Highway 48 Neemrana, Rajasthan 301020
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CONSTITUTIONAL LAW – I
LLB 101

INTRODUCTION TO THE COURSE

Constitutional law is the body of law that defines the relationship of different entities within a state, namely, the executive, the legislature, and the judiciary. The constitution is the basis from which the Indian legal system has evolved. The students of law should have a sound knowledge of the constitution. As the Constitution is the foundation of the Indian democratic system, constitutional law deals with some of the fundamental relationships within our society. This includes relationships among the states, the states and the union government, the three branches (executive, legislative, judicial) of the union government, and the rights of the individual in relation to both union and state government.

COURSE OBJECTIVES

The objective of this course is to:

1. Constitutional shall be studied plainly based on the provisions in terms of interpretations of the Court.
2. Detailed planning provided with alternative methods
3. Provide and interpreted by the judiciary
4. Analyse the provisions of the constitution critically

COURSE OUTCOMES

The students will be able to;

1. Identify the various dimensions of the constitutional law
2. Understand the process of Executive, legislative and judicial mechanisms under the constitution
3. Enumerate the constitutional remedies available.
4. Apply the real sprit of distribution of power

TEACHING METHODOLOGY

A Dialectic system of learning would provide a better appreciation of the constitutional governance in India through classroom debate and moot court exercises after the basic issues are identified by lecture and discussion. Research of issue-based conflict of interest through court cases may be an added advantage.

As per the norms of the University for this Course, there will be 6 classes per week. Clinical and tutorial forms of learning should be followed. The teaching methodology will include Lectures-cum-discussion, Assignments, Projects and Presentations.

COURSE OUTLINE

Unit-I Credit 6
Introduction (Hours 60)

- Definition of Constitution and Classification; Constitutionalism and Constitutional Morality
- Making of the Indian Constitution
- Aims and Objectives
- Basic features of the Indian Constitution
- Nature of the Indian Constitution: Federal, Unitary, Quasi-federal; Cooperative and Competitive Federalism

Leading Case Laws:

1. *Rai Sahib Ram Jawaya Kapur* v. *State of Punjab* AIR 1955 SC 549
2. *State of West Bengal* v. *Union of India* AIR 1963 SC 1241
3. *Kesavananda Bharati* v. *State of Kerala* (1973) 4 SCC 225
4. *S. R. Bommai* v. *Union of India* (1994) 3 SCC 1
5. *State of Haryana* v. *State of Punjab* (2002) 2 SCC 507
6. *Rameshwar Prasad and Ors.* v. *Union of India and Anr.* (2006) 2 SCC 1
7. *Kuldip Nayar* v. *Union of India* (2006) 7 SCC 1
8. *I.R. Coelho* v. *State of Tamil Nadu* (2007) 2 SCC 1
9. *Arvind Kejriwal* v. *Union of India* 2014
10. *Union of India & Anr*. v. *M/s Mohit Minerals Pvt. Ltd. Through Director* 2022

Unit-II
Constitutional Organs

- **Legislature:**
- Parliament and State Legislatures
- Composition of Parliament and State legislatures
- Qualification and Disqualification of Members
- Legislative Procedure, power and Privileges
- **Executive:** Power of President and Governor
- **Union and State Judiciary**: Composition, Appointment and Removal of Judges
- Jurisdiction of Supreme Court and High Court
- Independent Judiciary National Judicial Appointment Commission

Leading Case Laws

1. *S.P. Anand* v. *H.D. Deve Gowda*, (1996) 6 SCC 734
2. *B. R. Kapur* v. *State of Tamil Nadu* (2001) 7 SCC 231
3. *Lily Thomas* v. *Union of India* (2013) 7 SCC 653.
4. *Lok Prahari (through General Secretary SN Shukla)* v. *Election Commission of India* (2018) 18 SCC 114
5. *Special Reference No. 1 (Re Gujarat Assembly Election Matter)* (2002) 8 SCC 237 127
6. *Anil Kumar Jha* v. *Union of India* (2005) 3 SCC 150
7. *Jaya Bachchan* v. *Union of India* (2006) 5 SCC 266
8. *Consumer Education and Research Society* v. *Union of India & Ors*. (2009) 9 SCC 648
9. *In re Keshav Singh* AIR 1965 SC 745
10. *Raja Ram Pal* v. *Hon'ble Speaker, Lok Sabha* (2007) 3 SCC 184
11. *Ram Jawaya Kapoor* v. *State of Punjab*, AIR 1955 SC 549.
12. *Jayantilal Amritlal Shodhan* v. *F.N. Rana and Ors*, AIR 1964 SC

13. *Smt. Jaikumari* v. *State of Maharashtra*, AIR 2009 Bom.
14. *Poonam Verma* v. *Delhi Development Authority*, AIR 2008 SC
15. *Indian Medical Association* v. *Union of India*, AIR 2011 SC
16. *D. C. Wadhwa* v. *the State of Bihar* (1987) 1 SCC 378 159
17. *R.C. Copper* v. *Union of India*, AIR 1970 SC 564.
18. *A. K. Roy* v. *Union of India* (1982) 1 SCC 271
19. *Krishna Kumar Singh* v. *the State of Bihar* (2017) 3 SCC 1
20. *Union of India* v. *Sankalchand Himatlal Sheth* (1997) 4 SCC 193
21. *S. P. Gupta* v. *President of India* (1981) Supp SCC 87
22. *S.C. Advocates on Record Association* v. *UOI* (1993) 4 SCC 441
23. *In re Special Reference No. 1 of 1998* (1998) 7 SCC 739
24. *S.C. Adv. on Record Association* v. *Union of India* (2016) 5 SCC 1 213
25. *Shanti Bhushan* v. *Supreme Court of India through its Registrar* (2018) 8 SCC 396
26. *Mohd. Arif* v. *The Reg. Supreme Court of India* (2014) 9 SCC 737
27. *Madras Bar Association* v. *Union of India* (2014) 10 SCC 1
28. *Rupa Ashok Hurra* v. *Ashok Hurra* (2002) 4 SCC 388

Unit-III
Distribution of Legislative Powers:

- Distribution with respect to territory: Doctrine of Territorial Nexus
- Distribution with respect to the subject matter.
- Interpretation of legislative lists:
- ✓ Territorial Nexus
- ✓ Harmonious Construction
- ✓ Pith and Substance
- ✓ Colorable Legislation
- ✓ Residuary Power of Legislation
- ✓ Doctrine of Repugnancy

Leading Case Laws

1. *In Re C P & Berar Sales of Motor Spirit & Lubricants Taxation Act,1938* AIR 1939 FC 1
2. *Gujarat University* v. *Krishna Ranganath Mudholkar* AIR 1963 SC 703
3. *Prafulla Kumar* v. *Bank of Commerce, Khulna* AIR 1947 PC 60
4. *State of Rajasthan* v. *G. Chawla* AIR1959 SC 544
5. *State of Karnataka* v. *Drive-in Enterprises* (2001) 4 SCC 60
6. *K.C. Gajapati Narayan Deo* v. *State of Orissa* AIR 1953 SC375
7. *Union of India* v. *H. S. Dhillon* (1971) 2 SCC 779
8. *Zaverbhai* v. *State of Bombay* AIR 1954 SC 752
9. *Hoechst Pharmaceuticals Ltd.* v. *State of Bihar* (1983) 4 SCC 45
10. *Vijay Kr Sharma* v. *State of Karnataka* (1990) 2 SCC 562
11. *State of Kerala* v. *Mar Appraem Kuri Company Ltd.* (2012) 7 SCC 106

Unit-IV
Emergency Provisions

Emergency Provisions:

- Origin and concept of Emergency
- Types of Emergency in the Indian Constitution
- National Emergency
- State Emergency

- Financial Emergency
- Effects of Proclamation of Emergency
- Emergency and Fundamental Rights

List of Cases

1. *Indira Nehru Gandhi* v. *Shri Raj Narain & Anr*, AIR 1975 SC 2299
2. *Kesavananda Bharati* v. *State of Kerala*, AIR 1973 SC 1461
3. *State of Rajasthan & Ors* v. *Union of India*, AIR 1977 SC 1361
4. S. R. Bommai V. Union of India, AIR 1994 SC 1918
5. *A.D.M Jabalpur* v. *Shiv Kant Shukla*, AIR 1976 SC1207
6. *Minerva Mills Ltd* v. *Union of India*, (1980) 3 SCC 625.
7. *Ghulam Sarwar* v. *Union of India*, AIR 1967 SC 1335.
8. *Bijayanand Patnaik And Ors.* v. *President Of India And Ors.* AIR 1974 Ori 52
9. *Makhan Singh* v. *State of Punjab*, AIR 1964 SC 381
10. *Maharastra State* v. *Prabhakar*, AIR 1966 SC 424
11. *Ghulam Sarwar* v. *Union of India*, AIR 1967 SC 1335
12. *Rameshwar Prasad* v. *Union of India*, (2006) 2 SCC 1

Unit-V
Judicial Review and Constitutional Amendment

- Judicial Review: Nature and Scope
- Amendment to the Constitution: Methods of Constitutional Amendment
- Limitation Upon Constituent Power-Doctrine of Basic Structure
- Judicial Activism and Judicial Restraint

List of Cases

1. *Marbury* v. *Madison* (1803)
2. *A.K.Gopalan* v. *State of Madras* AIR 1950 SC 27
3. *Shankari Prasad* v. *Union of India*, AIR 1951 SC 458.
4. *Sajjan Singh* v. *State of Rajasthan*, AIR 1965 SC 845.
5. *I.C. Golak Nath and Ors.* v. *State of Punjab and Anr*., AIR 1967 SC 1643.
6. *Kesavananda Bharati* v. *State of Kerala*, AIR 1973 SC 1461
7. *Indira Nehru Gandhi* v. *Raj Narain*, 1975 Supp SCC 1.
8. *Minerva Mills* v. *Union of India*, AIR 1980 SC 1789.
9. *Sanjeev Coke Mfg. Co.* v. *Bharat Coking Coal Ltd*., (1983) 1 SCC 147.
10. *I.R. Coelho (Dead) By Lrs* v. *State of Tamil Nadu & Ors*. AIR 2007 SC 8617
11. *L. Chaiadra Kumar* v. *Union of India*, (1997) 3SCC261
12. *S.P. Sampath Kumar* v. *Union of India*, (1987) 1 SCC 124
13. *Kerela Bar Hotels Association* v. *State of Kerela* AIR 2016 SC 163

Suggested Readings

1. Durga Das Basu: Introduction to the Constitution of India, LexisNexis India.
2. Durga Das Basu: Shorter Constitution of India, Prentice-Hall of India, New Delhi.
3. Shibanikinkar Chaube: Constituent Assembly of India, Manohar Publishers & Distributors, New Delhi.
4. J. N. Pandey: Constitutional Law of India, Central Law Agency, Allahabad.
5. M.C. Jain Kagzi: The Constitutional of India, India Law House, New Delhi.

6. Arthur Berriedale Keith: A Constitutional History of India 1600-1935, Methuen & Co. Ltd., London.
7. M. P. Jain: Indian Constitutional Law, LexisNexis India.
8. Prof. M. P. Singh V.N. Shukla's Constitution of India Eastern Book Company, Lucknow.
9. M. V. Pylee Constitutional Amendments in India, S. Chand & Company, New Delhi.
10. M. V.V. Ramana Inter-State River Water Disputes in India, Orient Longman, New Delhi.
11. H. M. Seervi: Constitutional Law of India, N.M. Tripathi, Bombay.
12. Jagdish Swarup: Constitution of India, Modern Publications, New Delhi.

LAW OF CONTRACT – I
(LLB 102)

INTRODUCTION OF THE COURSE

Contracts are the basis of most transactions, especially transactions dealing with property. Whether the transaction is in the ordinary course of life or in the electronic world (e-commerce) the general principles governing contracts remain the same. For this reason, it is very important to introduce the students to the basic principles governing contracts and lay a powerful foundation for their study of other transactional and related laws in higher semesters. Law of contract being the pillar of the legal structure of a society, the fundamental goal of the study is to critically evaluate principles underlying the legal postulates and propositions.

COURSE OBJECTIVE

This course has the following objectives:

1. To study the basic concept of a contract including its development contract.
2. To deal with the elements and limitations of a free contract.
3. To provide relevant provisions regarding the remedies of breach of contract.
4. To discuss the specific performance of the contract.

COURSE OBJECTIVE

The student shall be able to:

1. Understand the basic concept and elements of the Indian Contract.
2. Analyse the various limitations under the Indian Contract.
3. Apply the provisions of other laws under the Contract.
4. Know the provisions regarding the specific enforcement under specific relief Act

Course Outline:

UNIT I — Credit 6

General Introduction — (Hours 60)

- History and Nature of Contractual Obligation
- **Formation of Contract**: Offer, Kinds of offer, Acceptance, Mode of Acceptance Communication and Revocation of Offer and Acceptance, Contract through Electronic Medium
- Intention to create Legal Relationship/Obligation

UNIT II

Free consent and Limitations on Freedom of Contract

- **Consideration**: Definition Essential Elements Doctrine of Privity of Contact, and Consideration, Exceptions of Consideration, Exceptions-Adequacy of Consideration-Past, Executed and Executor Consideration

- **Capacity to Contract**: Meaning-Incapacity arising out of Status & Mental Defects; Nature of Minor's Agreement-Effect of Minor's Agreement as regard to Estoppel-Liability, Restitution and Notification-Accessories Supplied to a Minor-Agreements Beneficial and Detrimental to a Minor.
- **Principle of Free Consent**: Coercion-Undue Influence-Misrepresentation-Fraud-Mistake; Unlawful Consideration and Object
- **Void Agreement**: Meaning-Agreement without Consideration-Agreement in Restraint of Marriage-Agreement in Restraint of Trade-Agreement in Restraint of Legal Proceedings-Unmeaning Agreement-Wagering Agreement

UNIT III

Discharge of a Contract

- **Contingent Contract**: Performance of Contingent Contract
- **Discharge of Contract**: Performance-Impossibility of Performance-Doctrine of Frustration-By Agreement-By Breach-Anticipatory Breach-Breach during Performance
- Appropriation of Payment
- Quasi-Contract

UNIT IV

Remedies for Breach of Contract and Quasi Contracts

- **Remedies for Breach of Contact**: Types of Damages, Remoteness of Damages & Measures of Damages
- Penalty and Liquidated Damages,
- *Quantum Meruit*

UNIT V

The Specific Relief Act

- **Specific Performance of Contract**: Contract that can be Specifically Enforced, Persons against whom Specific Enforcement can be ordered.
- Rescission and Cancellation
- **Injunction**: Temporary-Perpetual
- **Declaratory Orders**: Discretion and Power of the Court

List of Books

1. Dr. Avtar Singh: *Law of Contract & Specific Relief*, Eastern Book Company, Lucknow.
2. Dr. R.K. Bangia: *Contract*, Allahabad Law Agency, Allahabad.
3. H. K. Saharay: *Dutt on Contract-The Indian Contract Act, 1872*, Eastern Law House, Kolkata.
4. G. H. Treitel: *The Law of Contract*, Sweet & Maxwell, London.
5. H. G. Beale and Joseph Chitty: *Chitty on Contracts: General Principles*, Sweet & Maxwell, London.

6. J. Beatson, Andrew Burrows & John Cartwright: *Anson's Law of Contract*, Oxford University Press, London.
7. M. Krishnan Nair: *Indian Contract Law*, Orient Longman, Hyderabad.
8. Michael P. Furmston: *Cheshire, Fifoot & Furmston's Law of Contract*, Oxford University Press, London.

Relevant Cases

1. *Carlill* v. *Carbolic Smoke Ball Co*., (1893) 1 QB 256.
2. *Lalman Shukla* v. *Gauri Dutt*, (1913) 11 All 486.
3. *Balfour* v. *Balfour*, (1919) 2 KB 571.
4. *Weeks* v. *Tybald*, (1605) 75 ER 982.
5. *Harvey* v. *Facie*, (1893) AC 552.
6. *Powel* v. *Lee*, (1908) 24 LTR 606.
7. *Bhagwandas Govardhandas Kedia* v. *Girdhari Lal Parshotamdas & Co*., AIR 1966 SC 543.
8. *Dutton* v. *Poole*, (1672) KB Lev 210.
9. *Tweddle* v. *Atkinson*, 30 LJ QB 218.
10. *Durga Prasad* v. *Baldeo*, (1880) 3 All 221.
11. *Kedar Nath* v. *Gorie Mohamed* (1886) 1 LR 14 Cal 614.
12. *Chinnaya* v. *Ramayaa*, (1882) 4 Mad 137.
13. *Mohori Bibee* v. *Dharmodas Ghose*, 30 Cal 539.
14. *Khan Gul* v. *Lakha Singh*, ILR (1928) 9 Lah 711.
15. *Madhub Chandra* v. *Raj Coomar*, (1874) XIV Bengal Law Rev. 76.
16. *Nordenfelt* v. *Maxim Nordenfelt Gun & Ammunition Co., Ltd*. (1894) AC 535.
17. *Krell* v. *Henry*, (1903) 2 KB 740 CA.
18. *Satyabrata Ghose* v. *Mugneeram*, AIR 1954 SC 44.
19. *Hadley* v. *Baxendale*, (1854) 9 Exch 341.
20. *Simpson* v. *London North Rly. Co*., (1876) QBD 274.
21. *Victoria Laundry (Windsor) Ltd*. v. *Nowman Industries Ltd.*, (1949) KB 528.
22. *Ardeshir H. Mama* v. *Flora Sassoon*, IP 1928 PC 208.
23. *Devender Singh* v. *Syed*, AIR 1973 SC 2457.
24. *Thomas* v. *Hanuman Prasad*, AIR (1983) A 202.
25. *American Cyanamid* v. *Ethican*, (1975) 1 All ER 504.

FAMILY LAW – I
(LLB 103)

INTRODUCTION TO THE COURSE

India, a country of rich cultural and religious diversity, offers personal laws pertaining to each religion, be it Hindus, Muslims, Christians, etc. Personal laws govern matters like marriage, divorce, adoption, succession, maintenance etc. Family Law I deals with the sources and development of Hindu Law. This course is a study of the fundamentals of Hindu Law and includes the Hindu Marriage Act, 1955, the Hindu Adoptions and Maintenance Act, 1956, the Hindu Minority and Guardianship Act, 1956 and the structure of Family Courts in India.

COURSE OBJECTIVES

This course has the following objectives

1. To evaluate the strength of the family system in India.
2. and the extent of legal support provided to the same and also to examine when and how and to what extent the constitutional directive of Uniform Civil Code enables to regulate a religious part of family life if any, may emerge. Besides this to give an overview of some of the current problems arising out of the foundational inequalities.

TEACHING METHODOLOGY

As per the norms of the University for this Course, there will be 6 classes per week. Clinical and tutorial forms of learning should be followed. The teaching methodology will include Lectures-cum-discussion, Assignments, Court room exercises, Projects, and Presentations.

COURSE OUTLINE

Unit-I Credit 6

Concept of Hindu law & Sources of law (Hours 60)

Philosophy & Concept of Hindu law, Schools of Hindu law, Sources of Hindu law, who is a Hindu, un codified general law among the various religious groups of people of India.

Unit-II

The Hindu Marriage and Divorce

A. Applicability of Legislation (Section 2)
B. Concept and forms of Marriage (Section 5 R/w Section 7)

C. Conditions for the Validity of Marriage (Section 5 R/w Section 3 R/w Section 18)

D. Solemnization of Marriage (Section 7)

E. Section 3 of PCMA R/w Section 9 of PCMA

F. Child Marriage R/w Provisions of POCSO

G. Void and Voidable Marriages (Section 11 and Section 12)

H. Registration of Marriage (Section 8)

I. Restitution of Conjugal Rights (Section 9 R/w Article 21 of Indian Constitution)

J. Judicial Separation (Section 10) R/w 13 (1A)

K. Status of sologamy?

L. Unisex Marriages and Question of living together?

Divorce (Hindu Marriage Act, 1955)

A. Theories of Divorce- Guilt Theory and Consent Theory

B. Grounds of Divorce Cruelty, Desertion, Adultery along with Joseph Shine vs. UOI, 2018, SC

C. Study on Section 13

D. Options of Puberty, Breakdown of Marriage, Mutual Consent (Section13B), Grounds for Divorce for Woman Only (Section 13(2))

E. Irretrievable Breakdown of Marriage as a ground of Divorce.

Cases:

- *Dr. Surajmani Stella Kuju*v. *DurgaCharanHansdah* AIR 2001 SC 938
- *S. Nagalingam*v. *Sivagami*(2001) 7 SCC 487 4
- *Bhaurao Shankar Lokhande*v. *State of Maharashtra,* AIR 1965 SC 1564 8
- *Lily Thomas* v. *Union of India,* AIR 2000 SC 1650 12
- *PinnintiVenkataramana*v. *State*, AIR 1977 AP 43 23
- *AshaQureshi*v. *AfaqQureshi*, AIR 2002 MP 263 33
- *P*. v. *K.*, AIR 1982 Bom. 400 37
- *BabuiPanmatoKuer*v. *Ram Agya Singh,* AIR 1968 Pat. 190 47
- *Seema*v. *Ashwani Kumar* (2006) 2 SCC 578 51
- *Javed&Ors. v. State of Haryana &O*rs. AIR 2003 SC 3057
- *Kailashwati*v. *AyudhiaParkash,* 1977 C.L.J. 109 (P.& H.) 55
- *SwarajGarg*v. *K.M. Garg,* AIR 1978 Del. 296 66
- *Saroj Rani* v. *Sudarshan Kumar,* AIR 1984 SC 1562 74
- *N.G. Dastane*v. *S. Dastane,* AIR 1975 SC 1534 81
- *Samar Ghosh* v. *Jaya Ghosh,* 2007 (3) SCJ 253 101
- *Bipin chandra Jaisingh bai Shah* v. *Prabhavati*, AIR 1957 SC 176 122
- *Dharmendra Kumar* v. *Usha Kumar,* AIR 1977 SC 2213 139
- *T. Srinivasan* v.*T. Varalakshmi*, 1 (1991) DMC 20 (Mad.) 142
- *Hira chand Srinivas Managaonkar*v. *Sunanda,* AIR 2001 SC 1285 149
- *Sureshta Devi* v. *Om Prakash,* 1 (1991) DMC 313 (SC) 155

Unit-III

Hindu Adoptions and Maintenance

ADOPTION

A. Law on the legitimacy of children and adoption.
B. Legitimacy of the issue in void and voidable marriage and the rights of such children
C. Issues relating to custody of children
D. Requisite of Valid Adoption- Conditions for giving in, taking of person adopted procedure and conditionality.
E. When adoption is complete
F. Effects of Adoption
G. Inter-Country adoption
H. Adoption in different religious groups.

MAINTENANCE

A. Maintenance during the pendency of the suit.
B. Maintenance after the dissolution of marriage and conditions of permanent alimony (Section 24 R/w Section 25 HMA, 1955, Section 18 HAMA, 1956, Section 125 CrPC, Section 20 DVA)

Unit-IV
Hindu Minority and Guardianship Act, 1956

A. Guardian under the Guardian and Wards Act
B. Who can be appointed
C. Procedure of application – who can apply – what are powers – what matters court would consider for appointment of a guardian – cessation of authority
D. General and special liability of a guardian
E. Natural guardian and his/her power

Unit-V

The Hindu Succession Act,

A. Origin and Nature of Joint Family and Coparcenary
B. Characteristic features of Coparcenary
C. Classification of Property
D. Karta: Position, Power and Liabilities, Privileges and Obligations.

E. Partition: Definition, Persons entitled to demand partition, Reopening and Reunion.

Cases:

- *Brijendra*v. *State of M.P.*, AIR 2008 SC 1058 164
- *Amar KantaSen*v. *SovanaSen*, AIR 1960 Cal. 438 159
- *Padmja Sharma* v. *Ratan Lal Sharma*, AIR 2000 SC 1398 162
- *GithaHariharan*v. *Reserve Bank of India* (1999) 2 SCC 228 169

Recommended Readings

Aqil Ahmad, *Mohammedan Law*, (Central Law Agency, 24th ed. 2011)
R.K. Agarwala, *Hindu Law*(Central Law Agency, 22nd ed. 2007)
ParasDiwan, *Law of Intestate and Testamentary Succession* (1998), Universal
Basu, N.D., *Law of Succession* (2000), Universal
Kusem, *Marriage and Divorce Law Manual* (2000) Universal
Machanda.S.C.*Law and Practice of Divorce in India* (2000) Universal
P.V.Kane, *History of Dharmasastras* Vol.2 pt.1 at 624-632 (1974)
A.Kuppuswami (ed.) *Mayne's Hindu Law and Usage*Ch.4(1986)
B.Sivaramayys, *Inequalities and the Law*, (1985)
K.C.Daiya, "*Population control through family planning in India, "Indian Journal of Legal Studies*,85 (1979)
J.D.M. Derrett, *Hindu Law: Past and Present*
J.D.M. Derrett, *Death of Marriage Law*
A.A.A.Fyzee, *Outline of Muhammadan Law*, (1998)
AlladiKuppuswami,(ed.) *Mayne's Hindu Law and Usage*, (1986)
J.D.M.Derret, *A Critique of Modern Hindu Law*, (1970)
ParasDiwan, *Hindu Law* (1985) Law 45
S.T.Desai (ed.) *Mulla's Principles of Hindu Law*, (1998) -Butterworths-India.
Pares Diwan, *Family Law: Law of Marriage and Divorce in India*, (1984).
A.M.Bhattacharjee, *Muslim Law and the Constitution* (1994) Eastern Law House, Calcutta.

LAW OF TORTS, CONSUMER PROTECTION AND MV. ACT
(LLB 104)

PRELUDE TO THE COURSE

Independent of criminal or contract law, Tort law provides individuals and groups with redress for injury to every dimension of life, from physical injury to property damage to personal insult. Over past decades no area of law within the civil justice system has experienced greater ferment than the law of Tort, this has resulted in vital changes in the thinking of tortuous liability.

The objective of the course is to formalize the students with the nature and extent of liability of the private enterprises, multinationals and the government authorities for the wrongs committed against the individual and their property, and to develop sound knowledge, skills and disposition amongst students of B.A. LL.B. on some of the contemporary issues of Specific Torts, cyber-Tort, and Economic Tort, and Product Liability etc.

COURSE OBJECTIVE

The objective of this course is to:

1. Understand the Nature of Tort
2. Examine the conditions of creating tortious liability and general defences
3. Discuss the specific torts and their available remedies

COURSE OUTCOMES

The students will be able to:

1. Identify the various conceptual aspects of the Law of Torts.
2. Discuss various defences under tortuous liability and specific kinds of torts.
3. Enumerate the remedies available for specific torts.

UNIT – I **Credit 6**
INTRODUCTION TO LAW OF TORTS **(Hours 60)**

- Definitions and Development of Torts, Actions under the torts in England and India
- Tort distinguished from Contract and Crime
- Constituents of Torts
- *Ubi Jus Ibi Remedium*
- *Injuria sine Damnum*
- *Damnum sine Injuria*

Leading case Laws

- Ashby v. Damno(1703) 2 Lord Raym, 938
- Gloucester Grammer School Case (1410) Y.B Hill 11 Hen, 4 of 47, p. 21, 36
- Ushaben v. Bhagyalakxmi Chitra Mandir, AIR 1978, Guj. 13
- Bhim Singh v. J & K, AIR 1986, SC 494
- Jethu Singh v. State of Rajasthan, AIR, 2014, Raj. 157

UNIT-II
GENERAL DEFENCES IN TORT

- *Volenti non fit Injuria*
- Act of God
- Inevitable Accident

- Necessity
- Private Defence
- Plaintiff the Wrong Doer
- Mistake

Leading case Laws

- Hall v. Brooklands Auto Racing Club, (1932) All E.R. Rep. 208
- Padmavati v. Dugganaika (1975) 1 Kam. 93. 1975, A.C.
- Smith v. Baker, (1891) A. C. 325.
- Thomas v. Quatermaine, (1887) 18 Q.B.D.658, at P.695, per Brown, L.J.
- Dann v. Hamilton, (1939) 1 K.B 509.
- Nichols v. Marsland, (1876) 2 Ex. D. 1.
- Stanley v. Powell, (1891) 11 Q.B. 86
- Bird v. Holbrook, (1823) 4 Bing. 628; 130 E.R. 91.

UNIT – III
LIABILITIES IN TORTS

- Strict Liability
- Absolute Liability
    (i) Absolute liability under the motor vehicles Act, 1988 (Sec. 140 to 143, 161 to 163)
- Vicarious Liability:
    - Master Servant Relationship
    - Principal-Agent Relationship
    - Relationship between the Partners

Leading case Laws

- Rylands v. Fletcher, (1868) L.R. 3 H.L. 330.
- M.C. Mehta v. Union of India, AIR 1987, SC 1086.
- Union Carbide Corporation v. Union of India, AIR 1992 S.C. 248.
- State Bank of India v.Shyama Devi, A.I.R. 1978 S.C.1263.
- Limpus v. London General Omnibus Co. (1862) 1 H. & C.526

UNIT- IV
SPECIFIC TORTS

- Defamation – Meaning and Types
- Negligence – Concept and the Defences available
- Nuisance – Meaning and Types
- Trespass
- Nervous Shock
- Remoteness of Damage
- Remedies under the Law of Torts

Leading case Laws

- Ram Jethmalani v. Subramaniam Swamy, A.I.R.2006 Del.300.
- Cassidy v. Daily Mirror Newspapers Ltd. (1929) 2 K.B.331.
- Donoghue v. Stevenson, (1932) A.C. 562.

- Campbell v. Paddington Corporation, (1911) 1 K.B. 869.

UNIT – V
CONSUMER PROTECTION ACT and MV ACT 1988

- Basic Concepts of Consumer
  - (i) Nature, scope & silent features
  - (ii) Doctrine of caveat Emptor
  - (iii) Caveat Venditor
- Consumer Dispute and Redressal Agencies Constitution, Jurisdiction and Procedure
- Registration and Licensing of Motor Vehicle
- Liability without fault, offences and penalties and Claim tribunals

Textbooks:

1. Lal, R & D, *Law of Torts*, Lexis Nexis Publications
2. R.K. Bangia, Law of Torts including Compensation under the Motor Vehicles Act and Consumer Protection Laws, Allahabad Law Agency, 2013
3. Avtar Singh: P. S. A. Pillai's Law of Tort, Eastern Book Company, Lucknow.
4. J. N. Pandey: Law of Torts, Central Law Publications, Allahabad.
5. Kumud Desai: Law of Torts (An Outline with Cases), N.M. Tripathi, Bombay.
6. R. F. V. Heuston & R. A. Buckley: Salmond & Heuston on the Law of Torts, Sweet &
7. Maxwell, London.
8. Ratanlal & Dhirajlal (Revised by Akshay Sapre): Ratanlal and Dhirajlal's The Law of
9. Torts, LexisNexis, Gurgaon
10. S. K. Kapoor: Law of Torts, Central Law Agency, Allahabad.

Reference Books:

1. W.V.H. Rogers, Winfield and Jolowicz on Tort, Sweet & Maxwell, 2010 (18th Edn)
2. Ramaswamy Iyer's, The Law of Torts, Lexis Nexis, 2007 (10th Edn)

LEGAL LANGUAGE

(LLB 105)

PRELUDE TO THE COURSE:
The course provides an overview of the fundamentals of the English Language which involves grammar and its usage, the need and importance of legal language relevance of literature and language for law and some selected literary works to enable the students to have an analytical mind and also develop character study.

COURSE OBJECTIVES:
The course aims to:
1. Highlight the importance and usage of legal language.
2. Emphasize the usage of grammar in legal drafting.
3. Inculcate the skills necessary for drafting legal documents.
4. Make the students have an analytical approach to literature through prose & character study
5. Make the students have an analytical approach to literature through interpretation of poetry.

COURSE OUTCOMES:
After completion of the course, the students will be able to:
1. Describe importance of Legal Language.
2. Identify the correct usage of grammar in legal drafting.
3. Draft documents for legal correspondence.
4. Analyse characters of literary texts.
5. Apply skills of interpreting poetry.

PART –A LAW & LANGUAGE

UNIT-I **Credit 6**
INTRODUCTION TO LEGAL LANGUAGE **(Hours 60)**

(a) Importance of Language & Literature in Law
(b) Need and Importance of Legal Language
(c) Legal Language in India – attention and awareness of practical legal import of sentences
(d) Education: Indian & American by Anurag Mathur

UNIT- II
GRAMMAR

(a) Nouns, Pronouns & Adjectives
(b) Reported Speech
(c) Verbs, Adverbs, tenses & Agreement of the Verb with the Subject
(d) Articles

UNIT- III
LEGAL WRITING

(a) Legal Words – Suit, FIR, Plaint, Written Statement, Plaintiff, Defendant, Homicide, Genocide, Suicide, Vandalism, Prosecution, Defence, summons, Ultra vires, Intra vires,

Alimony, Maintenance, Monogamy, Polygamy, Bigamy, Polyandry, Precedent, Contract, Agreement, Will

(b) Drafting a Complaint as a Consumer of Spurious Goods

- Drafting a Complaint as a Consumer of Deficiency in Services
- Drafting a FIR
- Drafting a RTI Application
- Writing an Article – Cyber Tort, Terrorism, Women Empowerment, Refugees in India, Consumer Protection and other relevant and emerging issues
- Letter Writing – Formal & Informal

PART – B LAW & LITERATURE

UNIT- IV
PROSE

(a) An Astrologer's Day – R. K. Narayan
(b) The Child – Munshi Premchand
(c) Kabuliwala – Rabindranath Tagore
(d) The Bar – M. C. Chagla
(e) The Chief Justice – M. C. Chagla

UNIT- V
POETRY

(a) The Gift of the Magi – O Henry
(b) Bangle Sellers – Sarojini Naidu
(c) The Princess & the Gypsies – Francis Crawford
(d) Where the Mind is Without Fear – Rabindranath Tagore
(e) Success is counted Sweetest – Emily Dickinson

Suggested Reading:

Sl. No.	Name of the Textbooks	Year of Publication
	TEXT BOOKS	
1.	Martinet, T. *A Practical English Grammar*, OUP	2016
2.	Orient Longman, *The Joy of Reading*	2015
3.	Chagla, M. C., *Roses in December*, Bhartiya Vidya Bhawan	2015
	REFERENCE BOOKS	
4.	Wren & Martin, High School English Grammar & Comprehension	2014

B.A.LL.B (Hons.) Semester-II

CURRICULUM AND SYLLABI

(2nd Semester)

B.A.LL.B. (Hons.)
(Integrated Law degree course)

SCHOOL OF LAW

RAFFLES
UNIVERSITY

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B.A.LL.B (Hons.) Semester-II

LEGAL & CONSTITUTIONAL HISTORY (BAL 201)

INTRODUCTION OF THE COURSE

It is widely believed and perhaps rightly so that today's problems and solutions thereto lie hidden in History. Understanding the history of the state, social institutions, people and culture inherently makes one understand as to how to critically appreciate a fact situation. Thus, a lawyer must understand the history of the political establishment and social institutions and thus evaluate the legal and judicial structure and process. History II deals with the changes that took place in colonial times in Indian society, the economy in general, and the legal system in particular. It seeks to answer some basic questions. How did contemporary India emerge? What were the processes and events that shaped it? Why and how did the present legal system evolve? What were the various ideas and elements that went into the making of British policies? What were the changes that took place in the courts and laws in colonial times and how they impacted the Indians and their old systems? How did Indian Nationalism emerge & what were the forms it took? What was the genesis of some of the problems like communalism? What were the concerns of the framers of the constitution and the major debates? Finally how the concept of Indian secularism emerged during the national movement and was adopted post-independence.

OBJECTIVES OF THE COURSE

The modern Indian Legal system has originated from our history. This paper aims to acquaint students about the important events in Indian history which shaped our legal framework. What were the various ideas and elements that went into the making of British policies? What were the changes that took place in the courts and laws in the colonial times and how they impacted the Indians and their old systems.

TEACHING METHODOLOGY

Initial learning begins with a Socratic method followed by a dialectic process of learning and critiquing; which gradually develops in case studies, research and finally to go for art of lecturing and convincing the listeners.

Evaluation Scheme

Continuous Assessment System- 40%
Mid-Term- 20%
End Term- 40%

B.A.LL.B (Hons.) Semester-II

COURSE OUTLINE

UNIT 1

DEVELOPMENT OF COURTS & JUDICIAL INSTITUTIONS FROM 1600 TO 1781

A. **India at the Dawn of British Arrival:** English East India Company, Foundation, Constitution and Growth till 1726-Administration of Justice in Presidency Towns (1600-1726) and Development of Court and Institutions under the East India Company.

B. **Establishment of Crown Courts in India:** The Mayor's Courts and Courts of Request in Presidency Towns-Beginning of Adalat System-Warren Hastings Plan of 1772, Reforms under Plan of 1774 and Reorganization in 1780-Regulating Act of 1773

C. **Salient Features of Supreme Court at Calcutta:** Composition-Powers-Functions-Working-Landmarks Cases: Trial of Raja Nand Kumar (1775)-Case of Kamaluddin (1775)-The Patna Case (1779)-The Cossijurah Case (1779-80)

UNIT 2

DEVELOPMENT OF COURTS & JUDICIAL INSTITUTIONS SINCE 1781

A. **Act of Settlement 1781:** Supreme Courts at Madras and Bombay- Role of Cornwallis in Judicial Reforms: Judicial Plans of 1787, 1790 and 1793-Progress of Adalat System under Sir John Shore, Lord Walleseley, Lord Amherest and Lord William Bentick

B. History of Indian High Courts under Act of 1861, 1865, 1911 & Govt. of India Act, 1915 & 1935

C. Judicial Committee of Privy Council as a Court of Appeal and its Jurisdiction to Hear Appeals from Indian Decisions-Abolition of the Jurisdiction-Federal Court-Modern Judicial System

UNIT 3

DEVELOPMENT OF LAW

A. Racial Discrimination in the Administration of Civil and Criminal Justice

B. Introduction of English Law in the Presidencies and Mufussils

C. Development of Criminal Law-Development of Civil Law-Development of Personal Law during British Periods

UNIT 4

CIVIL REBELLIONS, RISE & GROWTH OF THE INDIAN NATIONAL MOVEMENT

A. **Revolt of 1857:** Civil Rebellious and Peasant Revolts with Special Reference to Indigo-Revolt, Deccan Riots and Mappila Uprising-Early Nationalists and Militant Nationalists-Revolutionary Group-Terrorists
B. Passing of the Indian Council Act, 1881, 1892 and the Govt. of India Act of 1909, 1919 & 1935
C. The emergence of Gandhi in Indian Politics and Techniques of Mass Mobilization: Non-Cooperation, Civil Disobedience and Quit Indian Movement-Transfer of Power and Indian Independence Act, 1947

UNIT 5

HISTORICAL GROWTH OF LEGAL PROFESSION & LAW-REPORTING

A. **Codification of Indian Laws and the Law Commissions:** The Charter Act of 1833-First Law Commission- Charter Act of 1853-Second, Third & Fourth Law Commission
B. **Growth of Legal Profession in India:** Legal Practitioners Act, 1853, The High Court of 1861, The Legal Practitioners Act 1879, Report of the Indian Bar Committee, 1923, The Indian Bar Council Act, 1926 and The Advocates Act, 1961
C. History of Law Reporting in India

RECOMMENDED READING:

1. J. K. Mittal: Indian Legal & Constitutional History, Allahabad Law Agency, Allahabad.
2. Kailash Rai: Indian Legal & Constitutional History, Allahabad Law Agency, Allahabad.
3. M P Jain: Outlines Of Indian Legal and Constitutional History, LexisNexis India, Gurgaon.
4. M. P. Singh: Outlines of Indian Legal and Constitutional History: Including Elements of Indian Legal System, Universal Law Publishing Co. Pvt. Ltd, New Delhi.
5. M. Rama Jois: Legal and Constitutional History of India: Ancient Legal, Judicial and Constitutional System, Universal Law Publishing-An Imprint of LexisNexis, New Delhi.
6. Sumeet Malik: V. D. Kulshreshtha's Landmarks in Indian Legal & Constitutional History, Eastern Book Company, Lucknow.

B.A.LL.B (Hons.) Semester-II

LAW OF CONTRACT – I (BAL 202)

INTRODUCTION OF THE COURSE

Contracts are at the basis of majority of transactions especially transactions dealing with the property. Whether the transaction is in the ordinary course of life or in the electronic world (e-commerce) the general principles governing contracts remain same. For this reason, it is very important to introduce the students to the basic principles governing contracts and lay a powerful foundation for their study of other transactional and related laws in higher semesters. Law of contract being the pillar of the legal structure of a society, the fundamental goal of study is to critically evaluate principles underlying the legal postulates and propositions.

TEACHING METHODOLOGY

Case-study method shall be the main method of learning to be followed. Dialectic method of mooting and argumentation plays a very convincing procedure of learning. The information sharing and flow of information among the teacher and taught has to work as bonding of the entire course. Case comment and book review can also be a method of research writing in this paper.

Course Outline:

UNIT 1

General Introduction

- History and Nature of Contractual Obligation
- **Formation of Contract**: Offer, Kinds of offer, Acceptance, Mode of Acceptance Communication and Revocation of offer and Acceptance, Contract through Electronic Medium
- Intention to create Legal Relationship/Obligation

UNIT 2

Free consent and Limitations on Freedom of Contract

- **Consideration**: Definition Essential Elements Doctrine of Privity of Contact, and Consideration, Exceptions of Consideration, Exceptions-Adequacy of Consideration-Past, Executed and Executor Consideration

- **Capacity to Contract**: Meaning-Incapacity arising out of Status & Mental Defects; Nature of Minor's Agreement-Effect of Minor's Agreement as regard to Estoppel-Liability, Restitution and Notification-Accessories Supplied to a Minor-Agreements Beneficial and Detrimental to a Minor.
- **Principle of Free Consent**: Coercion-Undue Influence-Misrepresentation-Fraud-Mistake; Unlawful Consideration and Object
- **Void Agreement**: Meaning-Agreement without Consideration-Agreement in Restraint of Marriage-Agreement in Restraint of Trade-Agreement in Restraint of Legal Proceedings-Unmeaning Agreement-Wagering Agreement

UNIT 3

Discharge of a Contract

- **Contingent Contract**: Performance of Contingent Contract
- **Discharge of Contract**: Performance-Impossibility of Performance-Doctrine of Frustration-By Agreement-By Breach-Anticipatory Breach-Breach during Performance
- Appropriation of Payment
- Quasi-Contract

UNIT 4

Remedies for breach of Contract and Quasi Contracts

- **Remedies for Breach of Contact**: Types of Damages, Remoteness of Damages & Measures of Damages
- Penalty and Liquidated Damages,
- *Quantum Meruit*

UNIT 5

The Specific Relief Act

- **Specific Performance of Contract**: Contract that can be Specifically Enforced, Persons against whom Specific Enforcement can be ordered.
- Rescission and Cancellation
- **Injunction**: Temporary-Perpetual
- **Declaratory Orders**: Discretion and Power of the Court

List of Books

1. Dr. Avtar Singh: *Law of Contract & Specific Relief*, Eastern Book Company, Lucknow.
2. Dr. R.K. Bangia: *Contract*, Allahabad Law Agency, Allahabad.

3. H. K. Saharay: *Dutt on Contract-The Indian Contract Act, 1872*, Eastern Law House, Kolkata.
4. G. H. Treitel: *The Law of Contract*, Sweet & Maxwell, London.
5. H. G. Beale and Joseph Chitty: *Chitty on Contracts: General Principles*, Sweet & Maxwell, London.
6. J. Beatson, Andrew Burrows & John Cartwright: *Anson's Law of Contract*, Oxford University Press, London.
7. M. Krishnan Nair: *Indian Contract Law*, Orient Longman, Hyderabad.
8. Michael P. Furmston: *Cheshire, Fifoot & Furmston's Law of Contract*, Oxford University Press, London.

Relevant Cases

1. *Carlill* v. *Carbolic Smoke Ball Co*., (1893) 1 QB 256.
2. *Lalman Shukla* v. *Gauri Dutt*, (1913) 11 All 486.
3. *Balfour* v. *Balfour*, (1919) 2 KB 571.
4. *Weeks* v. *Tybald*, (1605) 75 ER 982.
5. *Harvey* v. *Facie*, (1893) AC 552.
6. *Powel* v. *Lee*, (1908) 24 LTR 606.
7. *Bhagwandas Govardhandas Kedia* v. *Girdhari Lal Parshotamdas & Co*., AIR 1966 SC 543.
8. *Dutton* v. *Poole*, (1672) KB Lev 210.
9. *Tweddle* v. *Atkinson*, 30 LJ QB 218.
10. *Durga Prasad* v. *Baldeo*, (1880) 3 All 221.
11. *Kedar Nath* v. *Gorie Mohamed* (1886) 1 LR 14 Cal 614.
12. *Chinnaya* v. *Ramayaa*, (1882) 4 Mad 137.
13. *Mohori Bibee* v. *Dharmodas Ghose*, 30 Cal 539.
14. *Khan Gul* v. *Lakha Singh*, ILR (1928) 9 Lah 711.
15. *Madhub Chandra* v. *Raj Coomar*, (1874) XIV Bengal Law Rev. 76.
16. *Nordenfelt* v. *Maxim Nordenfelt Gun & Ammunition Co., Ltd*. (1894) AC 535.
17. *Krell* v. *Henry*, (1903) 2 KB 740 CA.
18. *Satyabrata Ghose* v. *Mugneeram*, AIR 1954 SC 44.
19. *Hadley* v. *Baxendale*, (1854) 9 Exch 341.
20. *Simpson* v. *London North Rly. Co*., (1876) QBD 274.
21. *Victoria Laundry (Windsor) Ltd*. v. *Nowman Industries Ltd.*, (1949) KB 528.
22. *Ardeshir H. Mama* v. *Flora Sassoon*, IP 1928 PC 208.
23. *Devender Singh* v. *Syed*, AIR 1973 SC 2457.
24. *Thomas* v. *Hanuman Prasad*, AIR (1983) A 202.
25. *American Cyanamid* v. *Ethican*, (1975) 1 All ER 504.

B.A.LL.B (Hons.) Semester-II

GENERAL ENGLISH-II (BAL 203)

INTRODUCTION TO THE COURSE

English is a fascinating subject that allows the student to combine imagination with intellectual inquiry; it teaches students to read closely, write well and think critically

OBJECTIVES

• To enhance the understanding basic language skills in written and spoken English

• Establish the interrelationship between the study of law and literature and help the students visualize a more humane perspective of legal studies

• Develop the ability to comprehend and analyze English texts of an advanced nature

• Develop the ability for sustained speech and composition in the descriptive, narrative, expository, argumentative and persuasive modes

• Improve the oratory skills of students to enable them to be fluent lawyers in the future

• Teach practical applications of the English language in fields such as report writing, official correspondence etc.

• The course reinforces core reading, writing, listening and speaking skills in English and prepares students to obtain the International Legal English Certification

• Prepare the base for general progression to legal language in next semester

TEACHING METHODOLOGY

As per the norms of the university in this course there will be 6 classes per week. Teaching methodology will include Lectures-cum-discussion, Assignments, Projects and Presentations.

COURSE OUTLINE

UNIT 1

LAW AND LITERATURE

(1) Nature of Law

A) The Nature of Law

B) Custom , Morality, Law

a) Law is for guidance of human conduct.

b) Law is a body of rules.
c) Law is imposed
d) Enforcement
e) The State
f) Content of Law
g) Justice and Law

Mode of Teaching: Discussion, Writing, Debates

(2) Crimes and Civil Wrong
A) Distinction between Crime and Civil Wrong
B) Terminology used in Crime and civil Wrong

Methods of Teaching: Discussion, Writing, and Research on the subject with examples.

(3) Command of Language in the Profession of the Law
A) The tools of trade
B) Acquiring skill
C) Addressing the court

(4) Plain Language and the Law
A) What is Plain English

Recommended Reading: Cutts, Martin. The Plain English Guide. New Delhi: Oxford University Press, 1995. 3-4

B) What is Plain Language? In Its annual report for 1991-1992, the Plain Language Institute answered this question)

Recommended Reading: http://plainlanguage.com/Resources/whatisplain.html

C) Egg–bound

Recommended Reading: MarkAdlerhttp www.alder.demon.co.uk/eggbound.html

(5) The Indian Constitution
A) Broad Features
B) Influence of other Countries constitution on our countries constitution.
C) Some Characteristics of the Indian Constitution

Recommended Reading: Setalvad, M.C. The Common Law in India. London: Stevens and Sons,1960.168-76

Recommended Readings

1. M.A. Yadugiri & Geetha Bhasker , English for Law, Foundation Books, Delhi, 2005
2. R.P.Bhatnagar, Law and Language, Macmillan, 2009
3. Michael McKeon, The Origins of the English Novel, John Hopkins University Press, USA, 2002.
4. .William J. Long, English Literature, A.I.T.B.S., Delhi, 2004.

UNIT 2

LAW AND LITERATURE

(1) The impact of Technology on the Practice of Law

A) Internet and the World Wide Web

B) Communication

a) Email

b) Mailing Lists or List servers

c) Newsgroups

C) Internet Relay Chat , Internet Phone and Video Teleconferencing

a) Internet Relay Chat

b) Internet Phone

c) Video Conferencing

D) Legal Research

a) Internet Legal Research

b) CD-ROM and Optical Storage

E) Dispute Settlement in Cyberspace

Recommended Reading: Georges, Richard M. *Future Lawyer Page*. 22 April 2000

http://www.futurelawyer.com/flabar.html/

(2) The International Court of Justice

A) Procedure

B) Jurisdiction

C) Enforcement

D) The 'Limited Appeal of the ICJ

Recommended Reading: http://www.wwlia.org/icj.html 31 October 2001.1-3

(3) Application of Precedents

A) Knowing the facts

a) Cases discussed

Recommended Reading: Dias, R.W.M. Jurisprudence 5th ed London: Butterworths,1985. 136-39

(4) Legal Reasoning

A) Induction

B) Analogy

C) Justification

Recommended Reading: Dias, R.W.M. Jurisprudence. London: Butterworths, 1985. 153-57

(5) The Bet by Anton Chekhov

A) Discussion on the difference between Russian Literature and Western Literature.

B) Analysis of the story.

Recommended Reading: *www.eastoftheweb.com/short-stories/UBooks/**Bet**.shtml*

*en.wikipedia.org/wiki/**The_Bet**_(short_story)*

The Project Gutenberg EBook of Best Russian Short Stories, including "The Bet"

Recommended Readings

5. M.A. Yadugiri & Geetha Bhasker , English for Law, Foundation Books, Delhi, 2005
6. R.P.Bhatnagar, Law and Language, Macmillan, 2009
7. Michael McKeon, The Origins of the English Novel, John Hopkins University Press, USA, 2002.
8. William J. Long, English Literature, A.I.T.B.S., Delhi, 2004.

UNIT 3

PHONETICS AND GRAMMAR

(1) Phonetics (IPA) and Phonetic Break up.

A) Recap of sounds done in Semester I

a) Consonants and Vowels
b) Chart of Consonants and Vowels

B) Phonetic Break up of words

C) Commonly Mis pronounced Words

D) Syllable and Syllable Stress rules.
a) Syllable Break up
b) How to Stress a Syllable
c) Rules of Syllable stress on the basis of word ending
d) Stress Shift

E) Question Formation
a) Close ended
b) Open ended
c) Tag Questions

F) Modals
a) Modal of ability
b) Modal of Possibility
c) Modal of Permission
d) Other Modals

Recommended Readings

1. S. Pit Corder, An intermediate English Practice Book, Orient Longman, Hyderabad, 1996.
2. A.S.Hornby, Guide to Patterns and Usage in English, OUP, Delhi, 1999.
3. David Green, Contemporary English Grammar Structures and Composition, Macmillan, Chennai, 1999.
4. Geoffrey Leech and Jan Svartvik, A Communicative Grammar of English, Longman, Delhi, 2001.
5. Thomson and Martinet, A Practical English Grammar, OUP, Bombay, 1970

UNIT 4

BUSINESS COMMUNICATION

1) Report Writing on various current event topics
2) Letter Writing

a) Official
b) Complaint

3) C.V Writing
4) Job Application Writing
5) Goodwill Letters
   a) Condolence letter
   b) Promotion Letter
   c) Motivational Letters
6) Notice
   a) Legal Notice
   b) Private Notice
   c) Public Notice
7) Affidavit
   a) Simple
   b) Court

Recommended Readings

1. Chaturvedi & Chaturvedi, "Business Communication", Pearson, 2004.
2. Rai & Rai, "Business Correspondence & Report Writing", Himalaya Publishing House, 2001
3.Matthukutty M Monippally, "Business Communication Strategies" Tata Mc Graw Hill, 2001
4. Sharma & Mohan, "Business Correspondence and Report Writing", Tata Mc Graw Hill, 2002

UNIT 5

ARTICLE AND LAW

A) Speeches of Mahatma Gandhi

Recommended Reading: (http://en.wikipedia.org/wiki/Quit_India_speech) and Martin Luthra King (http://abcnews.go.com/Politics/martin-luther-kings-speech-dream-full-text)

   a) Critical analysis of both the speeches
   b) Listening activity by playing the speeches in the class

B) Articles on current issues
   a) Delhi Gang Rape (Taken from Frontline January 25 ,2013 and Lawz January 2013 edition)

b) Italy and its Maro' by Marina Forti (Taken from Economic and Political Weekly April 6,2013)

C) Articles on Law

a) Norvartis Case. (The Hindu, Monday , April 15)

b) Why Justice must be seen and heard (Indian Express, 20 Jan)

c) JS Verma : Left behind little as inheritance , lot as legacy

d) When Constitution got a Judicial Shield

Recommended Reading:

1) Frontline Magazine
2) Economic and Political Weekly
3) The Week
4) Outlook
5) Law Reports

B.A.LL.B (Hons.) Semester-II

POLITICAL SCIENCE-II (BAL 204)
(PUBLIC POLICY & PUBLIC ADMINISTRATION)

INTRODUCTION TO THE COURSE

This course is aimed at equipping students with tool of administrations that better helps in grasping the process of implementation of law

OBJECTIVE OF THE COURSE

- To make students familiar with working of executive
- To acquaint students with certain constitutional provisions that would guide them in working of legislature, executive and judiciary
- To accustom students with certain commissions that form bed rock of Indian constitution

TEACHING METHODOLOGY

As per the norms of the university in this course there will be 6 classes per week. Teaching methodology will include Lectures-cum-Discussion, Assignments, Projects and Presentations.

COURSE OUTLINE

Unit – I

Introduction to Public Policy and Public Administration

Meaning, nature and scope of public policy - making of public policies - constitutional basis for making it

Meaning, nature and scope of Public Administration in a State - Public & Private administration - Evolution of Public Administration in developed and developing countries.

Contemporary challenges of Public Administration - Second administrative reforms commissions that deal with good governance

B.A.LL.B (Hons.) Semester-II

Unit II

Theories of Organizations

Theories of Organization - Scientific Management - Bureaucratic theory of organization - Classic theory of organization - Human Relations theory of organization.

Principles of Organization - Hierarchy - Span of Control - Unity of Command - Centralised and decentralised administration.

Unit III

Structure of Organization - I

Chief executive - functions of Chief Executive - Departments of e - location of authority - Autonomy/independence and accountability of departments - Public enterprises/ Corporations as units of administration - Growth of public enterprises/Corporation in India - Autonomy and Accountability - Nature, scope and extent of ministerial control - Parliamentary Control, etc

Unit IV

Structure of Organization - II

Boards and Commissions - Constitutional bodies – Finance Commission - UPSC - EC - BC / SC / ST Commissions - Field administration - Decentralized administration - 73rd & 74th ed.

Independent Regulatory Commissions - Growth of Regulatory Commissions in India - Impact of Globalization on Administration - TRAI, IDRA, SEBI.

Unit V

Theories of Management and Administrative Reform

Management issues / concepts - Participative Management - Planning – Planning Commission - NDC - Planning under 73rd & 74th Amendments - Coordination - delegation - Audit & Accountability - O & M – Right to Information

Developed legislation - Quasi judicial and administrative powers - Administrative Tribunals - contemporary developments - 323A & B - Control over public administration - Executive, legislative & judicial.

RECOMMENDED READINGS

1. Max Weber, 1997, 'Rational-legal authority and bureaucracy' in Michael Hill (ed), *The Policy Process: A Reader*, Prentice Hall, Harvester Wheatsheaf, London, pp. 323-37
2. F. W. Taylor, 'Scientific Management', in in Jay M. Shafritz & Albert C. Hyde (ed), 1997, *Classics of Public Administration*, Fourth Edition, Hartcourt Brace College
3. Givisheani, The Human Relation Doctrine,
4. Fredrickson and Smith, 2003, 'Decision Theory', in *The Public Administration Theory Primer*, Westview Press, Cambridge.
5. Principles of Organization in Rumki Basu Public Administration, sterling Publishers, New Delhi
6. Aspects of Indian Administration in B.L. Fadia Public Administration, Concepts and Theories, Sahitya Prakashan, 2012.
7. Satyajit Singh and Pradeep Sharma (ed), 2007, 'Introduction' in *Decentralization: Institutions and Politics in Rural India*, Oxford University Press, Delhi.
8. James Manor, 1999, 'Defining Terms', in *The Political Economy of Democratic Decentralization*, The World Bank, Washington D.C.
9. Indian Constitution : Bare Act: Universal Law publishing House, New Delhi
10. Nicholas Henry, *Public Administration and Public Affairs*, Tenth Edition, PHI, New Delhi.
11. Indian Constitution : Bare Act: Universal Law publishing House, New Delhi
12. Public accountability, NGOs and peoples participation
    (i) Social Audit, Nikhil Dey
    (ii) Accounts and Accountability, Rob Jenkins and Anne Marie Goetz
    (iii) Citizen enlargement in Institutions of Public-sector over right in India – Goetz and Jenkins
13. Pradeep K. Sharma & Mandalini Devasher, 'Right to Information in India, in Satyajit Singh and Pradeep Sharma (ed), 2007, *Decentralization: Institutions and Politics in Rural India*, Oxford University Press, Delhi.
14. Indian Constitution : Bare Act: Universal Law publishing House, New Delhi

15. Grindle, M. & Thomas, J. (1991), *Public Choice and Policy Change: The Political Economy of Reform in Developing Countries*.
16. What is Good Governance, UNESCAP.
17. Amreshwar Avasthi & Shriram Maheswari, Public Administration, New Delhi.
18. Chaturvedi (Edited), Comparative Public Administration, I.I.P.A. New Delhi.
19. Leonard D.White, Public Administration, Eurasia Publishing House, New Delhi.
20. *www.**trai**.gov.in/*
21. *www.**sebi**.gov.in/*
22. www.**idra**.org/
23. arc.gov.in/3rdreport.pdf
24. Mohit Bhattacharya, 2008, *New Horizons of Public Administration*, Jawahar Publishers, New Delhi, Fifth Revised Edition.
25. Nicholas Henry, 2007, *Public Administration and Public Affairs*, Prentice Hall, New Delhi, 10th edition.
26. Mohit Bhattacharya, Recent Advances in the Discipline of Public Administration

27. . Dwight Waldo, 1968, 'Public Administration', *International Encyclopedia of the Social Sciences*, Macmillan.
28. 2. Richard Anderson, *Public Policy*.

B.A.LL.B (Hons.) Semester-II

SOCIOLOGY-II (BAL 205)
(SOCIOLOGY OF INDIAN SOCIETY)

INTRODUCTION TO THE COURSE

The course is aimed at rectifyi aims to rectify the limitations of being familiar by presenting a comprehensive, integrated and empirically-based profile of Indian society. The continuity between the present and the past is an evident feature of Indian society. Though this continuity is reflected in the structure of the course, the focus is on the contemporary Indian society. It is hoped that the sociological perspective on Indian society presented in this course will also enable students to gain a better understanding of their own situation and region.

OBJECTIVE OF THE COURSE

- To make students aware with the micro and macro world of Indian Society
- To understand functional similarities and differences in the institutions of Indian Society
- To understand the processes of social change and development in Indian Society

TEACHING METHODOLOGY

As per the norms of the university , there will be 6 classes per week in this course. Teaching methodology will include Lectures-cum-discussion, Assignments, Projects, Presentations and Field work.

B.A.LL.B (Hons.) Semester-II

COURSE OUTLINE

UNIT-1

TEXTUAL AND FIELD VIEW OF INDIAN SOCIETY

A. Emergence of Sociology in India
B. Orientalist Approach
C. Indological Approach: G. S Ghurye and Louis Dumont

UNIT- 2

CASTE SYSTEM IN INDIA

A. Caste System: Meaning, definition and Features
B. Changing trends in the Caste System
C. Caste system in Contemporary India
D. Caste and Social Mobility
E. Aspects of Mobility in Caste-Sanskritization,

UNIT-3

ECONOMY AND POLITY

A. The Jajmani System: Form, Content, Dynamics and Change
B. Agrarian Reforms in India: Permanent Landlords, Tenants and Land Revenue
C. New Economic Policy: Liberalization, Privatization and Globalization
D. Local Polity in India: Factions, Caste Councils and Village Panchyats
E. Democratic Decentralization/ Panchayati: Concept and Evolution

UNIT-4

LAW AND INDIAN SOCIETY

A. Sociological Approaches to Law
B. Law in Relation to Social Order in India
C. The interplay between Values or Norms and the Law
D. Law as a means of Social Control: Micro and Macro levels in Operation
E. Law and Social Change in India

MODULE-5

WOMEN AND SOCIAL MOVEMENTS IN INDIA

A. The Feminist Perspective
B. The Status of Women in India: Ancient, Medieval and Modern
C. Social Movements: Definition, Characteristics and Types
D. Women Movements
E. Tribal Movements
F. Agrarian Movements

REFERENCES:

1. Abraham, Francis M. (2006). Studies in Sociology: An Introduction to Concepts and Theories. New Delhi: Oxford University Press.
2. Ahuja, Ram (1999). Society in India: Concepts, Theories and Recent Rrends. New Delhi: Rawat Publication.
3. Bhushan, Vidaya and Sachdeva, D. R. (2006) An Introduction to Sociology. Kitab Mahal
4. Bottomore, T. B. (1972). Sociology: A Guide to Problems and Literature. India: Blackie and Son Ltd.
5. Giddens, Anthony (1993) Sociology. United Kingdom: Polity Press.
6. Harlambos, M. (1998). Sociology: Themes and Perspectives. New Delhi. Oxford University Press.
7. Inkeles, Alex. (1987). What is Sociology? New Delhi. Prentice Hall of India.
8. Kuppuswamy, B (1992). Social Change in India. Konark Publishers Ltd.
9. Ommen, T. K and Venugopal C.N. (2002). Sociology. Lucknow: Eastern Book Company.
10. Rao, C.N. Shankar. (2011). Sociology of Indian Society. New Delhi: S Chand and Co.

B.A.LL.B (Hons.) Semester-II

ECONOMICS-II (BAL 206)
(MONEY, BANKING & PUBLIC FINANCE)

INTRODUCTION TO THE COURSE

"Money is the axis around which the whole economy revolves. Monetary economics provides a framework for analyzing money in its functions as a medium of exchange, store of value, and unit of account. It examines the effects of monetary systems, including regulation of money and associated financial institutions and international aspects. The study of monetary aggregates, their behavior, determination etc therefore has become very important. Banks are central to economic growth. They play a central role in development of an economy. Thus it makes study of Indian banking system indispensible. In the same way role of public finance and fiscal policies can't be denied in modern concept of welfare state. The policies of revenue and expenditure as laid down by governments make a huge impact on economies. This paper makes an effort to teach the principles of revenue, expenditure and debts to the law students which makes the basis for their further studies."

OBJECTIVE OF THE COURSE

- To make student understand about the basic concepts of Monetary Economics.
- To understand the functioning of monetary system in economy.
- To understand the Banking structure of Indian economy.
- To understand the concepts, nature and principles of public finance.

TEACHING METHODOLOGY

As per the norms of t , there will be 6 classes per week in this coursesses per week. Teaching methodology will include Lectures-cum-discussion, Assignments, Projects and Presentations.

THE EVALUATION SCHEME

- Continuous Assessment- 40%

• Mid-Term- 20%

• End Term- 40%

COURSE OUTLINE

UNIT-1

INTRODUCTION TO MONETARY ECONOMICS

A. Money – Meaning, features, types and functions

B. Demand for Money

C. Money Supply – Meaning and types; High Powered money

D. Money Multiplier

E. Exchange rate systems; Depreciation and devaluation – concept & impact on economy.

Recommended Readings

1. Handa, Jagdish., Business & Economics, Routledge, 2008

2. Koutsoyiannis, A.,Modern Economics, Mc GrawHill, London,1979

3.Shapiro, Edward., Macroeconomic Analysis, Galgotia Publications Private Limited, new Delhi, 2007

4. Samuelson PA and Nordhaus WD, Economics, Seventeenth Edition, Tata McGraw Hill, New Delhi, 1998.

5. Bhatia, H L., Public finance, Vikas Publications, 16 edition.

UNIT-2

MONETARY POLICY & FINANCIAL MARKETS

A. Monetary Policy – Meaning & Objectives; Tools of Monetary Policy

B. Money & Capital Market – Meaning, Features & constituents

C. Quantity theory of money – Fisher & Cambridge Version; Friedman approaches

Recommended Readings

1. Bruce Champ, Scott Freeman, Joseph Haslag., Modeling Monetary Economies , Cambridge University Press, 2011

2 William E. Gibson, George G. Kaufman., Monetary economics: readings on current issues, Tata McGraw Hill

3. Samuelson PA and Nordhaus WD, Economics, Seventeenth Edition, Tata McGraw Hill, New Delhi, 1998.

4. Musgrave, Richard., Public Finanace – theory & practice., Tata Mc Graw Hill Publications, 5th edition.

5. Dwivedi, D N., Macro Economics: Theory & Policy, Tata Mc Graw Hill Publications

6. Pathak, Bharti V., Indian Financial system: Markets, Institutions & Services, Pearson Education, 7th edition.

UNIT-3
BANKING & STANDARDS IN BANKING

A. Banking: Meaning & Classification; Functions & Importance of Commercial Banks
B. Banking crisis & mitigation
C. Central Bank – functions, quantitative & qualitative credit control methods,
D. RBI: Role of RBI; Limitations & Introduction to Basel Norms

Recommended Readings

1 Mithani, D.M., Public Finance: Theory and Practice., Himalaya Publication, 2006
2. Agarwal, Vanita., Pearson Education , India
4. Michl, Thomas R., Macroeconomic Theory: A Short Course, M . E. Sharpe
5. Harvey S. Rosen., Public Finance, 2007

UNIT-4
INTRODUCTION TO PUBLIC FINANCE

A. Public Finance: Meaning, types, nature & scope of public finance; Public & private finance

B. Public Revenue – meaning & sources; Types of Revenue

C. Taxation – meaning; Principles & Canons of taxation; Tax incentives; Double tax relief

Recommended Readings

1. Seth, M L., MacroEconomic Analysis, Lakshmi Narain Publications,29th edition, 2012

2. Gupta, G S., Tata Mc Graw Hill, 2nd edition, 2004

3. Chand S N, Public Finance, Atlantic Publishers & Distributors

UNIT-5
PUBLIC EXPENDITURE AND PUBLIC DEBT

A. Public expenditure – Meaning & principles of Public Expenditure
B. Public Debt – Meaning & types
C. Debt management – meaning & methods
D. Debt restructuring – issues on sovereign debt restructuring during the past decades & methods to resolve the issues with appropriate mechanism.
   - ❖ Discuss latest budget

Recommended Readings

1. Mithani, D M., Macroeconomics. Himalaya Publications

2. Agarwal, Vanita., Pearson Education , India

3. Samuelson PA and Nordhaus WD, Economics, Seventeenth Edition, Tata McGraw Hill, New Delhi

Other Recommended Readings

Rosen Harvey S., Gayer Ted, Public Finance., Tata McGraw Hill, 8th edition

Christoffersen, H., Beyeler, M., Eichenberger, R., Nannestad, P., Paldam, M., "The Good Society"., Springer Publishers.

Handa, Jagdish., "Monetary Economics" Routledge publications, 2008

Kumar Ravi T., "Indian Banking in Transition: Issues and Challenges"., Visison Books, 2000.

"The great crash: The meaning of Lehman" ; The Economist

Mid-Quarter Monetary Policy Review: September 2013; http://www.rbi.org.in

http://www.indg.in/financial-literacy/financial_quiz/relationship_between_banker_and_customer.pdf

B.B.A.LL.B (Hons.) Semester-II

CURRICULUM AND SYLLABI

(2nd Semester)

B.B.A.LL.B. (Hons.)
(Integrated Law degree course)

SCHOOL OF LAW

RAFFLES
UNIVERSITY

Japanese Zone, National Highway 48 Neemrana, Rajasthan 301020

www.rafflesuniversity.edu.in

B.B.A.LL.B (Hons.) Semester-II

LEGAL & CONSTITUTIONAL HISTORY (BBL 201)

INTRODUCTION OF THE COURSE

It is widely believed and perhaps rightly so that today‘s problems and solutions thereto lie hidden in History. Understanding the history of the state, social institutions, people and culture inherently makes one understand as to how to critically appreciate a fact situation. Thus, a lawyer must understand the history of the political establishment and social institutions and thus evaluate the legal and judicial structure and process. History II deals with the changes that took place in colonial times in Indian society, the economy in general, and the legal system in particular. It seeks to answer some basic questions. How did contemporary India emerge? What were the processes and events that shaped it? Why and how did the present legal system evolve? What were the various ideas and elements that went into the making of British policies? What were the changes that took place in the courts and laws in colonial times and how they impacted the Indians and their old systems? How did Indian Nationalism emerge & what were the forms it took? What was the genesis of some of the problems like communalism? What were the concerns of the framers of the constitution and the major debates? Finally how the concept of Indian secularism emerged during the national movement and was adopted post-independence.

OBJECTIVES OF THE COURSE

The modern Indian Legal system has originated from our history. This paper aims to acquaint students about the important events in Indian history which shaped our legal framework. What were the various ideas and elements that went into the making of British policies? What were the changes that took place in the courts and laws in the colonial times and how they impacted the Indians and their old systems.

TEACHING METHODOLOGY

Initial learning begins with a Socratic method followed by a dialectic process of learning and critiquing; which gradually develops in case studies, research and finally to go for art of lecturing and convincing the listeners.

Evaluation Scheme

Continuous Assessment System- 40%
Mid-Term- 20%
End Term- 40%

B.B.A.LL.B (Hons.) Semester-II

COURSE OUTLINE

UNIT 1

DEVELOPMENT OF COURTS & JUDICIAL INSTITUTIONS FROM 1600 TO 1781

A. **India at the Dawn of British Arrival:** English East India Company, Foundation, Constitution and Growth till 1726-Administration of Justice in Presidency Towns (1600-1726) and Development of Court and Institutions under the East India Company.

B. **Establishment of Crown Courts in India:** The Mayor's Courts and Courts of Request in Presidency Towns-Beginning of Adalat System-Warren Hastings Plan of 1772, Reforms under Plan of 1774 and Reorganization in 1780-Regulating Act of 1773

C. **Salient Features of Supreme Court at Calcutta:** Composition-Powers-Functions-Working-Landmarks Cases: Trial of Raja Nand Kumar (1775)-Case of Kamaluddin (1775)-The Patna Case (1779)-The Cossijurah Case (1779-80)

UNIT 2

DEVELOPMENT OF COURTS & JUDICIAL INSTITUTIONS SINCE 1781

A. **Act of Settlement 1781:** Supreme Courts at Madras and Bombay- Role of Cornwallis in Judicial Reforms: Judicial Plans of 1787, 1790 and 1793-Progress of Adalat System under Sir John Shore, Lord Walleseley, Lord Amherest and Lord William Bentick

B. History of Indian High Courts under Act of 1861, 1865, 1911 & Govt. of India Act, 1915 & 1935

C. Judicial Committee of Privy Council as a Court of Appeal and its Jurisdiction to Hear Appeals from Indian Decisions-Abolition of the Jurisdiction-Federal Court-Modern Judicial System

UNIT 3

DEVELOPMENT OF LAW

A. Racial Discrimination in the Administration of Civil and Criminal Justice

B. Introduction of English Law in the Presidencies and Mufussils

C. Development of Criminal Law-Development of Civil Law-Development of Personal Law during British Periods

UNIT 4

CIVIL REBELLIONS, RISE & GROWTH OF THE INDIAN NATIONAL MOVEMENT

A. **Revolt of 1857:** Civil Rebellious and Peasant Revolts with Special Reference to Indigo-Revolt, Deccan Riots and Mappila Uprising-Early Nationalists and Militant Nationalists-Revolutionary Group-Terrorists
B. Passing of the Indian Council Act, 1881, 1892 and the Govt. of India Act of 1909, 1919 & 1935
C. The emergence of Gandhi in Indian Politics and Techniques of Mass Mobilization: Non-Cooperation, Civil Disobedience and Quit Indian Movement-Transfer of Power and Indian Independence Act, 1947

UNIT 5

HISTORICAL GROWTH OF LEGAL PROFESSION & LAW-REPORTING

A. **Codification of Indian Laws and the Law Commissions:** The Charter Act of 1833-First Law Commission- Charter Act of 1853-Second, Third & Fourth Law Commission
B. **Growth of Legal Profession in India:** Legal Practitioners Act, 1853, The High Court of 1861, The Legal Practitioners Act 1879, Report of the Indian Bar Committee, 1923, The Indian Bar Council Act, 1926 and The Advocates Act, 1961
C. History of Law Reporting in India

RECOMMENDED READING:

1. J. K. Mittal: Indian Legal & Constitutional History, Allahabad Law Agency, Allahabad.
2. Kailash Rai: Indian Legal & Constitutional History, Allahabad Law Agency, Allahabad.
3. M P Jain: Outlines Of Indian Legal and Constitutional History, LexisNexis India, Gurgaon.
4. M. P. Singh: Outlines of Indian Legal and Constitutional History: Including Elements of Indian Legal System, Universal Law Publishing Co. Pvt. Ltd, New Delhi.
5. M. Rama Jois: Legal and Constitutional History of India: Ancient Legal, Judicial and Constitutional System, Universal Law Publishing-An Imprint of LexisNexis, New Delhi.
6. Sumeet Malik: V. D. Kulshreshtha's Landmarks in Indian Legal & Constitutional History, Eastern Book Company, Lucknow.

B.B.A.LL.B (Hons.) Semester-II

LAW OF CONTRACT – I (BBL 202)

INTRODUCTION OF THE COURSE

Contracts are at the basis of majority of transactions especially transactions dealing with the property. Whether the transaction is in the ordinary course of life or in the electronic world (e-commerce) the general principles governing contracts remain same. For this reason, it is very important to introduce the students to the basic principles governing contracts and lay a powerful foundation for their study of other transactional and related laws in higher semesters. Law of contract being the pillar of the legal structure of a society, the fundamental goal of study is to critically evaluate principles underlying the legal postulates and propositions.

TEACHING METHODOLOGY

Case-study method shall be the main method of learning to be followed. Dialectic method of mooting and argumentation plays a very convincing procedure of learning. The information sharing and flow of information among the teacher and taught has to work as bonding of the entire course. Case comment and book review can also be a method of research writing in this paper.

Course Outline:

UNIT 1

General Introduction

- History and Nature of Contractual Obligation
- **Formation of Contract**: Offer, Kinds of offer, Acceptance, Mode of Acceptance Communication and Revocation of offer and Acceptance, Contract through Electronic Medium
- Intention to create Legal Relationship/Obligation

UNIT 2

Free consent and Limitations on Freedom of Contract

- **Consideration**: Definition Essential Elements Doctrine of Privity of Contact, and Consideration, Exceptions of Consideration, Exceptions-Adequacy of Consideration-Past, Executed and Executor Consideration

- **Capacity to Contract**: Meaning-Incapacity arising out of Status & Mental Defects; Nature of Minor's Agreement-Effect of Minor's Agreement as regard to Estoppel-Liability, Restitution and Notification-Accessories Supplied to a Minor-Agreements Beneficial and Detrimental to a Minor.
- **Principle of Free Consent**: Coercion-Undue Influence-Misrepresentation-Fraud-Mistake; Unlawful Consideration and Object
- **Void Agreement**: Meaning-Agreement without Consideration-Agreement in Restraint of Marriage-Agreement in Restraint of Trade-Agreement in Restraint of Legal Proceedings-Unmeaning Agreement-Wagering Agreement

UNIT 3

Discharge of a Contract

- **Contingent Contract**: Performance of Contingent Contract
- **Discharge of Contract**: Performance-Impossibility of Performance-Doctrine of Frustration-By Agreement-By Breach-Anticipatory Breach-Breach during Performance
- Appropriation of Payment
- Quasi-Contract

UNIT 4

Remedies for breach of Contract and Quasi Contracts

- **Remedies for Breach of Contact**: Types of Damages, Remoteness of Damages & Measures of Damages
- Penalty and Liquidated Damages,
- *Quantum Meruit*

UNIT 5

The Specific Relief Act

- **Specific Performance of Contract**: Contract that can be Specifically Enforced, Persons against whom Specific Enforcement can be ordered.
- Rescission and Cancellation
- **Injunction**: Temporary-Perpetual
- **Declaratory Orders**: Discretion and Power of the Court

List of Books

1. Dr. Avtar Singh: *Law of Contract & Specific Relief*, Eastern Book Company, Lucknow.
2. Dr. R.K. Bangia: *Contract*, Allahabad Law Agency, Allahabad.

3. H. K. Saharay: *Dutt on Contract-The Indian Contract Act, 1872*, Eastern Law House, Kolkata.
4. G. H. Treitel: *The Law of Contract*, Sweet & Maxwell, London.
5. H. G. Beale and Joseph Chitty: *Chitty on Contracts: General Principles*, Sweet & Maxwell, London.
6. J. Beatson, Andrew Burrows & John Cartwright: *Anson's Law of Contract*, Oxford University Press, London.
7. M. Krishnan Nair: *Indian Contract Law*, Orient Longman, Hyderabad.
8. Michael P. Furmston: *Cheshire, Fifoot & Furmston's Law of Contract*, Oxford University Press, London.

Relevant Cases

1. *Carlill* v. *Carbolic Smoke Ball Co*., (1893) 1 QB 256.
2. *Lalman Shukla* v. *Gauri Dutt*, (1913) 11 All 486.
3. *Balfour* v. *Balfour*, (1919) 2 KB 571.
4. *Weeks* v. *Tybald*, (1605) 75 ER 982.
5. *Harvey* v. *Facie*, (1893) AC 552.
6. *Powel* v. *Lee*, (1908) 24 LTR 606.
7. *Bhagwandas Govardhandas Kedia* v. *Girdhari Lal Parshotamdas & Co*., AIR 1966 SC 543.
8. *Dutton* v. *Poole*, (1672) KB Lev 210.
9. *Tweddle* v. *Atkinson*, 30 LJ QB 218.
10. *Durga Prasad* v. *Baldeo*, (1880) 3 All 221.
11. *Kedar Nath* v. *Gorie Mohamed* (1886) 1 LR 14 Cal 614.
12. *Chinnaya* v. *Ramayaa*, (1882) 4 Mad 137.
13. *Mohori Bibee* v. *Dharmodas Ghose*, 30 Cal 539.
14. *Khan Gul* v. *Lakha Singh*, ILR (1928) 9 Lah 711.
15. *Madhub Chandra* v. *Raj Coomar*, (1874) XIV Bengal Law Rev. 76.
16. *Nordenfelt* v. *Maxim Nordenfelt Gun & Ammunition Co., Ltd*. (1894) AC 535.
17. *Krell* v. *Henry*, (1903) 2 KB 740 CA.
18. *Satyabrata Ghose* v. *Mugneeram*, AIR 1954 SC 44.
19. *Hadley* v. *Baxendale*, (1854) 9 Exch 341.
20. *Simpson* v. *London North Rly. Co*., (1876) QBD 274.
21. *Victoria Laundry (Windsor) Ltd*. v. *Nowman Industries Ltd.*, (1949) KB 528.
22. *Ardeshir H. Mama* v. *Flora Sassoon*, IP 1928 PC 208.
23. *Devender Singh* v. *Syed*, AIR 1973 SC 2457.
24. *Thomas* v. *Hanuman Prasad*, AIR (1983) A 202.
25. *American Cyanamid* v. *Ethican*, (1975) 1 All ER 504.

B.B.A.LL.B (Hons.) Semester-II

GENERAL ENGLISH-II (BBL 203)

INTRODUCTION TO THE COURSE

English is a fascinating subject that allows the student to combine imagination with intellectual inquiry; it teaches students to read closely, write well and think critically

OBJECTIVES

• To enhance the understanding basic language skills in written and spoken English

• Establish the interrelationship between the study of law and literature and help the students visualize a more humane perspective of legal studies

• Develop the ability to comprehend and analyze English texts of an advanced nature

• Develop the ability for sustained speech and composition in the descriptive, narrative, expository, argumentative and persuasive modes

• Improve the oratory skills of students to enable them to be fluent lawyers in the future

• Teach practical applications of the English language in fields such as report writing, official correspondence etc.

• The course reinforces core reading, writing, listening and speaking skills in English and prepares students to obtain the International Legal English Certification

• Prepare the base for general progression to legal language in next semester

TEACHING METHODOLOGY

As per the norms of the university in this course there will be 6 classes per week. Teaching methodology will include Lectures-cum-discussion, Assignments, Projects and Presentations.

COURSE OUTLINE

UNIT 1

LAW AND LITERATURE

(1) Nature of Law

A) The Nature of Law

B) Custom , Morality, Law

a) Law is for guidance of human conduct.

b) Law is a body of rules.
c) Law is imposed
d) Enforcement
e) The State
f) Content of Law
g) Justice and Law

Mode of Teaching: Discussion, Writing, Debates

(2) Crimes and Civil Wrong
A) Distinction between Crime and Civil Wrong
B) Terminology used in Crime and civil Wrong

Methods of Teaching: Discussion, Writing, and Research on the subject with examples.

(3) Command of Language in the Profession of the Law
A) The tools of trade
B) Acquiring skill
C) Addressing the court

(4) Plain Language and the Law
A) What is Plain English

Recommended Reading: Cutts, Martin. The Plain English Guide. New Delhi: Oxford University Press, 1995. 3-4

B) What is Plain Language? In Its annual report for 1991-1992, the Plain Language Institute answered this question)

Recommended Reading: http://plainlanguage.com/Resources/whatisplain.html

C) Egg–bound

Recommended Reading: MarkAdlerhttp www.alder.demon.co.uk/eggbound.html

(5) The Indian Constitution
A) Broad Features
B) Influence of other Countries constitution on our countries constitution.
C) Some Characteristics of the Indian Constitution

Recommended Reading: Setalvad, M.C. The Common Law in India. London: Stevens and Sons,1960.168-76

Recommended Readings

1. M.A. Yadugiri & Geetha Bhasker , English for Law, Foundation Books, Delhi, 2005
2. R.P.Bhatnagar, Law and Language, Macmillan, 2009
3. Michael McKeon, The Origins of the English Novel, John Hopkins University Press, USA, 2002.
4. .William J. Long, English Literature, A.I.T.B.S., Delhi, 2004.

UNIT 2

LAW AND LITERATURE

(1) The impact of Technology on the Practice of Law

A) Internet and the World Wide Web

B) Communication

a) Email

b) Mailing Lists or List servers

c) Newsgroups

C) Internet Relay Chat , Internet Phone and Video Teleconferencing

a) Internet Relay Chat

b) Internet Phone

c) Video Conferencing

D) Legal Research

a) Internet Legal Research

b) CD-ROM and Optical Storage

E) Dispute Settlement in Cyberspace

Recommended Reading: Georges, Richard M. *Future Lawyer Page*. 22 April 2000

http://www.futurelawyer.com/flabar.html/

(2) The International Court of Justice

A) Procedure

B) Jurisdiction

C) Enforcement

D) The 'Limited Appeal of the ICJ

Recommended Reading: http://www.wwlia.org/icj.html 31 October 2001.1-3

(3) Application of Precedents

A) Knowing the facts

a) Cases discussed

Recommended Reading: Dias, R.W.M. Jurisprudence 5th ed London: Butterworths,1985. 136-39

(4) Legal Reasoning

A) Induction

B) Analogy

C) Justification

Recommended Reading: Dias, R.W.M. Jurisprudence. London: Butterworths, 1985. 153-57

(5) The Bet by Anton Chekhov

A) Discussion on the difference between Russian Literature and Western Literature.

B) Analysis of the story.

Recommended Reading: *www.eastoftheweb.com/short-stories/UBooks/**Bet**.shtml*

*en.wikipedia.org/wiki/**The_Bet**_(short_story)*

The Project Gutenberg EBook of Best Russian Short Stories, including "The Bet"

Recommended Readings

5. M.A. Yadugiri & Geetha Bhasker , English for Law, Foundation Books, Delhi, 2005
6. R.P.Bhatnagar, Law and Language, Macmillan, 2009
7. Michael McKeon, The Origins of the English Novel, John Hopkins University Press, USA, 2002.
8. William J. Long, English Literature, A.I.T.B.S., Delhi, 2004.

UNIT 3

PHONETICS AND GRAMMAR

(1) Phonetics (IPA) and Phonetic Break up.

A) Recap of sounds done in Semester I

a) Consonants and Vowels
b) Chart of Consonants and Vowels

B) Phonetic Break up of words

C) Commonly Mis pronounced Words

D) Syllable and Syllable Stress rules.
a) Syllable Break up
b) How to Stress a Syllable
c) Rules of Syllable stress on the basis of word ending
d) Stress Shift

E) Question Formation
a) Close ended
b) Open ended
c) Tag Questions

F) Modals
a) Modal of ability
b) Modal of Possibility
c) Modal of Permission
d) Other Modals

Recommended Readings

1. S. Pit Corder, An intermediate English Practice Book, Orient Longman, Hyderabad, 1996.
2. A.S.Hornby, Guide to Patterns and Usage in English, OUP, Delhi, 1999.
3. David Green, Contemporary English Grammar Structures and Composition, Macmillan, Chennai, 1999.
4. Geoffrey Leech and Jan Svartvik, A Communicative Grammar of English, Longman, Delhi, 2001.
5. Thomson and Martinet, A Practical English Grammar, OUP, Bombay, 1970

UNIT 4

BUSINESS COMMUNICATION

1) Report Writing on various current event topics
2) Letter Writing

a) Official
b) Complaint

3) C.V Writing
4) Job Application Writing
5) Goodwill Letters
   a) Condolence letter
   b) Promotion Letter
   c) Motivational Letters
6) Notice
   a) Legal Notice
   b) Private Notice
   c) Public Notice
7) Affidavit
   a) Simple
   b) Court

Recommended Readings

1. Chaturvedi & Chaturvedi, "Business Communication", Pearson, 2004.
2. Rai & Rai, "Business Correspondence & Report Writing", Himalaya Publishing House, 2001
3.Matthukutty M Monippally, "Business Communication Strategies" Tata Mc Graw Hill, 2001
4. Sharma & Mohan, "Business Correspondence and Report Writing", Tata Mc Graw Hill, 2002

UNIT 5

ARTICLE AND LAW

A) Speeches of Mahatma Gandhi

Recommended Reading: (http://en.wikipedia.org/wiki/Quit_India_speech) and Martin Luthra King (http://abcnews.go.com/Politics/martin-luther-kings-speech-dream-full-text)

   a) Critical analysis of both the speeches
   b) Listening activity by playing the speeches in the class

B) Articles on current issues
   a) Delhi Gang Rape (Taken from Frontline January 25 ,2013 and Lawz January 2013 edition)

b) Italy and its Maro' by Marina Forti (Taken from Economic and Political Weekly April 6,2013)

C) Articles on Law

a) Norvartis Case. (The Hindu, Monday , April 15)

b) Why Justice must be seen and heard (Indian Express, 20 Jan)

c) JS Verma : Left behind little as inheritance , lot as legacy

d) When Constitution got a Judicial Shield

Recommended Reading:

1) Frontline Magazine
2) Economic and Political Weekly
3) The Week
4) Outlook
5) Law Reports

B.B.A.LL.B (Hons.) Semester-II

BUSINESS ENVIRONMENT (BBL 204)

Class	Course	Course Type
II Semester	**B.B.A.LL.B. (Hons.)**	**Compulsory**
Subject Code	**Subject Name**	**L T P C**
LBE	**BUSINESS ENVIRONMENT**	**5 1 0 6**

Prelude to the Course:

The course aims to educate the students on the role of business in modern society. Emphasis is placed on the significant relationship, which exists between business at the social, legal, political, economic, financial and fiscal environment in India and also to analyse the competitive business environment.

Learning Objectives:

The main object of the course is to:

- Acclimatize the students with the importance of business today.
- Give the students an overview of the market structures and economies in India.
- Emphasize on the role of government in the economic planning of the country.
- Examine the relationship between business and the society.
- Enumerate the role played by international institutions in Indian Business Environment.

Learning Outcomes:

After completing this course, the students will be able to:

1. Identify and evaluate social, cultural, legal and technical factors in business environment.
2. Describe the various economic system and sectors.
3. Discuss economic planning and policies of Indian economy.
4. Apply ethical values and social responsibilities in business.
5. Explain International economic grouping and organisations.

Unit 1

Introduction to Business Environment

- Meaning, Concept, Nature and Significance of Business Environment
- Internal and External Environment of Business
- Need and Process of Business Environmental Analysis
- Legal Environment and Business

Unit 2

Business and Economy

- Economic Systems: Capitalism, Socialism, Mixed Economy
- Features of Indian Economy
- Public Sector & Private Sector: Role of Public Sector in Indian Economy and its Problems

- Small Scale Industries: Concept, Significance, Issues and Priorities

Unit 3

Business and Government

- Role of Government in Economic Planning in India: NITI Aayog
- Introduction to Industrial Policy: Resolution 1948, Industrial Policy Resolution, 1956
- New Industrial Policy 1991: Privatization, Liberalization and Globalization and their Implications on Indian Economy

Unit 4

Business and Society

- Relationship between Society and Business
- Business Ethics and Culture
- Technological Development and Social Changes

Unit 5

International Business Environment:

- GATT: Role and Functions in Promoting Business Endeavours
- World Trade Organisation (WTO) – Origin, Objectives, Functions and Role
- UNCTAD: Role & Functions in promoting business endeavours
- World Bank – Origin, Objectives, Functions, Role and Challenges
- International Monetary Fund (IMF) – Origin, Objectives, Functions, Role and Challenges European Union (EU): Origin, Role and Objectives

Suggested Readings:

Sl. No.	Name of the Textbooks	Year of Publication
1.	Ghose, *Indian Economy: Its Nature & Problems*, S. Chand Publications	2015
2.	Agarwal, A. N. *Emerging Dimensions of Indian Management*, Pearson	2015
3.	Saleem, S. *Business Environment*, S. Chand Publications	2014
4.	Upadhyaya, S. *Business Environment*, Mac Graw Pvt. Ltd.	2014

B.B.A.LL.B (Hons.) Semester-II

HUMAN RESOURCE MANAGEMENT (BBL 205)

INTRODUCTION TO THE COURSE

This module introduces the students with the key concepts, theories, tools & techniques of human resource management. The range of concepts that students will be introduced to include philosophy of HRM, human resource planning, job analysis, recruitment & selection, training & development, compensation & labor relation. By the end of the module, students will be fully equipped with the skills & techniques required to plan & manage the human resource in the organization.

OBJECTIVE OF THE COURSE

- To understand the changing environment of HRM and role of the HR managers.
- To learn the recruitment & selection process and application of IT.
- To make students understand the importance of training and development.
- To understand the pay plans, performance appraisal and compensation.
- To understand how to administer wage and salary of employees and employee services.

TEACHING METHODOLOGY

As per the norms of the university , there will be 6 classes per week in this course. Teaching methodology will include Lectures-cum-discussion, Assignments, Projects and Presentations.

COURSE OUTLINE

UNIT-1

INTRODUCTION TO HUMAN RESOURCE MANAGEMENT

- Definition and concept of HRM and personnel Management.
- Importance of HRM.
- Activities and functions of HRM.
- Organization of H.R.M. department, Role of HRM Department.

- Limitations of HRM, Challenges before HRM.

Recommended Readings

1. K. Aswathappa, (2009): Human Resource Management- Text & Cases 5e, India, McGraw Hill.
2. Dessler & Varkkey, (2010): Human Resource Management 11e, India, Prentice Hall.

UNIT-2

HUMAN RESOURCE PLANNING

- Definition and objectives of Human Resource Planning, Process of Human Resource Planning, Factors influencing estimation of Human Resources.
- Concept of Recruitment, Recruitment policy, Sources of Recruitment
- Selection and its procedure.

Recommended Readings

1. K. Aswathappa, (2009): Human Resource Management- Text & Cases 5e, India, McGraw Hill.
2. Dessler & Varkkey, (2010): Human Resource Management 11e, India, Prentice Hall.

UNIT-3

PERFORMANCE APPRAISAL

- Concept and objectives of Performance Appraisal.
- Process of Performance Appraisal.
- Methods of Performance Appraisal.
- Uses and limitations of Performance Appraisal.

Recommended Readings

1. K. Aswathappa, (2009): Human Resource Management- Text & Cases 5e, India, McGraw Hill.
2. Dessler & Varkkey, (2010): Human Resource Management 11e, India, Prentice Hall.

UNIT-4

TRAINING & DEVELOPMENT

- Meaning and Definition of Training.
- Need, objectives and importance of Training.

- Training Methods, Evaluation of Training Programme.
- Concept of Management Development, Management Development Process and methods.
- Evaluation of Management Development Programme.

Recommended Readings

1. K. Aswathappa, (2009): Human Resource Management- Text & Cases 5e, India, McGraw Hill.
2. Dessler & Varkkey, (2010): Human Resource Management 11e, India, Prentice Hall.

UNIT-5

WAGE AND SALARY ADMINISTRATION

- Methods of wage payments.
- Employee Remuneration, factors determining the level of remuneration.
- Profit sharing, Fringe Benefits and Employee services.
- Wages & Salary Administration.

Recommended Readings

1. K. Aswathappa, (2009): Human Resource Management- Text & Cases 5e, India, McGraw Hill.
2. Dessler & Varkkey, (2010): Human Resource Management 11e, India, Prentice Hall.

Other Recommended Readings

1. Dessler & Varkkey, (2010): Human Resource Management 11e, India, Prentice Hall.
2. Decenzo & Robbins, (2006): Fundamentals of Human Resource Management, Wiley.
3. Dipak Kr. Bhattacharyya, (2010): Human Resource Management 2e, India, Excel Books.
4. Bernardin, (2007): Human Resource Management- An Experimental Approach, India, TATA McGraw Hill.
5. Snell & Bohlander, (2008): Human Resource Management, India, South- Western Cengage Learning

B.B.A.LL.B (Hons.) Semester-II

ECONOMICS-II (BBL 206)
(MONEY, BANKING & PUBLIC FINANCE)

INTRODUCTION TO THE COURSE

"Money is the axis around which the whole economy revolves. Monetary economics provides a framework for analyzing money in its functions as a medium of exchange, store of value, and unit of account. It examines the effects of monetary systems, including regulation of money and associated financial institutions and international aspects. The study of monetary aggregates, their behavior, determination etc therefore has become very important. Banks are central to economic growth. They play a central role in development of an economy. Thus it makes study of Indian banking system indispensible. In the same way role of public finance and fiscal policies can't be denied in modern concept of welfare state. The policies of revenue and expenditure as laid down by governments make a huge impact on economies. This paper makes an effort to teach the principles of revenue, expenditure and debts to the law students which makes the basis for their further studies."

OBJECTIVE OF THE COURSE

- To make student understand about the basic concepts of Monetary Economics.
- To understand the functioning of monetary system in economy.
- To understand the Banking structure of Indian economy.
- To understand the concepts, nature and principles of public finance.

TEACHING METHODOLOGY

As per the norms of t , there will be 6 classes per week in this coursesses per week. Teaching methodology will include Lectures-cum-discussion, Assignments, Projects and Presentations.

THE EVALUATION SCHEME

- Continuous Assessment- 40%

• Mid-Term- 20%

• End Term- 40%

COURSE OUTLINE

UNIT-1

INTRODUCTION TO MONETARY ECONOMICS

A. Money – Meaning, features, types and functions

B. Demand for Money

C. Money Supply – Meaning and types; High Powered money

D. Money Multiplier

E. Exchange rate systems; Depreciation and devaluation – concept & impact on economy.

Recommended Readings

1. Handa, Jagdish., Business & Economics, Routledge, 2008

2. Koutsoyiannis, A.,Modern Economics, Mc GrawHill, London,1979

3.Shapiro, Edward., Macroeconomic Analysis, Galgotia Publications Private Limited, new Delhi, 2007

4. Samuelson PA and Nordhaus WD, Economics, Seventeenth Edition, Tata McGraw Hill, New Delhi, 1998.

5. Bhatia, H L., Public finance, Vikas Publications, 16 edition.

UNIT-2

MONETARY POLICY & FINANCIAL MARKETS

A. Monetary Policy – Meaning & Objectives; Tools of Monetary Policy

B. Money & Capital Market – Meaning, Features & constituents

C. Quantity theory of money – Fisher & Cambridge Version; Friedman approaches

Recommended Readings

1. Bruce Champ, Scott Freeman, Joseph Haslag., Modeling Monetary Economies , Cambridge University Press, 2011

2 William E. Gibson, George G. Kaufman., Monetary economics: readings on current issues, Tata McGraw Hill

3. Samuelson PA and Nordhaus WD, Economics, Seventeenth Edition, Tata McGraw Hill, New Delhi, 1998.

4. Musgrave, Richard., Public Finanace – theory & practice., Tata Mc Graw Hill Publications, 5th edition.

5. Dwivedi, D N., Macro Economics: Theory & Policy, Tata Mc Graw Hill Publications

6. Pathak, Bharti V., Indian Financial system: Markets, Institutions & Services, Pearson Education, 7th edition.

UNIT-3
BANKING & STANDARDS IN BANKING

A. Banking: Meaning & Classification; Functions & Importance of Commercial Banks
B. Banking crisis & mitigation
C. Central Bank – functions, quantitative & qualitative credit control methods,
D. RBI: Role of RBI; Limitations & Introduction to Basel Norms

Recommended Readings

1 Mithani, D.M., Public Finance: Theory and Practice., Himalaya Publication, 2006
2. Agarwal, Vanita., Pearson Education , India
4. Michl, Thomas R., Macroeconomic Theory: A Short Course, M . E. Sharpe
5. Harvey S. Rosen., Public Finance, 2007

UNIT-4
INTRODUCTION TO PUBLIC FINANCE

A. Public Finance: Meaning, types, nature & scope of public finance; Public & private finance

B. Public Revenue – meaning & sources; Types of Revenue

C. Taxation – meaning; Principles & Canons of taxation; Tax incentives; Double tax relief

Recommended Readings

1. Seth, M L., MacroEconomic Analysis, Lakshmi Narain Publications,29th edition, 2012

2. Gupta, G S., Tata Mc Graw Hill, 2nd edition, 2004

3. Chand S N, Public Finance, Atlantic Publishers & Distributors

UNIT-5
PUBLIC EXPENDITURE AND PUBLIC DEBT

A. Public expenditure – Meaning & principles of Public Expenditure
B. Public Debt – Meaning & types
C. Debt management – meaning & methods
D. Debt restructuring – issues on sovereign debt restructuring during the past decades & methods to resolve the issues with appropriate mechanism.
   - ❖ Discuss latest budget

Recommended Readings

1. Mithani, D M., Macroeconomics. Himalaya Publications

2. Agarwal, Vanita., Pearson Education , India

3. Samuelson PA and Nordhaus WD, Economics, Seventeenth Edition, Tata McGraw Hill, New Delhi

Other Recommended Readings

Rosen Harvey S., Gayer Ted, Public Finance., Tata McGraw Hill, 8th edition

Christoffersen, H., Beyeler, M., Eichenberger, R., Nannestad, P., Paldam, M., "The Good Society"., Springer Publishers.

Handa, Jagdish., "Monetary Economics" Routledge publications, 2008

Kumar Ravi T., "Indian Banking in Transition: Issues and Challenges"., Visison Books, 2000.

"The great crash: The meaning of Lehman" ; The Economist

Mid-Quarter Monetary Policy Review: September 2013; http://www.rbi.org.in

http://www.indg.in/financial-literacy/financial_quiz/relationship_between_banker_and_customer.pdf

CURRICULUM AND SYLLABI

(3rd Semester)

B.A.LL.B. (Hons.)
(Integrated Law degree course)

SCHOOL OF LAW

RAFFLES
UNIVERSITY

Japanese Zone, National Highway 48 Neemrana, Rajasthan 301020

www.rafflesuniversity.edu.in

CONSTITUTIONAL LAW – I
BAL 301

INTRODUCTION TO THE COURSE

Constitutional law is the body of law that defines the relationship of different entities within a state, namely, the executive, the legislature, and the judiciary. The constitution is the basis from which the Indian legal system has evolved. The students of law should have a sound knowledge of the constitution. As the Constitution is the foundation of the Indian democratic system, constitutional law deals with some of the fundamental relationships within our society. This includes relationships among the states, the states and the union government, the three branches (executive, legislative, judicial) of the union government, and the rights of the individual in relation to both union and state government.

COURSE OBJECTIVES

The objective of this course is to:

1. Constitutional shall be studied plainly based on the provisions in terms of interpretations of the Court.
2. Detailed planning provided with alternative methods
3. Provide and interpreted by the judiciary
4. Analyse the provisions of the Constitution critically

COURSE OUTCOMES

The students will be able to;

1. Identify the various dimensions of the constitutional law
2. Understand the process of Executive, legislative and judicial mechanisms under the constitution
3. Enumerate the constitutional remedies available.
4. Apply the real spirit of the distribution of power

COURSE OUTLINE

Unit-I — Credit 6
Introduction — (Hours 60)

- Definition of Constitution and Classification; Constitutionalism and Constitutional Morality
- Making of the Indian Constitution
- Aims and Objectives

- Basic features of the Indian Constitution
- Nature of the Indian Constitution: Federal, Unitary, Quasi-federal; Cooperative and Competitive Federalism

Leading Case Laws:

1. *Rai Sahib Ram Jawaya Kapur* v. *State of Punjab* AIR 1955 SC 549
2. *State of West Bengal* v. *Union of India* AIR 1963 SC 1241
3. *Kesavananda Bharati* v. *State of Kerala* (1973) 4 SCC 225
4. *S. R. Bommai* v. *Union of India* (1994) 3 SCC 1
5. *State of Haryana* v. *State of Punjab* (2002) 2 SCC 507
6. *Rameshwar Prasad and Ors.* v. *Union of India and Anr*. (2006) 2 SCC 1
7. *Kuldip Nayar* v. *Union of India* (2006) 7 SCC 1
8. *I.R. Coelho* v. *State of Tamil Nadu* (2007) 2 SCC 1
9. *Arvind Kejriwal* v. *Union of India* 2014
10. *Union of India & Anr*. v. *M/s Mohit Minerals Pvt. Ltd. Through Director* 2022

Unit-II
Constitutional Organs

A. Legislature:

(a) Parliament and State Legislatures
(b) Composition of Parliament and State Legislatures
(c) Qualification and Disqualification of Members
(d) Legislative Procedure, power, and Privileges

B. Executive:

(a) Power of President and Governor

C. Union and State Judiciary:

(a) Composition, Appointment and Removal of Judges
(b) Jurisdiction of Supreme Court and High Court
(c) Independent Judiciary National Judicial Appointment Commission

Leading Case Laws

1. *S.P. Anand* v. *H.D. Deve Gowda*, (1996) 6 SCC 734
2. *B. R. Kapur* v. *State of Tamil Nadu* (2001) 7 SCC 231
3. *Lily Thomas* v. *Union of India* (2013) 7 SCC 653.
4. *Lok Prahari (through General Secretary SN Shukla)* v. *Election Commission of India* (2018) 18 SCC 114
5. *Special Reference No. 1 (Re Gujarat Assembly Election Matter)* (2002) 8 SCC 237 127
6. *Anil Kumar Jha* v. *Union of India* (2005) 3 SCC 150
7. *Jaya Bachchan* v. *Union of India* (2006) 5 SCC 266
8. *Consumer Education and Research Society* v. *Union of India & Ors*. (2009) 9 SCC 648
9. *In re Keshav Singh* AIR 1965 SC 745
10. *Raja Ram Pal* v. *Hon'ble Speaker, Lok Sabha* (2007) 3 SCC 184
11. *Ram Jawaya Kapoor* v. *State of Punjab*, AIR 1955 SC 549.
12. *Jayantilal Amritlal Shodhan* v. *F.N. Rana and Ors*, AIR 1964 SC

13. *Smt. Jaikumari* v. *State of Maharashtra*, AIR 2009 Bom.
14. *Poonam Verma* v. *Delhi Development Authority*, AIR 2008 SC
15. *Indian Medical Association* v. *Union of India*, AIR 2011 SC
16. *D. C. Wadhwa* v. *the State of Bihar* (1987) 1 SCC 378 159
17. *R.C. Copper* v. *Union of India*, AIR 1970 SC 564.
18. *A. K. Roy* v. *Union of India* (1982) 1 SCC 271
19. *Krishna Kumar Singh* v. *the State of Bihar* (2017) 3 SCC 1
20. *Union of India* v. *Sankalchand Himatlal Sheth* (1997) 4 SCC 193
21. *S. P. Gupta* v. *President of India* (1981) Supp SCC 87
22. *S.C. Advocates on Record Association* v. *UOI* (1993) 4 SCC 441
23. *In re Special Reference No. 1 of 1998* (1998) 7 SCC 739
24. *S.C. Adv. on Record Association* v. *Union of India* (2016) 5 SCC 1 213
25. *Shanti Bhushan* v. *Supreme Court of India through its Registrar* (2018) 8 SCC 396
26. *Mohd. Arif* v. *The Reg. Supreme Court of India* (2014) 9 SCC 737
27. *Madras Bar Association* v. *Union of India* (2014) 10 SCC 1
28. *Rupa Ashok Hurra* v. *Ashok Hurra* (2002) 4 SCC 388

Unit-III
Distribution of Legislative Powers:

(a) Distribution with respect to territory: Doctrine of Territorial Nexus
(b) Distribution with respect to the subject matter.
(c) Interpretation of legislative lists:
(d) Territorial Nexus
(e) Harmonious Construction
(f) Pith and Substance
(g) Colorable Legislation
(h) Residuary Power of Legislation
(i) Doctrine of Repugnancy

Leading Case Laws

1. *In Re C P & Berar Sales of Motor Spirit & Lubricants Taxation Act,1938* AIR 1939 FC 1
2. *Gujarat University* v. *Krishna Ranganath Mudholkar* AIR 1963 SC 703
3. *Prafulla Kumar* v. *Bank of Commerce, Khulna* AIR 1947 PC 60
4. *State of Rajasthan* v. *G. Chawla* AIR1959 SC 544
5. *State of Karnataka* v. *Drive-in Enterprises* (2001) 4 SCC 60
6. *K.C. Gajapati Narayan Deo* v. *State of Orissa* AIR 1953 SC375
7. *Union of India* v. *H. S. Dhillon* (1971) 2 SCC 779
8. *Zaverbhai* v. *State of Bombay* AIR 1954 SC 752
9. *Hoechst Pharmaceuticals Ltd.* v. *State of Bihar* (1983) 4 SCC 45
10. *Vijay Kr Sharma* v. *State of Karnataka* (1990) 2 SCC 562
11. *State of Kerala* v. *Mar Appraem Kuri Company Ltd.* (2012) 7 SCC 106

Unit-IV
Emergency Provisions

Emergency Provisions:

- Origin and concept of Emergency
- Types of Emergency in the Indian Constitution
- National Emergency
- State Emergency
- Financial Emergency
- Effects of Proclamation of Emergency
- Emergency and Fundamental Rights

List of Cases

1. *Indira Nehru Gandhi* v. *Shri Raj Narain & Anr*, AIR 1975 SC 2299
2. *Kesavananda Bharati* v. *State of Kerala*, AIR 1973 SC 1461
3. *State of Rajasthan & Ors* v. *Union of India*, AIR 1977 SC 1361
4. S. R. Bommai V. Union of India, AIR 1994 SC 1918
5. *A.D.M Jabalpur* v. *Shiv Kant Shukla*, AIR 1976 SC1207
6. *Minerva Mills Ltd* v. *Union of India*, (1980) 3 SCC 625.
7. *Ghulam Sarwar* v. *Union of India*, AIR 1967 SC 1335.
8. *Bijayanand Patnaik And Ors.* v. *President Of India And Ors.* AIR 1974 Ori 52
9. *Makhan Singh* v. *State of Punjab*, AIR 1964 SC 381
10. *Maharastra State* v. *Prabhakar*, AIR 1966 SC 424
11. *Ghulam Sarwar* v. *Union of India*, AIR 1967 SC 1335
12. *Rameshwar Prasad* v. *Union of India*, (2006) 2 SCC 1

Unit-V
Judicial Review and Constitutional Amendment

(a) Judicial Review: Nature and Scope
(b) Amendment to the Constitution: Methods of Constitutional Amendment
(c) Limitation Upon Constituent Power-Doctrine of Basic Structure
(d) Judicial Activism and Judicial Restraint

List of Cases

1. *Marbury* v. *Madison* (1803)
2. *A.K.Gopalan* v. *State of Madras* AIR 1950 SC 27
3. *Shankari Prasad* v. *Union of India*, AIR 1951 SC 458.
4. *Sajjan Singh* v. *State of Rajasthan*, AIR 1965 SC 845.
5. *I.C. Golak Nath and Ors.* v. *State of Punjab and Anr*., AIR 1967 SC 1643.

6. *Kesavananda Bharati* v. *State of Kerala*, AIR 1973 SC 1461
7. *Indira Nehru Gandhi* v. *Raj Narain*, 1975 Supp SCC 1.
8. *Minerva Mills* v. *Union of India*, AIR 1980 SC 1789.
9. *Sanjeev Coke Mfg. Co.* v. *Bharat Coking Coal Ltd*., (1983) 1 SCC 147.
10. *I.R. Coelho (Dead) By Lrs* v. *State of Tamil Nadu & Ors*. AIR 2007 SC 8617
11. *L. Chaiadra Kumar* v. *Union of India*, (1997) 3SCC261
12. *S.P. Sampath Kumar* v. *Union of India*, (1987) 1 SCC 124
13. *Kerela Bar Hotels Association* v. *State of Kerela* AIR 2016 SC 163

Suggested Readings

1. Durga Das Basu: Introduction to the Constitution of India, LexisNexis India.
2. Durga Das Basu: Shorter Constitution of India, Prentice-Hall of India, New Delhi.
3. Shibanikinkar Chaube: Constituent Assembly of India, Manohar Publishers & Distributors, New Delhi.
4. J. N. Pandey: Constitutional Law of India, Central Law Agency, Allahabad.
5. M.C. Jain Kagzi: The Constitutional of India, India Law House, New Delhi.
6. Arthur Berriedale Keith: A Constitutional History of India 1600-1935, Methuen & Co. Ltd., London.
7. M. P. Jain: Indian Constitutional Law, LexisNexis India.
8. Prof. M. P. Singh V.N. Shukla's Constitution of India Eastern Book Company, Lucknow.
9. M. V. Pylee Constitutional Amendments in India, S. Chand & Company, New Delhi.
10. M. V.V. Ramana Inter-State River Water Disputes in India, Orient Longman, New Delhi.
11. H. M. Seervi: Constitutional Law of India, N.M. Tripathi, Bombay.
12. Jagdish Swarup: Constitution of India, Modern Publications, New Delhi.

LAW OF CONTRACT – II (LOC-II)
BAL 302

INTRODUCTION OF THE COURSE

In the society wherein all major ventures are getting corporatized, a law student should acquaint himself with the knowledge of special contracts apart from equipping himself with general principles of contract. This law is contained in several legislations apart from the Indian Contract Act. This course equips the students to better appreciate the legal services required in a corporate office so that he can enhance his relevance as a lawyer in society. Law relating to Sales of Goods deals with the sale transactions of moveable property, formation of sale contracts, rights and duties of vendor and vendee, terms of contract etc. Law of Partnership deals with the formation of partnership firms, duties and liabilities of incoming and outgoing partners etc.

Course Objective

This course has the following objectives:

1. To study a law related to acquaint himself with the knowledge of special contracts.
2. To provide several legislations apart from the Indian Contract Act.
3. To Discuss the legal provisions required in a corporate office so that he can enhance his relevance as a lawyer in society.
4. Law relating to Sales of Goods deals with the sale transactions of moveable property, formation of sale contracts, rights and duties of vendor and vendee, terms of contract etc. Law of Partnership deals with the formation of partnership firms, duties and liabilities of incoming and outgoing partners etc.

Course Outcomes

The students shall be able to:

1. Understand the list and define the specific contracts.
2. know the explanation of why specific contracts are important to our legal and economic system.
3. Analyse how sale transactions of moveable property take place.
4. They will find out how partnership firms are formed, the duties and liabilities of the partners in a partnership firm.

COURSE OUTLINE:

UNIT-I **Credit 6**

INDEMNITY, GUARANTEE, BAILMENT AND PLEDGE (Hours 60)

- **Contract of Indemnity**

1. Documents/Agreements of Indemnity - Definition, Nature and
2. Scope and Rights of indemnity holder
3. Commencement of the indemnifier's liability

- **Contract of Guarantee**

1. Definition, Nature and Scope Difference between the contract of indemnity and Guarantee
2. Rights of surety
3. Discharge of Surety
4. Extent of Surety's liability
5. Co-surety.

- **Contract of Bailment**

1. Definition – Kinds – Duties of Bailer and Bailee –
2. Rights of Finder of goods as Bailee Liability towards true owner
3. Rights to dispose of the goods.

- **Contract of pledge**

1. Definition
2. Comparison with Bailment
3. Rights and duties of Pawnor and Pawnee

Case Studies:

1. New India Assurance Company Ltd. v.Kusumanchi Kamleshwar Rao and another1997 (9) SCC 179
2. United India Insurance Company v. M/s. Aman Singh Munshilal A.I.R. 1994 P. &h. 206
3. Secretary of State v. The Bank Of India Ltd., A.I.R. 1938 P.C. 191.
4. Sham Sunder v. Chandu La, AIR 1935, Lahore 974
5. Gajanan Moreshwar v. Moreshwar Madan, A.I.R. 1942 Bom, 302, at 304.

6. Oriental Fire and General Insurance Co. Ltd. v. Murlidhar Gopikissen Pvt. Ltd. AIR 1985 Cal 301: 1985 Arbi LR 387
7. Nagpur N.S. Bank v. Union of India, A.I.R. 1981 A.p. 153, at 158.
8. EMCO Pressmaster Pvt. Ltd. v. Union of India AIR 2000 Del 37
9. National Building Condtruction Corporation ltd. v. State Bank of Patiala AIR 1993 Del 89
10. Association of Corporation and Apex Societies of Handlooms v. State of Bihar AIR 2000 Del 106
11. DLF Cement Ltd. v. Inspector of Police AIR 1999 AP 359
12. Jagdish Chandra Trikha v. Punjab National Bank AIR 1998 Del. 266
13. National Bank of Lahore v.Sohan Lal AIR 1962 Punjab 534
14. Ram Gulam v.Govt. of U.P. AIR 1950 All 106
15. L.M. Co-operative Bank v. Prabhudas Hathibhai AIR 1966 Bom. 134
16. Standard Chartered Bank v.Custodian AIR 2000 sc 1488
17. K.S. Nagalmbika v. Corporation Bank , Virajpet AIR 2000 Kant. 201
18. Central Bank of India vKesharao Narayanrao Patil, (200%) (1) BC 58 (Ori)
19. Philips v. Brooks Ltd. (1919) 2 K.B. 243
20. Belgaum Pioner Urban Co-op. Credit Bank v. Satyapromoda AIR 1962 Mys. 48
21. M. R. Dhawan v. Madan Mohan AIR 1966 Delhi 313, 315
22. Dhani Ram & Sons v. Frontier Bank Ltd. AIR 1962 Punjab 321
23. KM Hidayathulla v. Bank of India AIR 2001 Mad. 251
24. Bank of Maharashtra v. Racman Auto (p.) Ltd. AIR 1991 Delhi 278
25. Central Bank of India v. Grains and Gunny Agencies AIR 1989 MP28

UNIT-II

AGENCY

- **Agency**

1. Definition
2. Creation of Agency
3. Kinds of Agents
4. Distinction between Agent and Servant

5. Rights and Duties of Agent
6. Relation of Principal with third parties
7. Delegation of Duties and Rights of Agent
8. Extent of Agents authority
9. Personal liability of Agent
10. Termination of Agency.

Case Studies:

1. Keighley, Maxsted & Co. v. Durant (1901) AC 240
2. Kelner v. Baxter (1866) LR 2 CP 174
3. Badri Prasad v. State of Madhya Pradesh AIR 1966 SC 58
4. Saroj Kapur v. Nitin Casting Ltd. AIR 1987 Delhi 349
5. Keppel v. Wheeler (1927) 136 LT 203
6. National Bank of Lahore v. Sohanlal AIR 1962 Punjab 534

Text Book

1. Avtar Singh. "Contract and Specific Relief", Eastern Book Company, 10th Edition, Lucknow, 2010.

Reference Book

2. B S Ramaswamy, " Contracts and their Management, Lexis Nexis Butterworth, 3rd Edition, New Delhi 2008

3. H.K Saharay, "Dutt on Contract", Eastern Law House, 10th Edition, Kolkata, 2006

4. G C Bharuka, "Mulla on The India Contract Act", 12th Edition, Lexis Nexis Butterworths Wadhwa, Nagpur 2009

5. Venkoba Rao's Law of Agency, 3rd Edition, Butterworths, New Delhi, 2001

UNIT–III

INDIAN PARTNERSHIP ACT

- **Indian Partnership Act**

1. Definition – Nature, Mode of determining the existence of
2. Partnership – Relation of Partner to one another – Rights and duties of partner –

3. Relation of partners with third parties – Types of partners – Admission of partners – Retirement
4. Expulsion – Dissolution of Firm – Registration of Firms.

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Case Studies

1. Mahabir Cold Storage v. CIT, AIR 1991 SC 1357
2. C.I.T. v. Shah Mohandas Sadhuram, AIR 1966 SC15
3. Sharad Vasant Kotak v. Ramniklal Mohanlal Chawda (1998) 2 SCC 171
4. Ganga Metal Refining Company v. Commissioner of Income-tax, West Bengal, AIR 1967 Cal. 434
5. Mahadeodas v. Gherulal Parekh, AIR 1958 Cal. 703
6. K. Jaggaias v. Kokumanu AIR 1984 A.P. 149
7. Munishi Abdul Latif v. Gopeswar AIR 1933 Cal 204 : 56 Cal L.J 172
8. R.N. Kothare v. Hormasjee, AIR 1927 Bom 187
9. Dulichand Laxminarayan v. Commissoner of Income-Tax, (1956) 29 T.L.R. 535
10. Mahendra Kumar v. Sate of Madras, AIR 1968 Mad. 241
11. Sanganer Dal and Flour Mill v. F.C.I, AIR 1992 S.C 481
12. Dena Bank v. Bhikhabai Prabhudas Parekh and Co. and others, 2000 (5) SCC 694

Text Book

1. Pollock and Mulla, " The Indian Partnership Act", 7th Edition, Lexis Nexis Butterworths, New Delhi 2007

Reference Book

2. S.D. Singh, J.P. Gupta, "Law of Partnership in India", 15th Edition, Orient Law House, New Delhi.
3. H.K. Saharay, "Indian Partnership and Sale of Goods Act", R.Combray and Co. P.Ltd, Kolkata, 2004
4. V.S.Vadivel, "Partnership Firms", 3rd Revised Edition, Snow white, Mumbai, 2008
5. Dr. Madhusudhan Saharay, "Indian Partnership Act", Universal Law Publishing Co. New Delhi, 2010

6. Satyajeet Desai, " The Law of Partnership in India", 7th Edition, Wadhawa, Nagpur, 2009

UNIT –IV

Sales of Goods Act

- **Sale of Goods Act**
    1. The Contract of sale
    2. Conditions and Warranties
    3. Passing of Property
    4. Transfer of title
    5. Performance of the Contract
    6. Rights of Unpaid Seller
    7. Against goods – Remedies for Breach of Contract

Case Studies:

1. Andhra Sugar Ltd. v. State of A.P AIR 1968 SC 599
2. Coffee Board, Karnataka v. Commissioner of Commercial Taxes, AIR 1988 SC 1487
3. M/s Mukesh Kumar Aggrawal and Co. v. State of M.P, AIR 1988 S.C 563
4. Associated Power Co. Ltd v. Ram Taran Roy, AIR 1970 Cal. 75
5. H. Anraj v. Govt of Tamil Nadu AIR 1986 SC 63
6. Vijay Minerals Pvt. Ltd v. Bikash Chandra Deb AIR 1996 Cal. 67
7. Aluminium Industries Ltd. v. Minerals and Metals Trading Corpn, AIR 1998 Mad. 239
8. Union of India v. Tarachand AIR 1976 M.P. 101
9. State of Gujarat v. Variety Body Builders AIR 1976 SC 2108
10. Jagdish Radhakisan v. Ramesh S. Wagh AIR 2001 Bom 152
11. In re Andrew Yule and Co. AIR 1932 Cal. 879

Text Book

1. P. Ramanath Aiyar, Law of Sale of Goods", 8th Edition, Universal Law Publishing Co. Delhi, 2007

Reference Book

2. R.Chakraborty, "Law of Sale of Goods And Partnership", 1st Edition, Orient Publishing Company, Allahabad, 2007

3. Dr. Madhusudan Saharay, “Sale of Goods and Hire Purchase”, Universal Law Publishing Co., New Delhi, 2010
4. Justice. P. Narayna,“Law of Caveats”, First Edition, Asian Law House, Hyderabad, 2006
5. S.D. Singh, J.P. Gupta, “Law of Partnership in India”, 15th Edition, Orient Law House, New Delhi.
6. H.K. Saharay, “Indian Partnership and Sale of Goods Act”, R.Combray and Co. P.Ltd, Kolkata, 2004

UNIT –V

Hire Purchase Act 1972

- **Hire Purchase Act 1972**

1. Rights and Obligation of the Hirer and Owner
2. Form and Contents of Hire Purchase Agreements
3. Warranties and Conditions
4. Standard Form of Contracts: Nature, Advantages, Unilateral Character
5. Principles of Protection against the Possibility of exploitation
6. Judicial Approach to such Contracts
7. Exemption Clauses
8. Clash between two standard forms of contracts.

Text Book

Hire Purchase Act, 1972

LAW OF CRIMES-I (IPC)
BAL 303

INTRODUCTION TO THE COURSE

The primary objective of criminal law is to maintain law and order in society and protect people's life and liberty. It is for this reason that people place their ultimate reliance on this branch of law for protection against all injuries that human conduct can inflict on individuals and institutions. Due to these reasons, the penal law cannot afford to be weak, ambiguous or ineffective. Nor can it be harsh and arbitrary in its impact. The application of criminal law has to be uniform regardless of any discrimination on grounds of class, caste, religion, sex or creed etc. of either the criminal or the victim.

COURSE OBJECTIVE

1. To familiarize the students with the key concepts regarding crime and criminal law.
2. To expose the students to the range of mental states that constitute *mens rea* essential for committing a crime.
3. To teach specific offences under the Indian Penal Code.
4. To keep students abreast of the latest developments and changes in the field of criminal law.

COURSE OUTCOME

The students will be able to;

1. Understand the conceptual analysis of the law of crimes
2. Analyse the spirit of legal provisions of crimes
3. Apply the practical aspects of law of crime
4. Assess the real approach of the law of crime

Unit-I — Credit 6
Introduction to Criminal Law — (Hours 60)

(a) The nature and concept of crime
(b) Extent and operation of the Indian Penal Code
(c) Definition of Crime
(d) Constituents Elements of Crime: *Actus Reus* and *Mens rea*

Cases

1. Fowler v. Padget (1798) 7 T.R. 509
2. Harding v. Price (1948) 1KB. 695

3. R v. Allday (1837) 8 C & P, 136 at 139
4. R v. Prince (1875) L.R. 2 C.C.R. 154
5. Queen v. Tolson (1889) 23 Q.B.D. 168
6. Sherras v. De Rutzen (1895) 1 Q.B. 918
7. Cundy v. Le Cocq (1884) 13 QBD.207
8. Hobbs v. Winchester Corporation (1910) 2 K.B. 471
9. State of Maharastra v. M. H. George A.I.R. 1965 S.C. 722
10. Nathu Lal v. State of M.P. A.I.R. 1966 S.C. 43
11. Mubarak Ali Ahmad v. State of Bombay, A.I.R. 1957 S.C. 857
12. R v. Francis Cassidy (1867) 4 B.H.C. (Cr. C.) 17
13. Queen v. Nidha (1891) I.L.R. 14 All 38
14. Abhayanand Mishra v. State of Bihar A.I.R. 1961 S.C. 1698
15. State of Maharashtra v. Mohd. Yakub1980 Cr. L.J. 793

Unit-II
General Exceptions-I

(a) Definitions
(b) Private Defense against Body and Property
(c) Judicial and Executive acts
(d) Necessity
(e) Consent
(f) Infancy
(g) Insanity & Intoxication
(h) Mistake of Fact
(i) Accident

Cases:

1. K. M. Nanavati v. State of Maharastra AIR 1962 S.C. 605
2. Shivaji v. State of Maharastra 1973 Cr. L. J. 1783 (S.C.
3. Barrow v. Issacs (1891) 1 Q.B. 417
4. R. v. Tolson (1889) 23 Q.B.D. 168
5. R. v. Prince (1875) L.R. 2 C.C.R. 154
6. Sheras v. De Rutzen (1895) 1 Q.B. 918
7. Cundy v. Le Cocq (1884) 13 Q.B.D. 207
8. Bhawoojivaji v. Mulli Dayal (1888) 12 Bon 377
9. State of W.B. v. Shew Mangal Singh and others 1884 Cr. L.J. 1683 (S.C.)
10. Jageshwar v. Emperor A.I.R. 1924, 24 Cr. L.J. 789
11. Shakir Khan v. Crown A.I.R. 1931 Lah. 54
12. Bhupendra Singh A. Chaudasama v. State of Gujrat 1998 Cr. L. J. 57 (S.C.)
13. Reniger v. Fogossa (1779) 21 How
14. Cope v. Sharpe (1912) 1 K.B. 496

15. Maleverger v. Spinke (1537) Dyer at 36
16. R. v. Dudley and Stephen (1884) 14 Q.B.D. 273
17. Queen v. Lukhiri Agradanini (1874) 22 W.R. (Cr.) 237
18. Marsh v. Loader (1863) 14 C.B.N.S. 535
19. Hiralal v. State of Bihar 1977 Cr. L. J. 1921 (S.C.)
20. Mussammat Aimona (1864) 1 W.R. (Cr.) 43
21. R v. Arnold (1724) 16 St. Tr. 695
22. Lord Ferrer's case (1760) 19 St. Tr. 885
23. Hadfield's case (1800) 27 St. Tr. 128
24. Bowler's Case (1821) Collinson Lumey 673
25. M'Naghten's Case
26. A. G. for Northern Ireland v. Gallagher (1963) A.C. 349
27. Durham v. United State 214 F 2d 862
28. Sodeman v. R. (1936) 2 All E.R. 1138
29. D.P.P. v. Beard 1920 (A.C.) 479
30. Regina v. Doherty 16 Cox C.C. 306 at 308
31. Rajesh Kumar v. Dharamvir 1997 Cr. L.J. 2242 (S.C.
32. Buta Singh v. State of Punjab 1991 Cri L.J. 1464 (S.C.)
33. Jai Dev v. State of Punjab AIR 1963 SC 612
34. Onkarnath Singh v. State of U.P. AIR 1974 SC 1550
35. Ram Ratan v. State of Bihar AIR 1965 SC 926
36. Kesho Ram v. Delhi Administration AIR 1974 SC 1158
37. Baljit Singh v. State of U.P. AIR 1976 SC 2273
38. Domnic Varkey v. State of Kerala AIR 1971 SC 1208
39. DeoNarain v. State of U.P. AIR 1973 SC 473
40. Amjad Khan v. State AIR 1952 SC. 165

Unit-III
Incoherent Forms of Crime

(a) Joint and Constructive Liability/Common Intention and Common Object
(b) Criminal Conspiracy
(c) Attempt
(d) Abetment

Cases:

1. Barendra Kumar Ghose v. Emperor, 52 I.A. 40 (P.C.)
2. Mahboob Shah v. Emperor, 72 I.A. 148 (P.C.): A.I.R. 1945 P.C. 118
3. Kripal Singh v. State of U.P. A.I.R. 1954 S.C. 706
4. Ram Nath v. State of M.P. A.I.R. 1953 S.C. 420
5. Pandurang v. State of Hyderabad A.I.R. 1955 S.C. 216
6. Rishi Deo Pandey v. State of U.P. A.I.R. 1955 S.C. 331

7. Shree Kantiah v. State of Bombay A.I.R. 1955 S.C. 287
8. J.M. Desai v. State of Bombay A.I.R. 1960 S.C. 889
9. Krishna v. Maharastra A.I.R. 1963 S.C. 1413

Unit-IV
Punishment

(a) Concept of Punishment
(b) Theories of Punishment
(c) Punishment under the Indian Penal Code
(d) Capital Punishment

Cases:

1. Hira Lal Malik v. State of Bihar A.I.R. 1977 S.C. 2236
2. State of Punjab v. Mann Singh 1983 Cr. L. J. 229 (S.C.)
3. Kishori v. State of Delhi 1999 Cr. L. J. 584 (S.C.)
4. Jagmohan Singh v.State of U.P. 1973 Cr. L.J. 370
5. Rajendra Prasad v. State of U.P. 1979 Cr. L.J. 792
6. Bachan Singh v. State of Punjab 1980 Cr. L.J. 636 (S.C.)
7. Machhi Singh v. State of Punjab 1983 Cr. L. J. 1457 (S.C.)
8. Javed Ahmad v. State of Maharastra 1984 Cri. L.J. 1909 (S.C.)
9. Triveni Ben v. State of Gujrat 1989 Cri, L. J. 870 (S.C.)
10. T. V. Vatheeswaran v. State of Tamil Nadu 1983 Cri. L. J. 481 (S.C.)

Unit-V
Specific Offences

(a) Offences against the Religion
(b) Offences Relating to Documents and Property Marks (Forgery)
(c) Defamation
(d) Criminal intimidation, insult, and annoyance

Text Books:

1. Glanville Williams, *Text Book of Criminal Law*, Universal Law Publishing Co., New Delhi, 2012
2. Ratanlal Dhiraj Lal, *The Indian Penal Code*, Lexis Nexis, Butterworths Wadhwa, Nagpur, 2012
3. K.D. Gaur, *Textbook on Indian Penal Code*, Universal Law Publishing Co., New Delhi, 2012
4. C. K. Takwani: *Indian Penal Code,* Eastern Book Company, Lucknow.

References:

1. P. S. A. Pillai: *Criminal Law-Incorporating the Criminal Law (Amendment) Act*, 2013, LexisNexis India, Gurgaon.
2. Glanville Williams, *Text Book of Criminal Law*, Universal Law Publishing Co., New Delhi, 2012
3. Dr. H.S. Gaur, *Penal Law of India*, Law Publishers, Allahabad, 2013
4. John Dawson Mayne, Mayne's *Criminal law of India*, Gale, Making of Modern Law, 2013
5. K. S. N. Murthy & K. V. S. Sarma: *KSN Murthy's Criminal Law* (Indian Penal Code), LexisNexis India, Gurgaon.
6. S. N. Misra: *Indian Penal Code* (As amended by Criminal Law (Amendment) Act, (2013), Central Law Publications, Allahabad
7. Harish Chander: *The Indian Penal Code-A Critical Commentary*, Eastern Law House, Kolkata.
8. Bare Act of Indian Penal Code, 1860

POLITICAL SCIENCE – III
BAL 304

INTRODUCTION TO THE COURSE

The aim of this course is to introduce the concepts of state, diplomacy, power and important international organizations that will further students' understanding of international law. In the era of globalization International Relations play an important role in all aspects of life. This course will enhance students' level of understanding of international issues and thereby enable them to find out their solutions under various provisions mentioned in International Law.

COURSE OBJECTIVE

1. To equip students with study of international relations
2. To give a glimpse of important actors in international relations
3. To understand concepts of power and diplomacy for understanding international law

COURSE OUTCOMES

The students shall be able to

1. Understand the political system in india
2. Assess relations of Indian polity with international politics
3. Analyse powers and limitation of the states in the context of international political scenario
4. Critical approach of the political system

TEACHING METHODOLOGY

As per the norms of the university, there will be six classes per week. Teaching methodology will include Lectures-cum-Discussion, Assignments, Projects and Presentations.

THE EVALUATION SCHEME

• Continuous Assessment- 40%
• Mid-Term- 20%
• End Term- 40%

COURSE OUTLINE

Unit-I Credit 6

(Hours 60)

- The science of International Relations
- Methods to study International Relations
- Various Actors of International Relations: State, People, Resources, International Organizations, Non-Governmental Organization

RECOMMENDED READINGS

1. Introduction in John Baylis, Steve Smith& Patricia Owens, The Globalization of World Politics, OUP, London, 4th ed. 2008

2. Introduction in Norman D. Palmer & Howard C. Perkins, International Relations: The World Community in Transition, CBS Publishers & Distributors, ND, 1985

3. Introduction in Joshu Goldstein and Jon C. pevhouse in International relations Pearson, 10th Edition

4. People in B.S. Murthy International Relations and Organization, Eastern Book Company

5. International Organization in B.S. Murthy International Relations and Organization, Eastern Book Company

6. Non- Governmental Organization in B.S. Murthy International Relations and Organization, Eastern Book Company

7. Transnational Actors and International Organizations in John Baylis, Steve Smith& Patricia Owens, The Globalization of World Politics, OUP, London, 4th ed. 2008

Unit-II

- Concept of power, Limitations on State Power
- International Morality
- International Law
- Public opinion, Retaliation and War

RECOMMENDED READINGS

1. Power in John Baylis, Steve Smith & Patricia Owens, The Globalization of World Politics, OUP, London, 4th ed. 2008

2. Hans J. Morgenthau, Politics Among Nations: The Struggle for Power & Peace, Kalyani Publishers (Indian Reprint), ND 1997

3. International Morality in B.S. Murthy International Relations and Organization, Eastern Book Company

4. Public Opinion in B.S. Murthy International Relations and Organization, Eastern Book Company
5. War in B.S. Murthy International Relations and Organization, Eastern Book Company
6. International Organization, Law and Human Rights in Joshu Goldstein and Jon C. pevhouse in International relations Pearson, 10th Edition

Unit-III

- The Diplomatic Instruments of International Relations
- Ideological, Economic, Military and Collaboration
- Competition & Conflict

RECOMMENDED READINGS

1. B .S. MURTY, *The International Law of Diplomacy. The Diplomatic Instrument and World Public Order* (New Haven: New Haven Press, Dordrecht-Boston-London: Martinus Nijhoff Publlishers, 1989)
2. International and Global Security in John Baylis, Steve Smith & Patricia Owens, The Globalization of World Politics, OUP, London, 4th ed. 2008
3. Military Force and Terrorism in Joshu Goldstein and Jon C. pevhouse in International relations Pearson, 10th Edition
4. International Finances in Joshu Goldstein and Jon C. pevhouse in International relations Pearson, 10th Edition

Unit-IV

- United Nations Organizations
  - General Assembly
  - Security Council
  - International Court of Justice
  - World Trade Organization

RECOMMENDED READINGS

1. United Nations by Rumki Basu Sterling Publication, 2004
2. United Nations in John Baylis, Steve Smith & Patricia Owens, The Globalization of World Politics, OUP, London, 4th ed. 2008

Unit-V

- Settlement of Disputes
  - Negotiations
  - Arbitration

- Mediation
- Conciliation
- Judicial Settlement
- Collective Security Mechanism

RECOMMENDED READINGS

1. Handbook of peaceful settlement of Disputes http://legal.un.org/cod/books/HandbookOnPSD.pdf

Books

1. Hans J. Morgenthau, Politics Among Nations: The Struggle for Power & Peace, Kalyani Publishers (Indian Reprint), ND 1997
2. John Baylis, Steve Smit & Patricia Owens, The Globalization of World Politics, OUP, London, 4th ed. 2008.
3. Norman D. Palmer & Howard C. Perkins, International Relations: The World Community in Transition, CBS Publishers & Distributors, ND, 1985

SOCIOLOGY AND SOCIAL WORK-III
BAL 305

INTRODUCTION TO THE COURSE

The course is aimed at providing the overall view of the understanding of sociological approaches with its emergence as a science of society. It would be helpful in the growth of the criticality of the mind in understanding the underlying structures and conflicts existing in contemporary society. It is also hoped that through this course students will also be able to understand their own social identity in the broader social context.

COURSE OBJECTIVE

1. To make students aware with the interconnections of conceptual and the real world
2. To understand the structure, function and process of society
3. To understand the processes of social change and social conflict in society

COURSE OUTCOMES

The students shall be able to;

1. Understand the theories of sociology
2. Know and apply the ideology of the thinkers in practice
3. Analyse the role of media and prevention of crime
4. Express the views in future for the betterment of society

COURSE OUTLINE

Unit-I **Credit 6**

Auguste Comte's Theory of Positivism **(Hours 60)**

- Early development of Sociology through Observation, Experiment and Comparison
- The Law of Human Progress
- Social Statics and Social Dynamics
- Impact of Science on the Society

References:

i. **Bogardus, Emory, S.:** The Development of Social Thought, New York: Longmans

ii. **Jones, Pip:** Introducing Social Theory, Cambridge: Polity

Unit-II

Emil Durkheim's Theory of Functionality

- Social Structure and Social Facts
- Individual and Society
- Mechanical and Organic Solidarity
- Collective Conscience and Collective Representation

References:

i. **Best, Shaun:** A Beginner's Guide to Social Theory, London:Sage

ii. **Layder, Derek:** Understanding Social Theory, London: Sage

Unit-III

Max Weberian Theory of Interpretation and Understanding

- Social Action and Ideal Type
- Class, Status and Power
- Types of Authority and Bureaucracy
- Rationalization, Modernity and Disenchantment

Reference:

Ritzer, George: Sociological Theory, Maidenhead: McGraw-Hill

Unit-IV

Marxian Theory of Class Conflict and Alienation

- Alienation from the product of labour, and from the act of production, alienation from nature and from others in the capitalist's market economy
- Class Consciousness and Class Conflict
- Means of Production, Forces of Production and Relations of Production
- Dialectical and Historical Materialism
- Dynamics of Social Change

References:

i. **Harrington, Austin:** Modern Social Theory: An Introduction, Buckingham: Open University Press

ii. **Morrison, Kenneth:** Marx, Weber, Durkheim: Formations of Modern Social Thought, London: Sage

Unit-V

Globalization, Media and Crime

- Social Change & Globalization
- Post-structuralism and postmodernity
- Face, body, and speech in interaction
- Media in a global age
- Audiences and media representations
- Controlling the global media
- Explaining crime and deviance: sociological theories
- Victims and perpetrators of crime
- Prisons and punishment
-

References:

i. **Cowan's Noel:** Global History: A Short Overview, Cambridge: Polity
ii. **Scholte, Aart Jan:** Globalisation: A Critical Introduction, Basingstoke: Palgrave
iii. **Bennett, Tony & Watson, Diane:** Understanding Everyday Life, Oxford: Blackwell
iv. **Jenkin, Richard:** Social Identity, London: Routledge
v. **Thompson, John:** The Media and Modernity: A Social Theory of the Media, Cambridge: Polity
vi. **William, Kevin:** Understanding Media Theory, London: Hodder Arnold
vii. **White D. Robert & Haines Fiona:** Crime and Criminology: An Introduction, Oxford: OUP
viii. **Burke Hopkins Roger:** An Introduction to Criminological Theory, Devon: William Publishing
ix. **Downes David & Rock Paul:** Understanding Deviance, Oxford: OUP

<u>Recommended Reading</u>

1. Coser, Lewis A 1979. Masters of Sociological Thought. New York: Harcourt Brace Jovanovich.
2. Fletcher, Ronald. 1994. The Making of Sociology (2 volumes) Jaipur: Rawat
3. Internet Links :

a. **The Global Site – social science thinking on globalization**

www.theglobalsite.ac.uk/globalization

b. **An introduction to symbolic Interactionism based at Grinnell College , USA** :

http://web.grinnell.edu/courses/soc/s00/soc111-01/IntroTheories/Symbolic.html

c. **Theory.org – playful postmodern site on links between media and identities:**
www.theory.org.uk/

d. **The British Journal of Criminology – one of the world's top criminology journals:**
http://bjc.oxfordjournals.org

e. **United Nations Office on Drugs and Crime – coverage of crime internationally :**
www.unodc.org/unodc/crime_cicp_sitemap.html

ECONOMICS-III

LAW AND ECONOMICS

BAL 306

INTRODUCTION TO THE COURSE

This course utilizes the standard tools of economic analysis for the study of law and legal institutions, with special focus on (i) economics of property;(ii) economics of contracts; (iii) economics of tort law, and (iv) economics of lawmaking. This course explains the economic aspects of law making. It describes the normative aspect of economics. It appraises legal rules to determine the extent to which they meet the social goal of efficiency, an application of welfare economics.

OBJECTIVE OF THE COURSE

- To examine the importance of Economics to law
- To examine legal impediments to the field of Economics
- To understand law acts as an instrument for economic policy making
- To understand the economic basis of Law of Property, Law of Contract, Law of Torts and Criminology.

COURSE OUTLINE

Unit I **Credit 6**

Basic Concepts of Economics & Law **(Hours 60)**

A. Basic concepts of law: the common law & traditional civil law
B. Basic concepts of economics – Review of Price theory; Concepts of Economic Efficiency – Pareto Optimum
C. Market failure -Externalities, Monopoly, Public goods & information
D. The Game Theory

Recommended Readings

1. Cooter and Ulen: chapter 2; A Review of Microeconomic theory

2. Cooter and Ulen: chapter 3; An Introduction to Law and Legal Economics
3. Kenneth Gillingham, James Sweeney: "Market Failure and the Structure of Externalities" ; 2010
4. Vani K. Borooah: "Market Failure: An Economic Analysis of its Causes and Consequences" ; 2003

Game Theory : the library of Economics & Liberty, www.econlib.org/library/Enc/GameTheory.html

Unit I

Economic Analysis of Property Law

A. The Coase theorem; Bargaining Theory
B. The economic concept of property rights and its allocation; establishment & verification of property rights
C. Intellectual property as public goods (Patents, copyrights, trademarks)
D. Remedies & violation of property rights

Recommended Readings

1. Cooter and Ulen: chapter 4 & 5: An Economic theory of Property
2. Gary North "The Coase theorem: A STUDY IN ECONOMIC EPISTEMOLOGY". 1992
3. Posner, Richard A. (2005) "Intellectual Property: The Law and Economics Approach". Web Notes
   Cooter & Ulen
   a. Matt Rognlie , "Understanding the Coase theorem" 2011, *mattrognlie.com/2011/05/04/understanding-the-**coase-theorem**/*
   b. Christopher K. Eppich, *Patenting Dilemma: Drugs for Profit Versus Drugs for Health*, 43 Santa Clara L. Rev. 289 (2002).

Unit III

Economics of Law of Contract

A. Introduction to Contract: Bargain Theory; Economic theory of Contract
B. Perfect Contracts and market Failures - Remedies as Incentives; Specific Performance; Models of Remedies

Recommended Readings

Cooter and Ulen: Chapter 6 & 7: An Economic theory of Contracts

Steven Shavell, "Economic Analysis of Contract law" ; the national bureau of Economic Research, 2003.

Unit IV

Economics of Law of Torts

A. Economics of Torts: Calabresi's minimum social cost rule

B. Drivers & pedestrians: *Caveat Emptor* or negligence or strict liability?

   1. Caveats: activity levels; extent of precaution, administrative costs, court errors.
   2. The Learned Hand rule

C. Product liability: privity to negligence to strict liability to absolute liability

D. Consumer Product Injuries

E. Extension of Economic Model in Law of Torts

Recommended Readings

Cooter and Ulen: chapter 8 & 9 : An Economic theory of Tort Law

Winand Emons, "An Introduction to the Legal & Economic Theories of torts" 1993.

Richard A Posner, "Instrumental and Non-Instrumental Theories of Tort Law" 2013.

Unit V

Economic theory of Legal Process, Crime and Punishment

A. Computing the value of a legal claim

B. Settlement Bargaining

C. Economics of Trials and Economic Aspects of Appeals

D. The Theory of Criminal Law

E. The concept of Rational Crime

F. Optimal Amount of Crime Deterrence and of Efficient Punishment

G. Social Cost of Crime

H. The Deterrence effect of Imprisonment and capital punishment

I. The Economics of addictive drugs and crime

Recommended Readings

   a. Cooter and Ulen: chapter 10 : An Economic theory of Legal Process

b. Richard A Posner, “An Economic Approach to Legal Procedure & Judicial Administration” ; *The Journal of Legal Studies* : Vol 2, 1973
c. Cooter, Robert (1991) “Economic Theories of Legal Liability”, *Journal of Economic Perspectives* 5(3).
d. Cooter and Ulen: chapter 11 & 12 : An economics of Crime & Punishment
e. Gary S. Becker , “Crime and Punishment: An Economic Approach”; *National Bureau of Economic Research*, Vol 1, 1974.
f. M.A.Cohen, “Environmental Crime & Punishment : Legal / Economic Theory”
g. Farmer, Amy and Dek Terrell (2001) “Crime versus Justice: Is There a
h. Trade-off?” *The Journal of Law and Economics,* Vol. XLIV

CURRICULUM AND SYLLABI

(3rd Semester)

LL.B
(Three Year Program)

SCHOOL OF LAW

RAFFLES
UNIVERSITY

Japanese Zone, National Highway 48 Neemrana, Rajasthan 301020
www.rafflesuniversity.edu.in

JURISPRUDENCE
(LLB 301)

INTRODUCTION TO THE COURSE

Jurisprudence is the study and theory of law. Scholars of jurisprudence, or legal theorists (including legal philosophers and social theorists of law), hope to obtain a deeper understanding of the nature of law, of legal reasoning, legal systems and of legal institutions. Modern jurisprudence began in the 18th century and was focused on the first principles of the natural law, civil law, and the law of nations.

COURSE OBJECTIVE

This course has the following objectives:

1. Give an overview of the major legal philosophies of the world in the form of fours jurisprudential schools.
2. Making aware with meaning and justification for the existence of law and its sources.
3. Making aware of the various legal concepts and jural relations.
4. Justifying the relevancy of jurisprudence for various stockholders in legal education.

COURSE OBJECTIVE

The students shall be able to:

1. State the meaning and relevancy of jurisprudence.
2. Express the broader common features of the four jurisprudential Schools.
3. Critical understanding of the merit and demerit of each philosophical school.
4. Understand the meaning, kinds and sources of law.

COURSE OUTLINE

UNIT I — Credit 6
Introduction — (Hours 60)

A. Nature and Scope of Jurisprudence
B. Need for study of Jurisprudence
C. Linkage between Jurisprudence and other sciences
D. **Sources of Law:** Custom
E. Legislation
F. Precedent

UNIT II

Schools of Jurisprudence

A. Natural Law with Indian Perspective
B. Analytical Positivism, Pure Theory, Legal Realism
C. Historical Jurisprudence
D. Sociological Jurisprudence with Indian Perspective

UNIT III
State, Sovereignty and Law

A. Nature and functions of a State and its relationship with law
B. Nature and development of Sovereignty

UNIT IV
Nature and Kinds of law

A. Theories of Justice and Punishment
B. Law and Legislation
C. Law and Morality
D. Law and Religion
E. Law and Social change

UNIT V
Concepts of Law

A. Rights and Duties
B. Personality
C. Possession, Ownership and Property

Recommended Readings

1. L.M. Singhvi, Freedom on Trial, (1991), Vikar, N.Delhi.
2. Verinder Grover (Ed.) Political Process and Role of Courts, (1997) Deep & Deep Publications, N.Delhi.
3. B.P.Sigh Seghal (Ed.) Law, Judiciary and Justice (1993) Deep & Deep, N. Delhi.
4. Max Gluckman, Judicial Processes Among the Barotse of Northern Rhodesia (1967).
5. Paul Bohanan, Justice and Judgment Among the Tiv (1957)
6. E. Adamson Hoebel, The Law of the Primitive Man (1968)
7. Catherine Newman, Law and Economic Organization: A Comparative Study of Pre-industrial Law 306 Societies (1983)
8. Upendra Baxi, Towards the Sociology of Indian Law (1986)
9. Harold J. Berman, Law and Revolutions the Formation of the Western Legal Tradition (1983).
10. Yash Ghai, The Political Economy of Law. A Third World Reader (1986)
11. Henry J. Abraham, The Judicial Process (1995), Universal
12. Ronald Dworkin, Taking Rights Seriously (1996), Universal
13. Ronald Dworkin, A Matter of Principle (1985)
14. John Hart Ely, Democracy and Distrust. A Theory of Juridical Review (1980)
15. J. Stone, Precedent and the Law: Dynamics of Common Law Growth (1985)
16. Supreme Court of India, Third International Conferences of Appellate Judges Conference Papers and Proceedings (1985).
17. Upendra Baxi, The Indian Supreme Court and Politics (1980)

18. Upendra Baxi, Courage, Craft and Contention: The Indian Supreme Court in Mid-Eighties (1986), Tripathi, Bombay
19. Rajeev Dhavan, The Supreme Court of India: A Study of its Socio-Juristic Techniques (1977), Tripathi, Bombay
20. Rajeev Dhavan, and Alice Jacob, Selection and Appointment of Supreme Court Judges: A Case Study (1978)
21. Rajeev Dhavan and P. Kalpakam, The Supreme Court under Strain: The Challenge of Arrears (1979)
22. Simon Shetret & Jules Descheness (Ed.), Judicial Independence: A Contemporary Debate, Martinas Highoff Pub., Dercbrecht, (1985)
23. Martin Shapiro, Courts: A Comparitive and Political Analysis (1981), University of Chicago
24. H.R.Khanna, Judiciary in India and Judicial Process, (1985), S.C. Sarkar and Sons, Calcutta

PUBLIC INTERNATIONAL LAW
(LLB 302)

INTRODUCTION TO THE COURSE

Public international law concerns the structure and conduct of sovereign states; analogous entities, such as the Holy See; and intergovernmental organizations. To a lesser degree, international law also may affect multinational corporations and individuals, an impact increasingly evolving beyond domestic legal interpretation and enforcement. Public international law has increased in use and importance vastly over the twentieth century, due to the increase in global trade, environmental deterioration on a worldwide scale, awareness of human rights violations, rapid and vast increases in international transportation and a boom in global communications.

COURSE OBJECTIVE

This course has the following objectives

1. To provide the fundamental standing of international law
2. To study the law of treaty and the law of the sea
3. To learn the provisions of international relations among the nations
4. To examine the international provisions of state recognition

COURSE OUTCOMES

The students shall be able to:

1. Understand the basic concept and sources of international law
2. Demonstrate knowledge and understanding of the international rights frame work, its origins and justifying theories
3. Establish the capacity to assess how specific human rights may be asserted, enforced or violated.
4. Critically evaluate the relationship between international and domestic law

COURSE OUTLINE

Unit- I — Credit 6
INTRODUCTION — (Hours 60)

A. Definition and nature and scope of Public International Law
B. Distinction between Public International Law and Private International Law
C. Subjects of International law
D. Sources of International Law
E. Relationship between international law and municipal law (Monism, Dualism, British, American and Indian Practice)

Unit- II
Law of Treaty and Law of Sea

A. Law of Sea:

a. Meaning of Treaty and kinds of Treaty
b. Important of consent in the treaty formation
c. Process of formation of Treaty
d. Interpretation of the Treaty
e. Reservation against a Treaty
f. Termination of the Treaty
g. Pacta sunt servenda. Rebus Sic Stantibus and Peremptory norms of International Law

B. Law of Sea:

a. Development of Law of Sea
b. Territorial Sea,
c. Contiguous Zone,
d. Continental Shelf,
e. Exclusive Economic Zone,
f. The High Seas
g. International Tribunal for the Law of the Sea
h. International Seabed Mining- Parallel System of Mining

Unit- III
State Jurisdiction, State Recognition and State Responsibility

A. State Recognition:

a. Meaning, kinds of the State Recognition
b. Recognition of the Government
c. Theories of Recognition,
d. Legal Effect of Recognition
e. Withdrawal of Recognition States Succession

B. State Jurisdiction; meaning kinds of jurisdiction and exceptions to it.

C. State Responsibility, Meaning kinds of state responsibility and general defences

Unit- IV
Air and Space Law

A. Air Space: Various Theories, Aerial Navigation (Five freedom of Air), Outer Space Treaty, 1967 and recent trends
B. International Humanitarian Law: Meaning, Development and brief introduction to the Four Geneva Conventions and its Optional Protocols
C. International Organizations; Meaning, Characteristics
D. United Nations: Origin and Development, Purpose and Principles Main Organs and their compositions and functions.

Unit- V

Individuals under international law

A. Nationality meaning, legal consequence and termination of nationality
B. Stateless Person and Refugee; Meaning and their rights and duties under international law
C. Extradition: Definition, purpose and principles of extradition
D. Asylum: Meaning, types of asylum, and relation between asylum and extradition
E. Diplomatic Agents and Consuls: definitional and classification of heads of mission, the basis of immunities and privileges, privileges and immunities, waiver of immunity, termination of the diplomatic mission.

Recommended Readings

- "International Law" Gurdip Singh/Macmillan India Ltd.
- **"**International Law" J.G. Starke
- "Cases and materials in International Law" Harris
- "Principles of International Law" Brownlie/ Universal Publication
- "Principles of International Law" S.K Kapoor / CLA
- "International Law" Charles G. Fenwick/Oxford University Press
- "WTO and International Trade" M. B Rao and Manjula Guru
- "Understanding International Trade Law" Simone Schnitzer/Universal Publishing House
- "The Law and Policy of the World Trade Organization" Peter Van den Bossche/Werner Zdouc Paperback
- "International Trade Law" Indira Carr/Cavendish Publishing House

CORPORATE LAW-I
(LLB 303)

INTRODUCTION OF THE COURSE

The course is designed to understand the formation, management, and other activity of the companies. Because of the changing facts of global governance corporate governance plays a vital role in the development of an economy at both national and international levels. The Companies Act 1956 has not been repealed but certain provisions replaced by the new Act of 2013. The notified sections which replace the provisions of the Companies Act 1956 will be highlighted. Accordingly, the paper aims to introduce to the students the nuance of corporate law and its obligations of it toward society in discharging its trade relations and being a good corporate citizen. Therefore, the paper needs to be taught in light of the new Companies Amendment Act 2013.

COURSE OBJECTIVES

This course has the following objectives

1. To acquire knowledge and develop the regulatory framework of companies
2. To study various provisions of the Companies law
3. To differentiate between schedules, rules, notifications and circulars etc.
4. To develop legal skills about the dimensional issues of company law.

COURSE OUTCOMES

The students shall be able to;

1. Apply the practical aspect of company law in the global system of economic
2. Understand multinational companies in the legal system.
3. Frame the legal requirement for registration for companies.
4. Contest the cases pertaining to corporate law

COURSE OUTLINE

Unit-I **Credit 6**
Company and its Nature and Scope **(Hours 60)**

- Meaning, Definition, and characteristics of the company.
- Historical background of the company
- Kinds of companies
- Merits and Demerits of Incorporation of a company - Lifting the corporate veil.

Unit-II
Procedure for Incorporation of companies

- Role of promoters, Legal Position of Promoter
- Pre-incorporation contracts
- Memorandum of Association - Meaning, Purpose, Contents, Ultravires, and Doctrine of Ultra-vires
- Articles of Association - Meaning Purpose, Content. Alternation, Constructive Notice.
- Doctrine of Indoment Exceptions

Unit-III
Prospectus, Shares, and Debentures

- Meaning - Formalities of issue Prospectus - Misrepresentation of Prospectus - Golden Rule
- Shares - Meaning, Types of Shares, and Transfer of shares
- Share Capital, Meaning, Kinds, Alternation, Reduction, and Voting Rights
- Debenture - Meaning, Types, Charge-Fixed and Floating, Crystallization of Floating charge
- Borrowing Powers - Effective of unauthorized borrowings

Unit-IV

Members, Membership Rights &Management and Administration of Company

- Modes of acquiring Membership
- Rights and Privileges of Members and Shareholders
- Transfer and Registration of Transfer of Securities
- Transmission of Securities
- Dividend - Rules as to Payment of Dividend
- Directors - Appointment, Qualifications, Types, Position, Powers, Functions
- Duties and Liabilities of Directors
- Meetings, Kinds, Requisites of Valid Meeting
- Audit and Accounting System - Legal Position of Audit

Unit-V

Oppression, Mismanagement &Amalgamation and winding up

- Meaning of Oppression and Mismanagement
- Prevention of Oppression and Mismanagement - Rule in Foss v/s Harbottle (1843)
- Powers of the Company Law Board and Central Government
- Inspection and Investigation
- Role of Serious Fraud Investigation Office (SF10).
- Merger and Demerger of the Company
- Amalgamation, Compromise, and Arrangement
- Winding up - Meaning, Types, Procedure
- Payment of Liabilities in the event of winding up
- Role of Official Liquidator, Court, and National Company Law Tribunal

Case Studies:

1. Salomon v. Salomon & Co., Ltd. (1897) A.C. 22 (H.L.) :(1895-95) All ER Rep. 33
2. R.C. Cooper v. Union of India (1970) 3 SCR 530
3. *Kelner v Baxter* (1866) LR 2 CP 174
4. *Ashbury Railway Carriage* and Iron Co Ltd v Riche (1875) LR 7 HL 653
5. *Royal British Bank v Turquand* (1856) 6 E&B 327
6. Regal Hastings Ltd. V. Gulliver, [1942] 1 All ER 378
7. Foss v. Harbottle (1843) 2 Hare 461 : (1843) 67 ER 189
8. Nagappa Chettiar V. Madras Race Club, ILR 1949 Mad 808
9. JonesV. Ahman Son (1970) 70 Col LR 1079
10. Derej Vs Peale

Act and Statute (As Amended)

- The Companies Act, 2013

Text Book

1. C.A.Kamal Garg, Bharat's Corporate and Allied Laws, 2013

2. Institute of Company Secretaries of India, Companies Act 2013, CCH Wolter Kluver Business, 2013
3. Lexis Nexis, Corporate Laws 2013 (Palmtop Edition)
4. Avtar Singh: Company Law
5. Dutta on Company Law
6. N.D. Kapoor on Company Law, Charles Wild, and Stuart Weinstein Smith and Keenan, Company Law, Pearson Longman, 2009
7. The Companies Acts from 1956 to 2014 as amended up to the date.
8. The New Company Law, Dr. N.V. Paranjape, Central Law Agency.

Reference Book

1. Smith and Keenan's, Company Law (2002)
2. Andrew Lidbetter, Company Investigations ad Public Law (1999)
3. Saleem Sheikh & William Rees, Corporate Governance & Corporate Control (2002).
4. Gower's Principles of Company Law 8thEdition 2008, R. Cambray & Co. Pvt. Ltd.
5. Smith and Keenan's Company Law.
6. S. K. Verma & Suman Gupta, Corporate Governance and Corporate Law Reform in India. (2005).
7. Companies Act, 1956
8. Suman Gupta: Shareholder's Democracy: Fact or Fiction. (1992)
9. Paul L. Davies, Gower and Davies Principles of Modern Company Law (8th ed., 2008)
10. Avtar Singh, Indian Company Law (2008), Eastern, Lucknow.
11. L.C.B. Gower, Principles of Modern Company Law (1997) Sweet and Maxwell, London
12. Ramaiya, Guide to the Companies Act, (2007), Wadha.

INTELLECTUAL PROPERTY LAW
(LLB 304)

COURSE OUTLINE

Objective: Intellectual property in the modern world is not confined only to the protection of intellectual creations or inventions. Rather now it has become a powerful tool of economic growth and prosperity by stimulating creative and innovative ideas, of generating revenue, promoting investment, enhancing literary, social and cultural values of mankind. It prevents 'brain-drain', and nurture over-all economic health. Every sphere of life is getting molded by intellectual properties. It has become an important component of business transactions. The developments in international telecommunications have increased its importance and put new challenges to the protection of intellectual property. With such an importance of IP, well-crafted IP courses require to be devised. The objective of the current draft is to impart knowledge of the substantive intellectual property law and infuse it with the skill of applying and construing the law to different factual situations. On a theoretical level, students should be able to have a basic understanding of the IP. Subsequently, they are required to engage in a critical discourse on the policy factors of each and every kind of intellectual property to become aware of their rights to the protection of their creations and inventions. Apart from the introductory levels, students should be increasingly exposed to international aspects of IP law. A summary of the objectives is as follows:

COURSE OUTCOMES

This course has the following objectives:

1. To study the conceptualization of IPR
2. To focus on the investment, enhancing literary knowledge and cultural values of mankind.
3. To go through the substantive portion of IPR for the depth study.
4. To increase the international aspect of IPR

COURSE OUTCOMES

The students shall be able to;

1. Understand the international origin of IPR
2. Think over the Indian IPR law in relation to the International legal system.
3. Critically analyses the IPR law for protecting the intellectual property
4. Apply critically the principles of IPR laws for the protection creative activities.

Unit- I — Credit 6
Introduction — (Hours 60)

A. The meaning of Intellectual property
B. Competing rationales of the legal regimes for the protection of intellectual property
C. The main forms of intellectual property: copyright trademarks, patents, designs

D. Introduction to the leading international instruments concerning intellectual property rights:

a. The Berne Convention
b. The Paris Convention
c. Universal Copyright Convention
d. TRIPS Agreement
e. WCCT
f. WPPT

1. The role of the World Intellectual Property Rights Organisation (WIPO) and UNESCO in IP Protection.

Unit- II
Copy Rights Law

A. Historical evolution of copyrights law
B. Meaning of copyright; idea and expressions dichotomy
C. Subject matter of copyrights
D. Copyright in literary, dramatic, and musical works and artistic works
E. Copyright in sound records and cinematograph films
F. Copyright in computer programme
G. Copy right in data
H. Copy right in computer-created work and artificial intelligence
I. Rights protected by copyright
J. Moral Rights
K. Related rights
L. Acquisition, transfer &protection of Copyright
M. Limitations and exceptions to Rights
N. Notion of infringement
O. Criteria of infringement
P. Importation and infringement
Q. Remedies, especially, the possibility of Anton pillar injunctive relief in India.
R. The Folklore: The cultural expressions meaning and justification for protestation through sui generis Community IP legislation

Unit- III
The Law of Intellectual Property: Patents

A. Historical view of the patents law in India
B. Patent defined
C. Criteria for patenting;
D. Invention
E. Inventive steps
F. Obviousness non
G. Patentable and non-patentable invention
H. Process of obtaining a patent: application, examination, prior publication or anticipation opposition and sealing of patents: general introduction
I. Procedure for filing patents under Patent co-operation treaty

J. Ground for pre-grant and post-grant opposition
K. Duration of patents: law and policy considerations
L. Compulsory licenses
M. Defences in suits for infringement
N. Traditional knowledge:Need and justification for community IP
O. Plant varieties and farmers rights: Criteria and procedure for protection

Unit- IV
Intellectual Property in Trademarks

A. The rationale of protection of trademarks
B. Definitions and concept of trademarks
C. Criteria for registration
D. Absolute grounds for refusal
E. Relative grounds for refusal
F. Procedure for Registration of Trade Marks
G. Process of International registration: the Madrid System
H. The doctrine of deceptive similarity
I. Protection of well-known marks
J. Domain name and its registration process
K. Passing off and infringement of trademarks and domain name
L. Remedies
M. Geographical Indications and Appellation of Origin
N. The Lisbon treaty and registration of the Appellation origin

Unit- V

Designs- The Designs Act, 2000

A. Definition of design - Copyright in Design (duration)
B. Need for protection of industrial designs
C. Subject matter of protection and requirements
D. Procedure for obtaining design protection
E. Process of International Registration of Industrial design: The Hague System
F. Registration of design for articles
G. Cancellation of Design
H. Infringement of copyright in Design
I. Remedies
J. Trade secret meaning and essentials

Recommended readings

- Cormish W.R., Intellectual Property, Patents, Trade Marks, Copy Rights and Allied Rights (1999),
- Asia Law House, Hyderabad.

- Vikas Vashishth, Law and Practice of Intellectual Property (1999), Bharat Law House, Delhi.
- P. Narayanan, Intellectual Property Law (1999), (ed) Eastern Law House, Calcutta.
- Bibeck Debroy (ed.) Intellectual Property Rights (1998) Rajiv Gandhi Foundation, Delhi.
- U.I.F. Anderfelt, International Patent Legislation and Developing Countries (1971).
- W.R. Cornish, Intellectual Property(3rd ed.) (1996) Sweet and Maxwell
- W.R. Mann, Transfer of Technology (1982)
- Mata Din, Law of Passing off and Infringement Action of Trade Marks (1986).
- P.S. Sangal and Kishore Singh, Indian Patent System and Paris Convention: Legal Perspectives (1987).
- K. Thairani, Copyright: The Indian Experience (1987)
- W.R. Cornish, Para and Materials on Intellectual Property (1999), Sweet &

CRIMINAL PROCEDURE CODE
(LLB 305)

INTRODUCTION TO THE COURSE

The primary objective of criminal law is to maintain law and order in society and to protect the life and liberty of people. It is for this reason that people place their ultimate reliance on this branch of law for protection against all injuries that human conduct can inflict on individuals and institutions. Due to these reasons, the penal law cannot afford to be weak, ambiguous or ineffective. Nor can it be harsh and arbitrary in its impact. The application of criminal law has to be uniform regardless of any discrimination on grounds of class, caste, religion, sex or creed etc. of either the criminal or the victim.

COURSE OBJECTIVE

This course has the following objectives

1. Identify the stages in the investigation and procedure of trial in criminal cases.
2. Explain the powers, functions, and limitations of the police investigation.
3. To study procedural nuances of criminal court inquiry and trial.
4. Make the distinction between different types of trials provided under the code.
5. To use their skill of knowledge to protect and promote the basic fundamental rights provided by our constitution.

COURSE OUTCOMES

The students shall be able to;

1. Understand the nature and scope of the code.
2. Analyze the drawbacks of complicated procedural requirements of the code.
3. Develop a necessary understanding of procedural knowledge of court proceedings.
4. Apply the necessary skill set to assist the court and law enforcement agencies

Unit-I Credit 6

INTRODUCTORY (Hours 60)

a) Object and Importance of Cr.P.C
b) Functionaries under the Cr.P.C
c) Basic Concepts: Bailable Offence, Non-Bailable Offence, Cognizable Offence,
d) Non-cognizable Offence, Complaint, Charge, Police Report, Investigation, Inquiryand Trial, Summons Case, Warrant Case
e) Constitution & Powers of Criminal Courts & Offices
f) Public Prosecutor

Unit-II

PRE-TRIAL PROCEEDINGS

a) Information to Police & their Powers to investigate
b) Jurisdiction of Criminal Courts in Inquiries & Trials
c) Conditions requisite for Initiation of proceedings
d) Complaints to Magistrates
e) Commencement of proceedings before Magistrates
f) Provisions as to Bail & Bonds
g) The Criminal Procedure (Identification)Bill, 2022

Unit-III

TRIAL PROCEEDINGS

- Framing of Charge & Joinder of Charges
- Trial before a Court of Session
- Trial of Warrant cases by Magistrates
- Trial of Summons cases by Magistrates
- Summary Trials
- Evidence in Inquiries & Trials & General provisions

Unit-IV

MISCELLANEOUS

a) Appeals
b) Reference & Revision
c) Inherent Power of Court
d) Transfer of Criminal cases & Execution, Suspension, Remission & Commutation of Sentences
e) Irregular Proceedings & Limitations for taking Cognizance of certain offences
f) Plea Bargaining
g) Maintenance of Public Order and Tranquillity
h) Security for peace and good behaviour
i) Maintenance of wives, children and parents
j) Compounding of Offences

Unit-V

SPECIAL PROVISIONS RELATED TO PROBATION AND JUVENILE JUSTICE

- **Probation of Offenders Act, 1958**

  Concept of Probation System-Origin and Development in India

- **Juvenile Justice (Care and Protection of Children) Act,2000**

Power, composition, functions and procedure to be followed by the Juvenile Justice Board.

Text Books:

1. Rattan Lal & Dhirajlal- Code of Criminal Procedure

2. R.V. Kelkar - Code of Criminal Procedure

3. Chandrasekharan Pillai, Kelkar Lecturer on Criminal Procedure, 1998 Eastern Book Co.

4. Woodroffe, Commentaries on Criminal Procedure Code, 2000 Universal

5. Sarkar on Criminal Procedure Code

6.N.K. Chakrabarti- Probation System in the Administration of Criminal Justice

7. Ved Kumari- Juvenile Justice System s – (sections 441 – 462)

B.A.LL.B. (Hons.) Semester IV

CURRICULUM AND SYLLABI

(4th Semester)

B.A.LL.B. (Hons.)
(Integrated Law degree course)

SCHOOL OF LAW



RAFFLES
UNIVERSITY

Japanese Zone, National Highway 48 Neemrana, Rajasthan 301020

www.rafflesuniversity.edu.in

B.A.LL.B. (Hons.) Semester IV

CONSTITUTIONAL LAW - II (LCL-II)

Objective: This course will deal with fundamental rights because the success or failure of democracy depends on the extent to which civil liberties are enjoyed by the citizens. This paper will give knowledge to the students about the concept of state, classification of fundamental rights, the relevance of Directive Principles of State Policy and the importance of Fundamental Duties. The critical analysis of recent judgments delivered by the Courts enables the students to develop an analytical approach to contemporary issues.

TEACHING METHODOLOGY

A Dialectic system of learning would provide a better appreciation of the constitutional governance in India through classroom debate and moot court exercises after the basic issues are identified by lecture and discussion. Research of issue-based conflict of interest through court cases may be an added advantage.

As per the norms of the University for this Course, there will be 6 classes per week. Clinical and tutorial forms of learning should be followed. The teaching methodology will include Lectures-cum-discussion, Assignments, Projects and Presentations.

EVALUATION SCHEME

• Continuous Assessment-20%

• Mid-Term- 20%

• End Term- 60%

UNIT-1

STATE

- Concept of State under Article 12 of the Constitution
- Concept of Law under Article 13 of the Constitution

UNIT- 2

FUNDAMENTAL RIGHTS- I

A. Right to Equality (Articles14-18): Doctrine of Reasonable Classification and the Principle of Absence of Arbitrariness, Legitimate Expectations, Principle of Compensatory Discrimination.

B. Fundamental Freedom (Article 19): Freedom of Speech and Expression, Freedom of Press and Media; Expansion by Judicial Interpretation of Article19; Reasonable Restrictions (Article19 clause (2) to (5).

UNIT-3

FUNDAMENTAL RIGHTS- II

A. Right to Life and Personal Liberty (Articles 20-22): Scope and Content (Expansive Interpretation.
B. Right to Privacy, Gays‟ Rights, Live-in Relationships, etc.)
C. Right to Education (Article 21A): RTE Act, 2009

UNIT-4

FUNDAMENTAL RIGHTS- III

A. Right against Exploitation
B. Right to Religion
C. Cultural & Educational Rights

UNIT-4

RIGHT TO CONSTITUTIONAL REMEDIES

A. Writs: Habeas Corpus, Mandamus, Certiorari, Prohibition and Quo-warranto
B. Art. 32 and Art. 226
C. Judicial Review
D. Writ Jurisdiction and Private Sector

UNIT- 5

DPSP & FUNDAMENTAL DUTIES

A. Directive Principles of State Policy
B. Fundamental Duties

Suggested Readings

1. Arthur Berriedale Keith: A Constitutional History of India 1600-1935, Methuen & Co. Ltd., London
2. Dr. J. N. Pandey: Constitutional Law of India, Central Law Agency, Allahabad.
3. Durga Das Basu: Introduction to the Constitution of India, LexisNexis India, Gurgaon.
4. Durga Das Basu: Shorter Constitution of India, Prentice-Hall of India Pvt. Ltd., New Delhi
5. H. M. Seervi: Constitutional Law of India, N.M. Tripathi, Bombay
6. Jagdish Swarup: Constitution of India, Modern Publications, New Delhi
7. M. P. Jain: Indian Constitutional Law, LexisNexis India.
8. M. V. Pylee: Constitutional Amendments in India, S Chand & Company, New Delhi,

9. M. V. Pylee: Our Constitution Government & Politics, Universal Law Publishing Co. Pvt. Ltd., New Delhi
10. M. V. V. Ramana: Inter-State River Water Disputes in India, Orient Longman, New Delhi
11. M.C. Jain Kagzi: The Constitutional of India, India Law House, New Delhi
12. P. D. Mathew: Fundamental Rights in Action, Indian Social Institute, New Delhi
13. Prof. M. P. Singh: V. N. Shukla's Constitution of India, Eastern Book Company, Lucknow
14. Shibanikinkar Chaube: Constituent Assembly of India, Manohar Publishers & Distributors, New Delhi:
15. Zoya Hasan & E. Sridharan (eds.): India's Living Constitution: Ideas, Practices, Controversies, Permanent Black, Delhi

Leading Case Laws

1. Mohammad Yasin v. Town Area Committee, AIR 1952 SC 115
2. Masthan Sahib v. Chief Commissioner, Pondicherry, AIR 1963 SC 533
3. Ajit Singh v. State of Punjab, AIR 1967 SC 856
4. University of Madras v. Santa Bai, AIR 1954 Mad. 67
5. Ujjamabai v. State of U.P., AIR 1962 SC 1621
6. Electricity Board, Rajasthan v. Mohan Lal, AIR 1967 SC 1857
7. Sukhdev Singh v. Bhagatram, AIR 1975 SC 1331
8. R D Shetty v. International Airport Authority, AIR 1979 SC 1628
9. Ajay Hasia v. Khalid Mujib, AIR 1981 SC 487
10. Som Prakash Rekhi v. Union of India. (1981) 1 SCC 449
11. Naresh v. State of Maharashtra, AIR 1967 SC 1
12. Rupa Ashok Hurra v. Ashok Hurra, AIR 2002 SC 1771
13. R. Antulay v. R.S. Nayak, AIR 1988 SC 1531
14. Keshavan Madhavan Menon v. State of Bombay, AIR 1951 SC 128
15. Bhikaji Narain v. State of Madhya Pradesh, AIR 1955 SC 781.
16. Deep Chand v. State of Uttar Pradesh, AIR 1959 SC 648.
17. State of Bombay v. F.N. Balsara, AIR.1951 SC 318
18. Shankari Prasad v. Union of India, AIR 1951 SC 458
19. Sajjan Singh v. State of Rajasthan, AIR 1965 SC 845
20. Golaknath v. State of Punjab, AIR 1967 SC 1643
21. Kesavananda Bharti v. State of Kerela, AIR 1973 SC 1461
22. AIIMS Students Union v. AIIMS, AIR 2001 SC 3262.
23. Aruna Ramchandra Shanbaug v. Union of India, (2011) 4 SCC 454.

24. Ashok Kumar Thakur v. Union of India, (2008) 6 SCC 1.
25. Association for Democratic Reforms v. Union of India, AIR 2001 Del 126.
26. Bennet Coleman & Co. v. Union of India, AIR 1973 SC 106.
27. Bijoe Emmanual v. State of Kerala, AIR 1986 Ker. 34.
28. Devender Pal Singh Bhullar v. State (NCT of Delhi), (2013) 6 SCC 195.
29. Ex-Captain Garish Uppal v. Union of India, (2003) 2 SCC 45.
30. Francis Coralie v. Union Territory of Delhi, AIR 1981 SC 746.
31. Hussainara Khatoon v. Home Secretary, Bihar, AIR 1979 SC 1322.
32. Indian Express Newspapers (Bombay) Pvt. Ltd. v. Union of India, AIR 1986 SC 515.
33. Islamic Academy of Education v. State of Karnataka, (2003) 6 SCC 697.
34. M. H. Hoskot v. State of Maharashtra, AIR 1978 SC 1548.
35. M. Nagaraj v. Union of India, (2006) 8 SCC 212.
36. 15. Maneka Gandhi v. Union of India, AIR 1978 SC 597.
37. Municipal Corporation of Delhi v. Association of Victims of Uphaar Tragedy, AIR 2012 SC 100.
38. Namit Sharma v. Union of India, (2013) 1 SCC 745.
39. 18. National Human Right Commission v State of Arunachal Pradesh, AIR 1996 SC 1254.
40. P.A. Inamdar v. State of Maharashtra, AIR 2005 SC 3236.
41. Prakash Jha Productions v. Union of India, (2011) 8 SCC 372.
42. R. K. Dalmia v. Justice S. R. Tendolkar, AIR 1958 SC 538.
43. Rabindra Kumar Pal @Dara Singh v. Republic of India, 2011 (1) SCR 929.
44. Rupa Ashok Hurra v. Ashok Hurra, AIR 2002 SC 1771.
45. Satimbla Sharma v. St Paul's Senior Secondary School, (2011) 13 SCC 760.
46. Society for Unaided Private Schools of Rajasthan v. Union of India, AIR 2012 SC 3445.
47. St. Stephen's College v. University of Delhi, AIR 1992 SC 1630.
48. State of Bombay v. F. N. Balsara, AIR 1951 SC 318.
49. State of Orissa v. Mamta Mohanty, (2011) 3 SCC 436.
50. State of West Bengal v. Anwar Ali Sarkar, AIR 1952 SC 75.
51. T. K. Rangarajan v. Government of Tamil Nadu, AIR 2003 SC 3032.
52. T. M. A.Pai Foundation v. State of Karnataka, AIR 2003 SC 355.
53. Unni Krishnan v. State of A.P., AIR 1993 SC 2178.
54. Zee Telefilms Ltd. v. Union of India, (2005) 4 SCC 649.

B.A.LL.B. (Hons.) Semester IV

LAW OF CRIMES-II (LCRL-II)
(INDIAN PENAL CODE)

The course of Law of Crimes-1 has been so designed as to enable the students to understand the general principles of criminal liability,

Course Objectives

to identify the ingredients of an offence,

to understand the range of state of mind required for different offences,

to sensitize the students about the inherent biases of criminal law against certain groups of people despite its claim of universality, neutrality and equality. The course will enable students to critically scrutinize the recent developments and changes that have taken place in the field. The primary objectives of this course are to familiarize the students with the key concepts regarding crime and criminal law and expose the students to the range of mental states that constitutes *mens rea* essential for committing crime.

Unit-I
Offences against the Human Body-I

- Culpable Homicide and Murder
- Death Caused by Rash & Negligent Act
- Attempt to Murder
- Attempt and Abetment to Suicide

Cases:

1. Rawalpenta Venkalu v. State of Hyderabad, AIR 1956 SC 171
2. Palani Goundan v. Emperor, 1919 ILR 547 (Mad)
3. In re Thavamani, AIR 1943 Mad 571
4. Emperor v. Mushnooru Suryanarayana Murthy 42 (1912) 22 MLJR 333 (Mad.)
5. Kapur Singh v. State of PEPSU, AIR 1956 SC 654
6. Virsa Singh v. State of Punjab, AIR 1958 SC 465
7. State of Andhra Pradesh v. R. Punnayya, AIR 1977 SC 45
8. Emperor v. Mt. Dhirajia, AIR 1940 All. 486
9. Gyarsibai v. The State, AIR 1953 M.B. 61
10. K.M. Nanavati v. State of Maharashtra, AIR 1962 SC 605
11. Ghapoo Yadav v. State of M.P, (2003) 3 SCC 528
12. Cherubin Gregory v. State of Bihar, AIR 1964 SC 205
13. S.N. Hussain v. State of Andhra Pradesh, AIR 1972 SC 685
14. Cherubin Gregory v. State of Bihar, AIR 1964 SC 205
15. S.N. Hussain v. State of Andhra Pradesh, AIR 1972 SC 685

B.A.LL.B. (Hons.) Semester IV

Unit-II
Against Human Body-II

- Hurt: Grievous and Simple
- Assault and Criminal Force
- Wrongful Restraint and Wrongful Confinement
- Kidnapping and Abductions

Cases:

1. S. Varadarajan v. State of Madras, AIR 1965 SC 942
2. Thakorlal D. Vadgama v. State of Gujarat, AIR 1973 SC 2313
3. State of Haryana v. Raja Ram, (1973) 1 SCC 544 138

Unit-III
Offences against Women

- Pornography/Indecent Representation of Women, Eve-teasing
- Outraging Modesty of Woman *Voyeurism*, Stalking, Acid Attack
- Rape and Unnatural Offences Buying or Selling a Minor for Prostitution
- Offence Relating to Miscarriage
- Dowry Death-Cruelty by Husband or Relatives of a Husband

Cases:

1. Kanwar Pal Singh Gill v. State (Admn., U.T. Chandigarh) through Secy., (2005) 6 SCC 161
2. Tukaram v. State of Maharashtra, AIR 1979 SC 185
3. State of Punjab v. Gurmit Singh, (1996) 2 SCC 384
4. Independent Thought v. Union of India, (2017) 10 SCC 800.
5. Navtej Singh Johar v. Union of India Through Secretary, Ministry of Law and Justice, (2018) 10 SCC 1

Unit-IV
Offences against Property

- Theft, Extortion, Robbery and *Dacoity*
- Criminal Misappropriation and Criminal Breach of Trust
- Cheating and Forgery, Mischief

Cases:

1. Pyare Lal Bhargava v. State of Rajasthan, AIR 1963 SC 1094
2. Jadunandan Singh v. Emperor, AIR 1941 Pat. 129
3. Sekar v. Arumugham (2000) Cr.L.J. 1552 (Mad.)
4. State of Karnataka v. Basavegowda (1997) Cr.L.J. 4386 (Kant.)
5. Jaikrishnadas Manohardas Desai v. State of Bombay, AIR 1960 SC 889
6. Mahadeo Prasad v. State of West Bengal, AIR 1954 SC 724
7. Akhil Kishore Ram v. Emperor, AIR 1938 Pat. 185
8. Shri Bhagwan S.S.V.V. Maharaj v. State of A.P., AIR 1999 SC 2332

Unit-V
Offences against the State

- Waging or attempting to wage war - Sec. 121
- Sedition - Sec. 124-A
- Offences against Public Tranquility - Sec. 141, 146, 149
- Unlawful Assembly, Riots, affray
- Illegal gratification - Sec. 161

Cases:

1. Quoting Jublia Mallah v. Emperor' AIR 1944 Pat 58
2. R. v. Gordon
3. Mir Hasan Khan & Others v. State, AIR 1951 Pat 60.
4. Tara Singh v. Territory of Punjab, AIR 1951 CriLJ 449
5. State (N.C.T. Of Delhi) v. Navjot Sandhu@ Afsan Guru (2005) 11 SCC 600
6. National Investigation Agency v. Zahoor Ahmad Shah Watali AIR 2019 SC 1734
7. Bimal Gurung v. Union of India (2018) 15 SCC 480
8. Amrika Bai v. State of Chhattisgarh AIR 2019 SC 1831
9. Bilkis Yakub Rasool v. State of Gujarat (2019)
10. Kishorechandra Wangkhemcha v. Union of India (2021)
11. Vinod Dua v. Union of India (2021)
12. Rajat Sharma v. Union of India (2021)
13. State v. Disha A. Ravi (2021)
14. Rajina Parbin Sultana v. State of Assam (2021)
15. P.S. Kirubakaran v. Commr. of Police, Vepery (2021)
16. Patricia Mukhim v. State of Meghalaya & Ors (2021)

B.A.LL.B. (Hons.) Semester IV

LAW OF CONTRACT – II (LOC-II)

INTRODUCTION OF THE COURSE

In the society wherein all major ventures are getting corporatized, a law student should acquaint himself with the knowledge of special contracts apart from equipping himself with general principles of contract. This law is contained in several legislations apart from the Indian Contract Act. This course equips the students to better appreciate the legal services required in a corporate office so that he can enhance his relevance as a lawyer in society. Law relating to Sales of Goods deals with the sale transactions of moveable property, formation of sale contracts, rights and duties of vendor and vendee, terms of contract etc. Law of Partnership deals with the formation of partnership firms, duties and liabilities of incoming and outgoing partners etc.

TEACHING METHODOLOGY

Case-study method shall be the main method of learning to be followed. Dialectic method of mooting and argumentation plays a very convincing procedure of learning. The information sharing and flow of information among the teacher and taught has to work as bonding of the entire course. Case comment and book review can also be a method of research writing in this paper.

COURSE OUTLINE:

UNIT-1

Indemnity, Guarantee, Bailment and Pledge

- **Contract of Indemnity**

1. Documents/Agreements of Indemnity - Definition, Nature and
2. Scope and Rights of indemnity holder
3. Commencement of the indemnifier's liability

- **Contract of Guarantee**

1. Definition, Nature and Scope Difference between the contract of indemnity and Guarantee
2. Rights of surety

3. Discharge of Surety
4. Extent of Surety's liability
5. Co-surety.

- **Contract of Bailment**

1. Definition – Kinds – Duties of Bailer and Bailee –
2. Rights of Finder of goods as Bailee Liability towards true owner
3. Rights to dispose of the goods.

- **Contract of pledge**

1. Definition
2. Comparison with Bailment
3. Rights and duties of Pawnor and Pawnee

Case Studies:

1. New India Assurance Company Ltd. v.Kusumanchi Kamleshwar Rao and another1997 (9) SCC 179
2. United India Insurance Company v. M/s. Aman Singh Munshilal A.I.R. 1994 P. &h. 206
3. Secretary of State v. The Bank Of India Ltd., A.I.R. 1938 P.C. 191.
4. Sham Sunder v. Chandu La, AIR 1935, Lahore 974
5. Gajanan Moreshwar v. Moreshwar Madan, A.I.R. 1942 Bom, 302, at 304.
6. Oriental Fire and General Insurance Co. Ltd. v. Murlidhar Gopikissen Pvt. Ltd. AIR 1985 Cal 301: 1985 Arbi LR 387
7. Nagpur N.S. Bank v. Union of India, A.I.R. 1981 A.p. 153, at 158.
8. EMCO Pressmaster Pvt. Ltd. v. Union of India AIR 2000 Del 37
9. National Building Condtruction Corporation ltd. v. State Bank of Patiala AIR 1993 Del 89
10. Association of Corporation and Apex Societies of Handlooms v. State of Bihar AIR 2000 Del 106
11. DLF Cement Ltd. v. Inspector of Police AIR 1999 AP 359
12. Jagdish Chandra Trikha v. Punjab National Bank AIR 1998 Del. 266
13. National Bank of Lahore v.Sohan Lal AIR 1962 Punjab 534
14. Ram Gulam v.Govt. of U.P. AIR 1950 All 106
15. L.M. Co-operative Bank v. Prabhudas Hathibhai AIR 1966 Bom. 134
16. Standard Chartered Bank v.Custodian AIR 2000 sc 1488
17. K.S. Nagalmbika v. Corporation Bank , Virajpet AIR 2000 Kant. 201

18. Central Bank of India vKesharao Narayanrao Patil, (200%) (1) BC 58 (Ori)
19. Philips v. Brooks Ltd. (1919) 2 K.B. 243
20. Belgaum Pioner Urban Co-op. Credit Bank v. Satyapromoda AIR 1962 Mys. 48
21. M. R. Dhawan v. Madan Mohan AIR 1966 Delhi 313, 315
22. Dhani Ram & Sons v. Frontier Bank Ltd. AIR 1962 Punjab 321
23. KM Hidayathulla v. Bank of India AIR 2001 Mad. 251
24. Bank of Maharashtra v. Racman Auto (p.) Ltd. AIR 1991 Delhi 278
25. Central Bank of India v. Grains and Gunny Agencies AIR 1989 MP28

UNIT-2

Agency

- **Agency**

1. Definition
2. Creation of Agency
3. Kinds of Agents
4. Distinction between Agent and Servant
5. Rights and Duties of Agent
6. Relation of Principal with third parties
7. Delegation of Duties and Rights of Agent
8. Extent of Agents authority
9. Personal liability of Agent
10. Termination of Agency.

Case Studies:

1. Keighley, Maxsted & Co. v. Durant (1901) AC 240
2. Kelner v. Baxter (1866) LR 2 CP 174
3. Badri Prasad v. State of Madhya Pradesh AIR 1966 SC 58
4. Saroj Kapur v. Nitin Casting Ltd. AIR 1987 Delhi 349
5. Keppel v. Wheeler (1927) 136 LT 203
6. National Bank of Lahore v. Sohanlal AIR 1962 Punjab 534

Text Book

1. Avtar Singh. “Contract and Specific Relief”, Eastern Book Company, 10th Edition, Lucknow, 2010.

Reference Book

2. B S Ramaswamy, " Contracts and their Management, Lexis Nexis Butterworth, 3rd Edition, New Delhi 2008

3. H.K Saharay, "Dutt on Contract", Eastern Law House, 10th Edition, Kolkata, 2006

4. G C Bharuka, "Mulla on The India Contract Act", 12th Edition, Lexis Nexis Butterworths Wadhwa, Nagpur 2009

5. Venkoba Rao's Law of Agency, 3rd Edition, Butterworths, New Delhi, 2001

UNIT–3

Indian Partnership Act

- **Indian Partnership Act**

1. Definition – Nature, Mode of determining the existence of
2. Partnership – Relation of Partner to one another – Rights and duties of partner –
3. Relation of partners with third parties – Types of partners – Admission of partners – Retirement
4. Expulsion – Dissolution of Firm – Registration of Firms.

.

Case Studies

1. Mahabir Cold Storage v. CIT, AIR 1991 SC 1357
2. C.I.T. v. Shah Mohandas Sadhuram, AIR 1966 SC15
3. Sharad Vasant Kotak v. Ramniklal Mohanlal Chawda (1998) 2 SCC 171
4. Ganga Metal Refining Company v. Commissioner of Income-tax, West Bengal, AIR 1967 Cal. 434
5. Mahadeodas v. Gherulal Parekh, AIR 1958 Cal. 703
6. K. Jaggaias v. Kokumanu AIR 1984 A.P. 149
7. Munishi Abdul Latif v. Gopeswar AIR 1933 Cal 204 : 56 Cal L.J 172
8. R.N. Kothare v. Hormasjee, AIR 1927 Bom 187
9. Dulichand Laxminarayan v. Commissoner of Income-Tax, (1956) 29 T.L.R. 535
10. Mahendra Kumar v. Sate of Madras, AIR 1968 Mad. 241
11. Sanganer Dal and Flour Mill v. F.C.I, AIR 1992 S.C 481
12. Dena Bank v. Bhikhabai Prabhudas Parekh and Co. and others, 2000 (5) SCC 694

Text Book

1. Pollock and Mulla, " The Indian Partnership Act", 7th Edition, Lexis Nexis Butterworths, New Delhi 2007

Reference Book

2. S.D. Singh, J.P. Gupta, "Law of Partnership in India", 15th Edition, Orient Law House, New Delhi.
3. H.K. Saharay, "Indian Partnership and Sale of Goods Act", R.Combray and Co. P.Ltd, Kolkata, 2004
4. V.S.Vadivel, "Partnership Firms", 3rd Revised Edition, Snow white, Mumbai, 2008
5. Dr. Madhusudhan Saharay, "Indian Partnership Act", Universal Law Publishing Co. New Delhi, 2010
6. Satyajeet Desai, " The Law of Partnership in India", 7th Edition, Wadhawa, Nagpur, 2009

UNIT –4

Sales of Goods Act

- **Sale of Goods Act**
  1. The Contract of sale
  2. Conditions and Warranties
  3. Passing of Property
  4. Transfer of title
  5. Performance of the Contract
  6. Rights of Unpaid Seller
  7. Against goods – Remedies for Breach of Contract

Case Studies:

1. Andhra Sugar Ltd. v. State of A.P AIR 1968 SC 599
2. Coffee Board, Karnataka v. Commissioner of Commercial Taxes, AIR 1988 SC 1487
3. M/s Mukesh Kumar Aggrawal and Co. v. State of M.P, AIR 1988 S.C 563
4. Associated Power Co. Ltd v. Ram Taran Roy, AIR 1970 Cal. 75
5. H. Anraj v. Govt of Tamil Nadu AIR 1986 SC 63
6. Vijay Minerals Pvt. Ltd v. Bikash Chandra Deb AIR 1996 Cal. 67
7. Aluminium Industries Ltd. v. Minerals and Metals Trading Corpn, AIR 1998 Mad. 239
8. Union of India v. Tarachand AIR 1976 M.P. 101

9. State of Gujarat v. Variety Body Builders AIR 1976 SC 2108
10. Jagdish Radhakisan v. Ramesh S. Wagh AIR 2001 Bom 152
11. In re Andrew Yule and Co. AIR 1932 Cal. 879

Text Book

1. P. Ramanath Aiyar, Law of Sale of Goods", 8th Edition, Universal Law Publishing Co. Delhi, 2007

Reference Book

2. R.Chakraborty, "Law of Sale of Goods And Partnership", 1st Edition, Orient Publishing Company, Allahabad, 2007
3. Dr. Madhusudan Saharay, "Sale of Goods and Hire Purchase", Universal Law Publishing Co., New Delhi, 2010
4. Justice. P. Narayna,"Law of Caveats", First Edition, Asian Law House, Hyderabad, 2006
5. S.D. Singh, J.P. Gupta, "Law of Partnership in India", 15th Edition, Orient Law House, New Delhi.
6. H.K. Saharay, "Indian Partnership and Sale of Goods Act", R.Combray and Co. P.Ltd, Kolkata, 2004

UNIT –5

Hire Purchase Act 1972

- **Hire Purchase Act 1972**

1. Rights and Obligation of the Hirer and Owner
2. Form and Contents of Hire Purchase Agreements
3. Warranties and Conditions
4. Standard Form of Contracts: Nature, Advantages, Unilateral Character
5. Principles of Protection against the Possibility of exploitation
6. Judicial Approach to such Contracts
7. Exemption Clauses
8. Clash between two standard forms of contracts.

Text Book

Hire Purchase Act, 1972

B.A.LL.B. (Hons.) Semester IV

JURISPRUDENCE (JUR)

INTRODUCTION TO THE COURSE

Jurisprudence is the study and theory of law. Scholars of jurisprudence, or legal theorists (including legal philosophers and social theorists of law), hope to obtain a deeper understanding of the nature of law, of legal reasoning, legal systems and of legal institutions. Modern jurisprudence began in the 18th century and was focused on the first principles of the natural law, civil law, and the law of nations.

OBJECTIVE OF THE COURSE

The objective of this course is to study the nature of judicial process as an instrument of ordering the society in India within the background of evolution of judicial role and judicial process in other societies. This course is intended to highlight the role of court as policy maker, participant in power and an instrument of social change. The emergence of the Indian Supreme Court as the most powerful judicial tribunal of the democratic world makes it necessary to study amongst other things the social background and orientation of the judges, the techniques employed by it and the constituencies it serves.

TEACHING METHODOLOGY

As per the norms of the university, there will be 6 classes per week in this course. Teaching methodology will include Lectures-cum-discussion, Assignments, Projects and Presentations.

COURSE OUTLINE

UNIT-1

A. Introduction

B. Nature and Scope of Jurisprudence

C. Need for study of Jurisprudence

D. Linkage between Jurisprudence and other sciences

E. **Sources of Law:** Custom

F. Legislation

G. Precedent

UNIT-2

Schools of Jurisprudence

A. Natural Law with Indian Perspective
B. Analytical Positivism, Pure Theory, Legal Realism
C. Historical Jurisprudence
D. Sociological Jurisprudence with Indian Perspective

UNIT-3

State, Sovereignty and Law

A. Nature and functions of a State and its relationship with law
B. Nature and development of Sovereignty

UNIT-4

Nature and Kinds of law

A. Theories of Justice and Punishment
B. Law and Legislation
C. Law and Morality
D. Law and Religion
E. Law and Social change

UNIT-5

Concepts of Law

A. Rights and Duties
B. Personality
C. Possession, Ownership and Property

Recommended Readings

L.M. Singhvi, Freedom on Trial, (1991), Vikar, N.Delhi.

Verinder Grover (Ed.) Political Process and Role of Courts, (1997) Deep & Deep Publications, N.
Delhi.

B.P.Sigh Seghal (Ed.) Law, Judiciary and Justice (1993) Deep & Deep, N.Delhi.

Max Gluckman, Judicial Processes Among the Barotse of northern Rhodesia (1967).
Paul Bohanan, Justice and Judgment Among the Tiv (1957)
E. Adamson Hoebel, The Law of the Primitive Man (1968)
Catherine Newman, Law and Economic Organization: A Comparative Study of Pre-industrial Law 306 Societies (1983)
Upendra Baxi, Towards the Sociology of Indian Law (1986)
Harold J. Berman, Law and Revolutions the Formation of the Western Legal Tradition (1983).
Yash Ghai, The Political Economy of Law. A Third World Reader (1986)
Henry J. Abraham, The Judicial Process (1995), Universal
Ronald Dworkin, Taking Rights Seriously (1996), Universal
Ronald Dworkin, A Matter of Principle (1985)
John Hart Ely, Democracy and Distrust. A Theory of Juridical Review (1980)
J. Stone, Precedent and the Law: Dynamics of Common Law Growth (1985)
Supreme Court of India, Third International Conferences of Appellate Judges Conference Papers and Proceedings (1985).
Upendra Baxi, The Indian Supreme Court and Politics (1980)
Upendra Baxi, Courage, Craft and Contention: The Indian Supreme Court in Mid-Eighties (1986), Tripathi, Bombay
Rajeev Dhavan, The Supreme Court of India: A Study of its Socio-Juristic Techniques (1977), Tripathi, Bombay
Rajeev Dhavan, and Alice Jacob, Selection and Appointment of Supreme Court Judges : A Case Study (1978)
Rajeev Dhavan and P. Kalpakam, The Supreme Court under Strain: The Challenge of Arrears (1979)
Simon Shetret & Jules Descheness (Ed.), Judicial Independence: A Contemporary Debate, Martinas
Highoff Pub., Dercbrecht, (1985)
Martin Shapiro, Courts: A Comparitive and Political Analysis (1981), University of Chicago
H.R.Khanna, Judiciary in India and Judicial Process, (1985), S.C. Sarkar and Sons, Calcutta

B.A.LL.B. (Hons.) Semester IV

ADMINISTRATIVE LAW (ADML)

OBJECTIVE OF THE COURSE

1. Give an overview of the development of Administrative Law in India & its need today
2. Conceptualise the various components of Administrative Law
3. Justify the need for judicial control of administrative actions
4. Justify the necessity of controlling the delegated legislation
5.

COURSE OUTCOME

1. State the need for the development of Administrative Law.
2. Express the concept of delegated legislation and its control mechanisms.
3. Demonstrate natural justice and its exceptions.
4. Examine the recent innovations in administrative Law.
5. Appraise the judicial control of administrative action.

As per the norms of the university, there will be 6 classes per week in this course. Teaching methodology will include Lectures-cum-discussion, Assignments, Projects and Presentations.

THE EVALUATION SCHEME

- Continuous Assessment- 20%
- Mid-Term- 20%
- End Term- 60%

COURSE OUTLINE

UNIT- 1

Introduction of Administrative Law

A. Meaning, Nature and Scope of Administrative Law and causes for the evolution of Administrative Law
B. Relationship between Administrative Law & Constitutional Law
C. Concept of Droit Administratif – Meaning & Postulates
D. Rule of Law – Meaning, Principles, Merits, Demerits, New Dimensions in India
E. Separation of Powers – Meaning, Principles, Merits, Demerits, Comparative Study of U.S.A. and India

UNIT-2

Delegated Legislation and Limitations

1. Meaning and Scope of Delegated Legislation
2. Causes for its growth and Constitutionality
3. Control Mechanism: Legislative, Judicial and Procedural
4. Doctrine of Ultra Vires

UNIT- 3

Natural Justice

A. Concept of Natural Justice
B. Interpretation of the Salient Principles with relevant Judicial Pronouncements
  a) Nemo Judex in Causa Sua
  b) Audi Alteram Partem
  c) Reasoned Decisions
C. Exceptions to Natural Justice

UNIT- 4
Administrative Discretion

A. Administrative Discretion – Meaning & Concept, Administrative Discretion & Fundamental Rights
B. Doctrine of Legitimate Expectation & Concept of Absolute Discretion
C. Methods of Judicial Review: Public Interest Litigation and Writ Jurisdictions
D. Judicial Control of Administrative Action: Laches, Locus Standi and Alternative Remedy

UNIT- 5
Administrative Control Mechanism

A. Ombudsman – Meaning, Need and Relevance, U.K. v. India – Office of Lokpal, Lokpal in India
B. Central Vigilance Commission – Meaning, Service Conditions, General Functions, Sections 3 and 8 of The Central Vigilance Commission Act, 2003
C. Administrative Tribunals & Adjudication – Meaning, Characteristics, Reasons for Growth in Modern Times, Demerits
D. The Administrative Tribunal Act, 1985: Aims, Qualifications & Disqualifications of Members

Leading Case

LEADING CASE LAWS

1. Rai Sahib Ram Jawaya Kapur v. State of Punjab, AIR 1955 SC 549.
2. Asif Hameed v. State of J. & K., AIR 1989 SC 1899.
3. State of M.P. v Bharat Singh, AIR 1967 SC 1170.
4. ADM Jabalpur v. Shivkant Shukla, AIR 1976 SC 1207
5. Indira Gandhi (smt.) v Raj Narian AIR 1975 SC 2299
6. Dwarka Prasad Laxmi Narain v. State of U.P., (1954) SCR 803: AIR 1954 SC 224.
7. A.N. Parasuraman v. State of Tamil Nadu, AIR 1990 SC 40: (1989) 4 SCC 683.
8. J. R. Raghupathy v. State of A. P., AIR 1988 SC 1681.
9. Coimbatore District Central Cooperative Bank v. Coimbatore District Central Co-op. Bank Employees Assn., (2007) 4 SCC 669. 105
10. Om Kumar & Others v. Union of India, AIR 2000 SC 3689 115
11. R. v. Secretary of State for the Home Department, Ex Parte Daly, 2001] UKHL 26
12. Case Laws 1. A.K. Kraipak v. Union of India, AIR 1970 SC 150. 166
13. Ashok Kumar Yadav v. State of Haryana, AIR 1987 SC 454.
14. G.N. Nayak v. Goa University, AIR 2002 SC 790.
15. Amar Nath Chowdhuary v. Braithwaite & Co. Ltd., (2002)2SCC290:AIR2002SC 678.

16. Hira Nath Mishra v. Principal, Rajendra Medical College, (1973) 1 SCC 805: AIR 1973 SC 1260.
17. J.K. Aggarwal v. Haryana Seeds Development Corpn. Ltd. , (1991) 2 SCC 283: AIR 1991 SC 1221.
18. Bharat Petroleum Corpn. Ltd. v. Maharashtra General Kamgar Union, (1999) 1 SCC 626.
19. Maneka Gandhi v. Union of India (1978) 1 SCC 248.
20. H.L. Trehan v. Union of India, AIR 1989 SC 568.
21. K I Shepherd v. Union of India, AIR 1988 SC 686.
22. S.N. Mukherjee v. Union of India, AIR 1990 SC 1984.
23. Managing Director, ECIL, Hyderabad v. B. Karunakar, (1993) 4 SCC 727
24. Syed Yakoob v. K.S. Radha Krishanan (1964) 5 SCR 64: AIR 1964 SC 477. 248
25. Surya Dev Rai v. Ram Chander Rai, AIR 2003 SC 3044: (2003) 6 SCC 675.
26. Anadi Mukta Sadguru S.M.V.S.S.J.M.S. Trust v. V.R. Rudani, (1989) 2 SCC 691; AIR 1989 SC 1607.
27. Common Cause v. Union of India, AIR 2003 SC 4493.
28. Rupa Ashok Hurra v. Ashok Hurra, AIR 2002 SC 1771.
29. L. Chandra Kumar v. Union of India and others, AIR 1997 SC 1125 314
30. Union of India v. R. Gandhi, President, Madras Bar Association 2010 (5) SCALE 514

BOOKS RECOMMENDED:

1. I.P. Maasey, Administrative Law, EBC Publishers, 9th edi.
2. J.J.R.Upadhyaya,Administrative Law, CLA 7th edi.
3. S P Sathe, Administrative Law, 7th ed

References

1. Wade. Administrative law,(1988).
2. Dicey, Law of the Constitution, 8th ed.
3. Ivor Jennings, Law and the Constitution,(1969).
4. Griffith and Street, Principles of Administrative law (1967).

B.A.LL.B. (Hons.) Semester IV

ECONOMICS-IV (LECO-IV)
(THEORIES OF DEVELOPMENT & ECONOMIC ENVIRONMENT)

INTRODUCTION TO THE COURSE

"India is a developing country. Since Independence, till today India's economy has been continuously paving the way for Growth & development. We have witnessed an entirely new era as regards structural changes are concerned. During the transition as well as in current times our economy has witnessed several problems and constraints in the process of development. On the other hand India has also witness some forces acting as lubricants in development. The following paper makes an effort to study the various causes and paths through which an underdeveloped country can embark on the path of development. It studies economic models proposed by eminent economists and these models can lead us towards the target of growth. It is an attempt to provide insight to law students to enable them to understand the conditions conducive to economic growth and also its deterrents. Besides the paper also studies Economic Environment of Business in India, economic reforms, its impacts and various issues related to development.

OBJECTIVE OF THE COURSE

- To make student understand about the basic concepts of Economic growth & its factors.
- To understand the process through which economic development can be brought about.
- To understand the problems & obstacles of economic growth & development.
- To understand the economic environment in India and issues related to development.

TEACHING METHODOLOGY

As per the norms of the university in this course there will be 6 classes per week. Teaching methodology will include Lectures-cum-discussion, Assignments, Projects and Presentations.

COURSE OUTLINE

UNIT-1
Concept of economic Growth & Development

A. Introduction to the concepts of growth & Development
B. Factors affecting development
C. Indicators of growth – HDI, PQLI, & others

D. Features of Indian economy as underdeveloped & developing economy
E. Vicious cycle of poverty & determination of BPL in India
F. Unemployment – types & problems in India

Recommended Readings

1. Meier G M and James E Rauch, Leading issues in Economic Development, Oxford University Press, New York.
2. Jhingan, M L, The Economics of Development & Planning, Vrinda Publications Private Limited, New Delhi.
3. Ghsoh, B N, Contemporary Issues in Development Economics, Routledge Publishers, New Delhi.

UNIT-2
Theories of Economic Development

A. Lewis theory of surplus labour
B. Critical minimum effort thesis –Leibenstein
C. Concept of Balanced & Unbalanced Growth
D. Theories of Balanced & Unbalanced Growth
E. Theory of Big push

Recommended Readings

1. Jhingan, M L, The Economics of Development & Planning, Vrinda Publications Private Limited, New Delhi.
2. Todaro, Michael P and Stephen C Smith ., Economic Development, Pearson Education, London.
3. Ray, Debraj., Development Economics, Princeton University Press, New Jersey.
4. Taneja M L and R M Myer., Economics of Development & Planning, Shoban Lal N Chand and Company Educational Publishers, Jalandhar,

UNIT-3
Economic Environment of Business

A. Business Environment, meaning, nature & features
B. Internal Business Environment
   a) Value system of organization, financial capabilities, human resources
   b) Marketing Capabilities, Core competencies

C. External Business Environment
   a) Demographic Environment, Economic Environment, Political & Legal Environment
   b) Socio – cultural Environment, Technological Environment, Global Environment
D. Indian economic environment – concept, types, components & importance
E. New economic policy approach
F. Recent Industrial Policy.
G. Micro, Small & Medium Industries
H. Industrial Sickness

Recommended Readings

1. Cherrunillam, Francis., Economic Environment of Business, Himalaya Publications Limited.
2. Dutt Ruddar and K P M Sundharam., Indian Economy, S Chand and Company Limited, New Delhi.
3. Myneni, S R ., Indian Economics for Law students, Allahabad law Agency, Faridabad.
4. Lekhi, R K., The Economics of Development and Planning, Kalyani Publishers, Ludhiana.

UNIT-4
Economic Reforms in India

A. Globalization – Meaning, causes & effects
B. Liberalization – Meaning, impact
   Privatization - Meaning, impact
C. Disinvestment
D. Meaning & Types, Impact
E. Foreign Direct investment
   Meaning , Types, Methodology in India & Impact
F. Multinational Corporations - Meaning, Types & Impact
G. Special Economic Zones – various consideration & issues.

Recommended Readings

1. Aggarwal, A N., Indian Economy: Problems of Development & Planning, New Age International Publishers, New Delhi
2. Misra, S K and V K Puri., Indian Economy : Its Development Experience, Himalaya Publishing house, Mumbai.

3. Cherrunillam, Francis., Economic Environment of Business, Himalaya Publications Limited.

4. Dutt Ruddar and K P M Sundharam., Indian Economy, S Chand and Company Limited, New Delhi.

UNIT-5
Issues in India

A. Black money & corruption
B. Issues of food security & PDS in India
C. Planning in India – Various five year plans – success & failures
D. 12th five year plan & its evaluation.
E. Centre State financial relations

Recommended Readings

1.Agarwal, A N., Indian Economy: Problems of Development & Planning, New Age International Publishers, New Delhi

2.Misra, S K and V K Puri., Indian Economy : Its Development Experience, Himalaya Publishing house, Mumbai.

3. Cherrunillam, Francis., Economic Environment of Business, Himalaya Publications Limited.

4. Dutt Ruddar and K P M Sundharam., Indian Economy, S Chand and Company Limited, New Delhi.

Other Recommended Readings

1. Dobson, Wendey., Human Capital Formation and Economic Growth in Asia and the Pacific, Routledge, 2013

2. Worthington, Ian , Britton, Chriss.,The Business Environment, Pearson Education, 2009, sixth edition.

3. Gopal, Namita., Business Environment., Tata Mc Graw Hill, 2nd edition, 2009.

4. Paul, Justin., Business Environment : Text & cases, Tata Mc Graw Hill, 3rd edition, 2010.

5. Palmer Adrian, Hartley,Bob ., The Business Environment, Tata Mc Graw Hill, 1st edition, 2010

6. Todaro, Michael, Smith, Stephen., Economic Development, Pearson Education, 11th edition.

B.A.LL.B. (Hons.) Semester IV

B.B.A.LL.B. (Hons.) Semester

CURRICULUM AND SYLLABI

(4th Semester)

B.B.A.LL.B. (Hons.)
(Integrated Law degree course)

SCHOOL OF LAW



RAFFLES
UNIVERSITY

Japanese Zone, National Highway 48 Neemrana, Rajasthan 301020

www.rafflesuniversity.edu.in

B.B.A.LL.B. (Hons.) Semester

CONSTITUTIONAL LAW - II (LCL-II)

Objective: This course will deal with fundamental rights because the success or failure of democracy depends on the extent to which civil liberties are enjoyed by the citizens. This paper will give knowledge to the students about the concept of state, classification of fundamental rights, the relevance of Directive Principles of State Policy and the importance of Fundamental Duties. The critical analysis of recent judgments delivered by the Courts enables the students to develop an analytical approach to contemporary issues.

TEACHING METHODOLOGY

A Dialectic system of learning would provide a better appreciation of the constitutional governance in India through classroom debate and moot court exercises after the basic issues are identified by lecture and discussion. Research of issue-based conflict of interest through court cases may be an added advantage.

As per the norms of the University for this Course, there will be 6 classes per week. Clinical and tutorial forms of learning should be followed. The teaching methodology will include Lectures-cum-discussion, Assignments, Projects and Presentations.

EVALUATION SCHEME

• Continuous Assessment-20%

• Mid-Term- 20%

• End Term- 60%

UNIT-1

STATE

- Concept of State under Article 12 of the Constitution
- Concept of Law under Article 13 of the Constitution

UNIT- 2

FUNDAMENTAL RIGHTS- I

A. Right to Equality (Articles14-18): Doctrine of Reasonable Classification and the Principle of Absence of Arbitrariness, Legitimate Expectations, Principle of Compensatory Discrimination.

B. Fundamental Freedom (Article 19): Freedom of Speech and Expression, Freedom of Press and Media; Expansion by Judicial Interpretation of Article19; Reasonable Restrictions (Article19 clause (2) to (5).

UNIT-3

FUNDAMENTAL RIGHTS- II

A. Right to Life and Personal Liberty (Articles 20-22): Scope and Content (Expansive Interpretation.
B. Right to Privacy, Gays‟ Rights, Live-in Relationships, etc.)
C. Right to Education (Article 21A): RTE Act, 2009

UNIT-4

FUNDAMENTAL RIGHTS- III

A. Right against Exploitation
B. Right to Religion
C. Cultural & Educational Rights

UNIT-4

RIGHT TO CONSTITUTIONAL REMEDIES

A. Writs: Habeas Corpus, Mandamus, Certiorari, Prohibition and Quo-warranto
B. Art. 32 and Art. 226
C. Judicial Review
D. Writ Jurisdiction and Private Sector

UNIT- 5

DPSP & FUNDAMENTAL DUTIES

A. Directive Principles of State Policy
B. Fundamental Duties

Suggested Readings

1. Arthur Berriedale Keith: A Constitutional History of India 1600-1935, Methuen & Co. Ltd., London
2. Dr. J. N. Pandey: Constitutional Law of India, Central Law Agency, Allahabad.
3. Durga Das Basu: Introduction to the Constitution of India, LexisNexis India, Gurgaon.
4. Durga Das Basu: Shorter Constitution of India, Prentice-Hall of India Pvt. Ltd., New Delhi
5. H. M. Seervi: Constitutional Law of India, N.M. Tripathi, Bombay
6. Jagdish Swarup: Constitution of India, Modern Publications, New Delhi
7. M. P. Jain: Indian Constitutional Law, LexisNexis India.
8. M. V. Pylee: Constitutional Amendments in India, S Chand & Company, New Delhi,

9. M. V. Pylee: Our Constitution Government & Politics, Universal Law Publishing Co. Pvt. Ltd., New Delhi
10. M. V. V. Ramana: Inter-State River Water Disputes in India, Orient Longman, New Delhi
11. M.C. Jain Kagzi: The Constitutional of India, India Law House, New Delhi
12. P. D. Mathew: Fundamental Rights in Action, Indian Social Institute, New Delhi
13. Prof. M. P. Singh: V. N. Shukla's Constitution of India, Eastern Book Company, Lucknow
14. Shibanikinkar Chaube: Constituent Assembly of India, Manohar Publishers & Distributors, New Delhi:
15. Zoya Hasan & E. Sridharan (eds.): India's Living Constitution: Ideas, Practices, Controversies, Permanent Black, Delhi

Leading Case Laws

1. Mohammad Yasin v. Town Area Committee, AIR 1952 SC 115
2. Masthan Sahib v. Chief Commissioner, Pondicherry, AIR 1963 SC 533
3. Ajit Singh v. State of Punjab, AIR 1967 SC 856
4. University of Madras v. Santa Bai, AIR 1954 Mad. 67
5. Ujjamabai v. State of U.P., AIR 1962 SC 1621
6. Electricity Board, Rajasthan v. Mohan Lal, AIR 1967 SC 1857
7. Sukhdev Singh v. Bhagatram, AIR 1975 SC 1331
8. R D Shetty v. International Airport Authority, AIR 1979 SC 1628
9. Ajay Hasia v. Khalid Mujib, AIR 1981 SC 487
10. Som Prakash Rekhi v. Union of India. (1981) 1 SCC 449
11. Naresh v. State of Maharashtra, AIR 1967 SC 1
12. Rupa Ashok Hurra v. Ashok Hurra, AIR 2002 SC 1771
13. R. Antulay v. R.S. Nayak, AIR 1988 SC 1531
14. Keshavan Madhavan Menon v. State of Bombay, AIR 1951 SC 128
15. Bhikaji Narain v. State of Madhya Pradesh, AIR 1955 SC 781.
16. Deep Chand v. State of Uttar Pradesh, AIR 1959 SC 648.
17. State of Bombay v. F.N. Balsara, AIR.1951 SC 318
18. Shankari Prasad v. Union of India, AIR 1951 SC 458
19. Sajjan Singh v. State of Rajasthan, AIR 1965 SC 845
20. Golaknath v. State of Punjab, AIR 1967 SC 1643
21. Kesavananda Bharti v. State of Kerela, AIR 1973 SC 1461
22. AIIMS Students Union v. AIIMS, AIR 2001 SC 3262.
23. Aruna Ramchandra Shanbaug v. Union of India, (2011) 4 SCC 454.

24. Ashok Kumar Thakur v. Union of India, (2008) 6 SCC 1.
25. Association for Democratic Reforms v. Union of India, AIR 2001 Del 126.
26. Bennet Coleman & Co. v. Union of India, AIR 1973 SC 106.
27. Bijoe Emmanual v. State of Kerala, AIR 1986 Ker. 34.
28. Devender Pal Singh Bhullar v. State (NCT of Delhi), (2013) 6 SCC 195.
29. Ex-Captain Garish Uppal v. Union of India, (2003) 2 SCC 45.
30. Francis Coralie v. Union Territory of Delhi, AIR 1981 SC 746.
31. Hussainara Khatoon v. Home Secretary, Bihar, AIR 1979 SC 1322.
32. Indian Express Newspapers (Bombay) Pvt. Ltd. v. Union of India, AIR 1986 SC 515.
33. Islamic Academy of Education v. State of Karnataka, (2003) 6 SCC 697.
34. M. H. Hoskot v. State of Maharashtra, AIR 1978 SC 1548.
35. M. Nagaraj v. Union of India, (2006) 8 SCC 212.
36. 15. Maneka Gandhi v. Union of India, AIR 1978 SC 597.
37. Municipal Corporation of Delhi v. Association of Victims of Uphaar Tragedy, AIR 2012 SC 100.
38. Namit Sharma v. Union of India, (2013) 1 SCC 745.
39. 18. National Human Right Commission v State of Arunachal Pradesh, AIR 1996 SC 1254.
40. P.A. Inamdar v. State of Maharashtra, AIR 2005 SC 3236.
41. Prakash Jha Productions v. Union of India, (2011) 8 SCC 372.
42. R. K. Dalmia v. Justice S. R. Tendolkar, AIR 1958 SC 538.
43. Rabindra Kumar Pal @Dara Singh v. Republic of India, 2011 (1) SCR 929.
44. Rupa Ashok Hurra v. Ashok Hurra, AIR 2002 SC 1771.
45. Satimbla Sharma v. St Paul's Senior Secondary School, (2011) 13 SCC 760.
46. Society for Unaided Private Schools of Rajasthan v. Union of India, AIR 2012 SC 3445.
47. St. Stephen's College v. University of Delhi, AIR 1992 SC 1630.
48. State of Bombay v. F. N. Balsara, AIR 1951 SC 318.
49. State of Orissa v. Mamta Mohanty, (2011) 3 SCC 436.
50. State of West Bengal v. Anwar Ali Sarkar, AIR 1952 SC 75.
51. T. K. Rangarajan v. Government of Tamil Nadu, AIR 2003 SC 3032.
52. T. M. A.Pai Foundation v. State of Karnataka, AIR 2003 SC 355.
53. Unni Krishnan v. State of A.P., AIR 1993 SC 2178.
54. Zee Telefilms Ltd. v. Union of India, (2005) 4 SCC 649.

B.B.A.LL.B. (Hons.) Semester

LAW OF CRIMES-II (LCRL-II)
(INDIAN PENAL CODE)

The course of Law of Crimes-1 has been so designed as to enable the students to understand the general principles of criminal liability,

Course Objectives

to identify the ingredients of an offence,

to understand the range of state of mind required for different offences,

to sensitize the students about the inherent biases of criminal law against certain groups of people despite its claim of universality, neutrality and equality. The course will enable students to critically scrutinize the recent developments and changes that have taken place in the field. The primary objectives of this course are to familiarize the students with the key concepts regarding crime and criminal law and expose the students to the range of mental states that constitutes *mens rea* essential for committing crime.

Unit-I
Offences against the Human Body-I

- Culpable Homicide and Murder
- Death Caused by Rash & Negligent Act
- Attempt to Murder
- Attempt and Abetment to Suicide

Cases:

1. Rawalpenta Venkalu v. State of Hyderabad, AIR 1956 SC 171
2. Palani Goundan v. Emperor, 1919 ILR 547 (Mad)
3. In re Thavamani, AIR 1943 Mad 571
4. Emperor v. Mushnooru Suryanarayana Murthy 42 (1912) 22 MLJR 333 (Mad.)
5. Kapur Singh v. State of PEPSU, AIR 1956 SC 654
6. Virsa Singh v. State of Punjab, AIR 1958 SC 465
7. State of Andhra Pradesh v. R. Punnayya, AIR 1977 SC 45
8. Emperor v. Mt. Dhirajia, AIR 1940 All. 486
9. Gyarsibai v. The State, AIR 1953 M.B. 61
10. K.M. Nanavati v. State of Maharashtra, AIR 1962 SC 605
11. Ghapoo Yadav v. State of M.P, (2003) 3 SCC 528
12. Cherubin Gregory v. State of Bihar, AIR 1964 SC 205
13. S.N. Hussain v. State of Andhra Pradesh, AIR 1972 SC 685
14. Cherubin Gregory v. State of Bihar, AIR 1964 SC 205
15. S.N. Hussain v. State of Andhra Pradesh, AIR 1972 SC 685

Unit-II
Against Human Body-II

- Hurt: Grievous and Simple
- Assault and Criminal Force
- Wrongful Restraint and Wrongful Confinement
- Kidnapping and Abductions

Cases:

1. S. Varadarajan v. State of Madras, AIR 1965 SC 942
2. Thakorlal D. Vadgama v. State of Gujarat, AIR 1973 SC 2313
3. State of Haryana v. Raja Ram, (1973) 1 SCC 544 138

Unit-III
Offences against Women

- Pornography/Indecent Representation of Women, Eve-teasing
- Outraging Modesty of Woman *Voyeurism*, Stalking, Acid Attack
- Rape and Unnatural Offences Buying or Selling a Minor for Prostitution
- Offence Relating to Miscarriage
- Dowry Death-Cruelty by Husband or Relatives of a Husband

Cases:

1. Kanwar Pal Singh Gill v. State (Admn., U.T. Chandigarh) through Secy., (2005) 6 SCC 161
2. Tukaram v. State of Maharashtra, AIR 1979 SC 185
3. State of Punjab v. Gurmit Singh, (1996) 2 SCC 384
4. Independent Thought v. Union of India, (2017) 10 SCC 800.
5. Navtej Singh Johar v. Union of India Through Secretary, Ministry of Law and Justice, (2018) 10 SCC 1

Unit-IV
Offences against Property

- Theft, Extortion, Robbery and *Dacoity*
- Criminal Misappropriation and Criminal Breach of Trust
- Cheating and Forgery, Mischief

Cases:

1. Pyare Lal Bhargava v. State of Rajasthan, AIR 1963 SC 1094
2. Jadunandan Singh v. Emperor, AIR 1941 Pat. 129
3. Sekar v. Arumugham (2000) Cr.L.J. 1552 (Mad.)
4. State of Karnataka v. Basavegowda (1997) Cr.L.J. 4386 (Kant.)
5. Jaikrishnadas Manohardas Desai v. State of Bombay, AIR 1960 SC 889
6. Mahadeo Prasad v. State of West Bengal, AIR 1954 SC 724
7. Akhil Kishore Ram v. Emperor, AIR 1938 Pat. 185
8. Shri Bhagwan S.S.V.V. Maharaj v. State of A.P., AIR 1999 SC 2332

Unit-V
Offences against the State

- Waging or attempting to wage war - Sec. 121
- Sedition - Sec. 124-A
- Offences against Public Tranquility - Sec. 141, 146, 149
- Unlawful Assembly, Riots, affray
- Illegal gratification - Sec. 161

Cases:

1. Quoting Jublia Mallah v. Emperor' AIR 1944 Pat 58
2. R. v. Gordon
3. Mir Hasan Khan & Others v. State, AIR 1951 Pat 60.
4. Tara Singh v. Territory of Punjab, AIR 1951 CriLJ 449
5. State (N.C.T. Of Delhi) v. Navjot Sandhu@ Afsan Guru (2005) 11 SCC 600
6. National Investigation Agency v. Zahoor Ahmad Shah Watali AIR 2019 SC 1734
7. Bimal Gurung v. Union of India (2018) 15 SCC 480
8. Amrika Bai v. State of Chhattisgarh AIR 2019 SC 1831
9. Bilkis Yakub Rasool v. State of Gujarat (2019)
10. Kishorechandra Wangkhemcha v. Union of India (2021)
11. Vinod Dua v. Union of India (2021)
12. Rajat Sharma v. Union of India (2021)
13. State v. Disha A. Ravi (2021)
14. Rajina Parbin Sultana v. State of Assam (2021)
15. P.S. Kirubakaran v. Commr. of Police, Vepery (2021)
16. Patricia Mukhim v. State of Meghalaya & Ors (2021)

B.B.A.LL.B. (Hons.) Semester

LAW OF CONTRACT – II (LOC-II)

INTRODUCTION OF THE COURSE

In the society wherein all major ventures are getting corporatized, a law student should acquaint himself with the knowledge of special contracts apart from equipping himself with general principles of contract. This law is contained in several legislations apart from the Indian Contract Act. This course equips the students to better appreciate the legal services required in a corporate office so that he can enhance his relevance as a lawyer in society. Law relating to Sales of Goods deals with the sale transactions of moveable property, formation of sale contracts, rights and duties of vendor and vendee, terms of contract etc. Law of Partnership deals with the formation of partnership firms, duties and liabilities of incoming and outgoing partners etc.

TEACHING METHODOLOGY

Case-study method shall be the main method of learning to be followed. Dialectic method of mooting and argumentation plays a very convincing procedure of learning. The information sharing and flow of information among the teacher and taught has to work as bonding of the entire course. Case comment and book review can also be a method of research writing in this paper.

COURSE OUTLINE:

UNIT-1

Indemnity, Guarantee, Bailment and Pledge

- **Contract of Indemnity**

1. Documents/Agreements of Indemnity - Definition, Nature and
2. Scope and Rights of indemnity holder
3. Commencement of the indemnifier's liability

- **Contract of Guarantee**

1. Definition, Nature and Scope Difference between the contract of indemnity and Guarantee
2. Rights of surety

3. Discharge of Surety
4. Extent of Surety's liability
5. Co-surety.

- **Contract of Bailment**

1. Definition – Kinds – Duties of Bailer and Bailee –
2. Rights of Finder of goods as Bailee Liability towards true owner
3. Rights to dispose of the goods.

- **Contract of pledge**

1. Definition
2. Comparison with Bailment
3. Rights and duties of Pawnor and Pawnee

Case Studies:

1. New India Assurance Company Ltd. v.Kusumanchi Kamleshwar Rao and another1997 (9) SCC 179
2. United India Insurance Company v. M/s. Aman Singh Munshilal A.I.R. 1994 P. &h. 206
3. Secretary of State v. The Bank Of India Ltd., A.I.R. 1938 P.C. 191.
4. Sham Sunder v. Chandu La, AIR 1935, Lahore 974
5. Gajanan Moreshwar v. Moreshwar Madan, A.I.R. 1942 Bom, 302, at 304.
6. Oriental Fire and General Insurance Co. Ltd. v. Murlidhar Gopikissen Pvt. Ltd. AIR 1985 Cal 301: 1985 Arbi LR 387
7. Nagpur N.S. Bank v. Union of India, A.I.R. 1981 A.p. 153, at 158.
8. EMCO Pressmaster Pvt. Ltd. v. Union of India AIR 2000 Del 37
9. National Building Condtruction Corporation ltd. v. State Bank of Patiala AIR 1993 Del 89
10. Association of Corporation and Apex Societies of Handlooms v. State of Bihar AIR 2000 Del 106
11. DLF Cement Ltd. v. Inspector of Police AIR 1999 AP 359
12. Jagdish Chandra Trikha v. Punjab National Bank AIR 1998 Del. 266
13. National Bank of Lahore v.Sohan Lal AIR 1962 Punjab 534
14. Ram Gulam v.Govt. of U.P. AIR 1950 All 106
15. L.M. Co-operative Bank v. Prabhudas Hathibhai AIR 1966 Bom. 134
16. Standard Chartered Bank v.Custodian AIR 2000 sc 1488
17. K.S. Nagalmbika v. Corporation Bank , Virajpet AIR 2000 Kant. 201

18. Central Bank of India vKesharao Narayanrao Patil, (200%) (1) BC 58 (Ori)
19. Philips v. Brooks Ltd. (1919) 2 K.B. 243
20. Belgaum Pioner Urban Co-op. Credit Bank v. Satyapromoda AIR 1962 Mys. 48
21. M. R. Dhawan v. Madan Mohan AIR 1966 Delhi 313, 315
22. Dhani Ram & Sons v. Frontier Bank Ltd. AIR 1962 Punjab 321
23. KM Hidayathulla v. Bank of India AIR 2001 Mad. 251
24. Bank of Maharashtra v. Racman Auto (p.) Ltd. AIR 1991 Delhi 278
25. Central Bank of India v. Grains and Gunny Agencies AIR 1989 MP28

UNIT-2

Agency

- **Agency**

1. Definition
2. Creation of Agency
3. Kinds of Agents
4. Distinction between Agent and Servant
5. Rights and Duties of Agent
6. Relation of Principal with third parties
7. Delegation of Duties and Rights of Agent
8. Extent of Agents authority
9. Personal liability of Agent
10. Termination of Agency.

Case Studies:

1. Keighley, Maxsted & Co. v. Durant (1901) AC 240
2. Kelner v. Baxter (1866) LR 2 CP 174
3. Badri Prasad v. State of Madhya Pradesh AIR 1966 SC 58
4. Saroj Kapur v. Nitin Casting Ltd. AIR 1987 Delhi 349
5. Keppel v. Wheeler (1927) 136 LT 203
6. National Bank of Lahore v. Sohanlal AIR 1962 Punjab 534

Text Book

1. Avtar Singh. "Contract and Specific Relief", Eastern Book Company, 10th Edition, Lucknow, 2010.

Reference Book

2. B S Ramaswamy, " Contracts and their Management, Lexis Nexis Butterworth, 3rd Edition, New Delhi 2008

3. H.K Saharay, "Dutt on Contract", Eastern Law House, 10th Edition, Kolkata, 2006

4. G C Bharuka, "Mulla on The India Contract Act", 12th Edition, Lexis Nexis Butterworths Wadhwa, Nagpur 2009

5. Venkoba Rao's Law of Agency, 3rd Edition, Butterworths, New Delhi, 2001

UNIT–3

Indian Partnership Act

- **Indian Partnership Act**

1. Definition – Nature, Mode of determining the existence of
2. Partnership – Relation of Partner to one another – Rights and duties of partner –
3. Relation of partners with third parties – Types of partners – Admission of partners – Retirement
4. Expulsion – Dissolution of Firm – Registration of Firms.

.

Case Studies

1. Mahabir Cold Storage v. CIT, AIR 1991 SC 1357
2. C.I.T. v. Shah Mohandas Sadhuram, AIR 1966 SC15
3. Sharad Vasant Kotak v. Ramniklal Mohanlal Chawda (1998) 2 SCC 171
4. Ganga Metal Refining Company v. Commissioner of Income-tax, West Bengal, AIR 1967 Cal. 434
5. Mahadeodas v. Gherulal Parekh, AIR 1958 Cal. 703
6. K. Jaggaias v. Kokumanu AIR 1984 A.P. 149
7. Munishi Abdul Latif v. Gopeswar AIR 1933 Cal 204 : 56 Cal L.J 172
8. R.N. Kothare v. Hormasjee, AIR 1927 Bom 187
9. Dulichand Laxminarayan v. Commissoner of Income-Tax, (1956) 29 T.L.R. 535
10. Mahendra Kumar v. Sate of Madras, AIR 1968 Mad. 241
11. Sanganer Dal and Flour Mill v. F.C.I, AIR 1992 S.C 481
12. Dena Bank v. Bhikhabai Prabhudas Parekh and Co. and others, 2000 (5) SCC 694

Text Book

1. Pollock and Mulla, " The Indian Partnership Act", 7th Edition, Lexis Nexis Butterworths, New Delhi 2007

Reference Book

2. S.D. Singh, J.P. Gupta, "Law of Partnership in India", 15th Edition, Orient Law House, New Delhi.
3. H.K. Saharay, "Indian Partnership and Sale of Goods Act", R.Combray and Co. P.Ltd, Kolkata, 2004
4. V.S.Vadivel, "Partnership Firms", 3rd Revised Edition, Snow white, Mumbai, 2008
5. Dr. Madhusudhan Saharay, "Indian Partnership Act", Universal Law Publishing Co. New Delhi, 2010
6. Satyajeet Desai, " The Law of Partnership in India", 7th Edition, Wadhawa, Nagpur, 2009

UNIT –4

Sales of Goods Act

- **Sale of Goods Act**
  1. The Contract of sale
  2. Conditions and Warranties
  3. Passing of Property
  4. Transfer of title
  5. Performance of the Contract
  6. Rights of Unpaid Seller
  7. Against goods – Remedies for Breach of Contract

Case Studies:

1. Andhra Sugar Ltd. v. State of A.P AIR 1968 SC 599
2. Coffee Board, Karnataka v. Commissioner of Commercial Taxes, AIR 1988 SC 1487
3. M/s Mukesh Kumar Aggrawal and Co. v. State of M.P, AIR 1988 S.C 563
4. Associated Power Co. Ltd v. Ram Taran Roy, AIR 1970 Cal. 75
5. H. Anraj v. Govt of Tamil Nadu AIR 1986 SC 63
6. Vijay Minerals Pvt. Ltd v. Bikash Chandra Deb AIR 1996 Cal. 67
7. Aluminium Industries Ltd. v. Minerals and Metals Trading Corpn, AIR 1998 Mad. 239
8. Union of India v. Tarachand AIR 1976 M.P. 101

9. State of Gujarat v. Variety Body Builders AIR 1976 SC 2108
10. Jagdish Radhakisan v. Ramesh S. Wagh AIR 2001 Bom 152
11. In re Andrew Yule and Co. AIR 1932 Cal. 879

Text Book

1. P. Ramanath Aiyar, Law of Sale of Goods", 8th Edition, Universal Law Publishing Co. Delhi, 2007

Reference Book

2. R.Chakraborty, "Law of Sale of Goods And Partnership", 1st Edition, Orient Publishing Company, Allahabad, 2007
3. Dr. Madhusudan Saharay, "Sale of Goods and Hire Purchase", Universal Law Publishing Co., New Delhi, 2010
4. Justice. P. Narayna,"Law of Caveats", First Edition, Asian Law House, Hyderabad, 2006
5. S.D. Singh, J.P. Gupta, "Law of Partnership in India", 15th Edition, Orient Law House, New Delhi.
6. H.K. Saharay, "Indian Partnership and Sale of Goods Act", R.Combray and Co. P.Ltd, Kolkata, 2004

UNIT –5

Hire Purchase Act 1972

- **Hire Purchase Act 1972**

1. Rights and Obligation of the Hirer and Owner
2. Form and Contents of Hire Purchase Agreements
3. Warranties and Conditions
4. Standard Form of Contracts: Nature, Advantages, Unilateral Character
5. Principles of Protection against the Possibility of exploitation
6. Judicial Approach to such Contracts
7. Exemption Clauses
8. Clash between two standard forms of contracts.

Text Book

Hire Purchase Act, 1972

B.B.A.LL.B. (Hons.) Semester

JURISPRUDENCE (JUR)

INTRODUCTION TO THE COURSE

Jurisprudence is the study and theory of law. Scholars of jurisprudence, or legal theorists (including legal philosophers and social theorists of law), hope to obtain a deeper understanding of the nature of law, of legal reasoning, legal systems and of legal institutions. Modern jurisprudence began in the 18th century and was focused on the first principles of the natural law, civil law, and the law of nations.

OBJECTIVE OF THE COURSE

The objective of this course is to study the nature of judicial process as an instrument of ordering the society in India within the background of evolution of judicial role and judicial process in other societies. This course is intended to highlight the role of court as policy maker, participant in power and an instrument of social change. The emergence of the Indian Supreme Court as the most powerful judicial tribunal of the democratic world makes it necessary to study amongst other things the social background and orientation of the judges, the techniques employed by it and the constituencies it serves.

TEACHING METHODOLOGY

As per the norms of the university, there will be 6 classes per week in this course. Teaching methodology will include Lectures-cum-discussion, Assignments, Projects and Presentations.

COURSE OUTLINE

UNIT-1

A. Introduction

B. Nature and Scope of Jurisprudence

C. Need for study of Jurisprudence

D. Linkage between Jurisprudence and other sciences

E. **Sources of Law:** Custom

F. Legislation

G. Precedent

UNIT-2

Schools of Jurisprudence

A. Natural Law with Indian Perspective
B. Analytical Positivism, Pure Theory, Legal Realism
C. Historical Jurisprudence
D. Sociological Jurisprudence with Indian Perspective

UNIT-3

State, Sovereignty and Law

A. Nature and functions of a State and its relationship with law
B. Nature and development of Sovereignty

UNIT-4

Nature and Kinds of law

A. Theories of Justice and Punishment
B. Law and Legislation
C. Law and Morality
D. Law and Religion
E. Law and Social change

UNIT-5

Concepts of Law

A. Rights and Duties
B. Personality
C. Possession, Ownership and Property

Recommended Readings

L.M. Singhvi, Freedom on Trial, (1991), Vikar, N.Delhi.

Verinder Grover (Ed.) Political Process and Role of Courts, (1997) Deep & Deep Publications, N.
Delhi.

B.P.Sigh Seghal (Ed.) Law, Judiciary and Justice (1993) Deep & Deep, N.Delhi.

Max Gluckman, Judicial Processes Among the Barotse of northern Rhodesia (1967).
Paul Bohanan, Justice and Judgment Among the Tiv (1957)
E. Adamson Hoebel, The Law of the Primitive Man (1968)
Catherine Newman, Law and Economic Organization: A Comparative Study of Pre-industrial Law 306 Societies (1983)
Upendra Baxi, Towards the Sociology of Indian Law (1986)
Harold J. Berman, Law and Revolutions the Formation of the Western Legal Tradition (1983).
Yash Ghai, The Political Economy of Law. A Third World Reader (1986)
Henry J. Abraham, The Judicial Process (1995), Universal
Ronald Dworkin, Taking Rights Seriously (1996), Universal
Ronald Dworkin, A Matter of Principle (1985)
John Hart Ely, Democracy and Distrust. A Theory of Juridical Review (1980)
J. Stone, Precedent and the Law: Dynamics of Common Law Growth (1985)
Supreme Court of India, Third International Conferences of Appellate Judges Conference Papers and Proceedings (1985).
Upendra Baxi, The Indian Supreme Court and Politics (1980)
Upendra Baxi, Courage, Craft and Contention: The Indian Supreme Court in Mid-Eighties (1986), Tripathi, Bombay
Rajeev Dhavan, The Supreme Court of India: A Study of its Socio-Juristic Techniques (1977), Tripathi, Bombay
Rajeev Dhavan, and Alice Jacob, Selection and Appointment of Supreme Court Judges : A Case Study (1978)
Rajeev Dhavan and P. Kalpakam, The Supreme Court under Strain: The Challenge of Arrears (1979)
Simon Shetret & Jules Descheness (Ed.), Judicial Independence: A Contemporary Debate, Martinas
Highoff Pub., Dercbrecht, (1985)
Martin Shapiro, Courts: A Comparitive and Political Analysis (1981), University of Chicago
H.R.Khanna, Judiciary in India and Judicial Process, (1985), S.C. Sarkar and Sons, Calcutta

B.B.A.LL.B. (Hons.) Semester

ADMINISTRATIVE LAW (ADML)

OBJECTIVE OF THE COURSE

1. Give an overview of the development of Administrative Law in India & its need today
2. Conceptualise the various components of Administrative Law
3. Justify the need for judicial control of administrative actions
4. Justify the necessity of controlling the delegated legislation
5.

COURSE OUTCOME

1. State the need for the development of Administrative Law.
2. Express the concept of delegated legislation and its control mechanisms.
3. Demonstrate natural justice and its exceptions.
4. Examine the recent innovations in administrative Law.
5. Appraise the judicial control of administrative action.

As per the norms of the university, there will be 6 classes per week in this course. Teaching methodology will include Lectures-cum-discussion, Assignments, Projects and Presentations.

THE EVALUATION SCHEME

- Continuous Assessment- 20%
- Mid-Term- 20%
- End Term- 60%

COURSE OUTLINE

UNIT- 1

Introduction of Administrative Law

A. Meaning, Nature and Scope of Administrative Law and causes for the evolution of Administrative Law
B. Relationship between Administrative Law & Constitutional Law
C. Concept of Droit Administratif – Meaning & Postulates
D. Rule of Law – Meaning, Principles, Merits, Demerits, New Dimensions in India
E. Separation of Powers – Meaning, Principles, Merits, Demerits, Comparative Study of U.S.A. and India

UNIT-2

Delegated Legislation and Limitations

1. Meaning and Scope of Delegated Legislation
2. Causes for its growth and Constitutionality
3. Control Mechanism: Legislative, Judicial and Procedural
4. Doctrine of Ultra Vires

UNIT- 3

Natural Justice

A. Concept of Natural Justice
B. Interpretation of the Salient Principles with relevant Judicial Pronouncements
  a) Nemo Judex in Causa Sua
  b) Audi Alteram Partem
  c) Reasoned Decisions
C. Exceptions to Natural Justice

UNIT- 4
Administrative Discretion

A. Administrative Discretion – Meaning & Concept, Administrative Discretion & Fundamental Rights
B. Doctrine of Legitimate Expectation & Concept of Absolute Discretion
C. Methods of Judicial Review: Public Interest Litigation and Writ Jurisdictions
D. Judicial Control of Administrative Action: Laches, Locus Standi and Alternative Remedy

UNIT- 5
Administrative Control Mechanism

A. Ombudsman – Meaning, Need and Relevance, U.K. v. India – Office of Lokpal, Lokpal in India
B. Central Vigilance Commission – Meaning, Service Conditions, General Functions, Sections 3 and 8 of The Central Vigilance Commission Act, 2003
C. Administrative Tribunals & Adjudication – Meaning, Characteristics, Reasons for Growth in Modern Times, Demerits
D. The Administrative Tribunal Act, 1985: Aims, Qualifications & Disqualifications of Members

Leading Case

LEADING CASE LAWS

1. Rai Sahib Ram Jawaya Kapur v. State of Punjab, AIR 1955 SC 549.
2. Asif Hameed v. State of J. & K., AIR 1989 SC 1899.
3. State of M.P. v Bharat Singh, AIR 1967 SC 1170.
4. ADM Jabalpur v. Shivkant Shukla, AIR 1976 SC 1207
5. Indira Gandhi (smt.) v Raj Narian AIR 1975 SC 2299
6. Dwarka Prasad Laxmi Narain v. State of U.P., (1954) SCR 803: AIR 1954 SC 224.
7. A.N. Parasuraman v. State of Tamil Nadu, AIR 1990 SC 40: (1989) 4 SCC 683.
8. J. R. Raghupathy v. State of A. P., AIR 1988 SC 1681.
9. Coimbatore District Central Cooperative Bank v. Coimbatore District Central Co-op. Bank Employees Assn., (2007) 4 SCC 669. 105
10. Om Kumar & Others v. Union of India, AIR 2000 SC 3689 115
11. R. v. Secretary of State for the Home Department, Ex Parte Daly, 2001] UKHL 26
12. Case Laws 1. A.K. Kraipak v. Union of India, AIR 1970 SC 150. 166
13. Ashok Kumar Yadav v. State of Haryana, AIR 1987 SC 454.
14. G.N. Nayak v. Goa University, AIR 2002 SC 790.
15. Amar Nath Chowdhuary v. Braithwaite & Co. Ltd., (2002)2SCC290:AIR2002SC 678.

16. Hira Nath Mishra v. Principal, Rajendra Medical College, (1973) 1 SCC 805: AIR 1973 SC 1260.
17. J.K. Aggarwal v. Haryana Seeds Development Corpn. Ltd. , (1991) 2 SCC 283: AIR 1991 SC 1221.
18. Bharat Petroleum Corpn. Ltd. v. Maharashtra General Kamgar Union, (1999) 1 SCC 626.
19. Maneka Gandhi v. Union of India (1978) 1 SCC 248.
20. H.L. Trehan v. Union of India, AIR 1989 SC 568.
21. K I Shepherd v. Union of India, AIR 1988 SC 686.
22. S.N. Mukherjee v. Union of India, AIR 1990 SC 1984.
23. Managing Director, ECIL, Hyderabad v. B. Karunakar, (1993) 4 SCC 727
24. Syed Yakoob v. K.S. Radha Krishanan (1964) 5 SCR 64: AIR 1964 SC 477. 248
25. Surya Dev Rai v. Ram Chander Rai, AIR 2003 SC 3044: (2003) 6 SCC 675.
26. Anadi Mukta Sadguru S.M.V.S.S.J.M.S. Trust v. V.R. Rudani, (1989) 2 SCC 691; AIR 1989 SC 1607.
27. Common Cause v. Union of India, AIR 2003 SC 4493.
28. Rupa Ashok Hurra v. Ashok Hurra, AIR 2002 SC 1771.
29. L. Chandra Kumar v. Union of India and others, AIR 1997 SC 1125 314
30. Union of India v. R. Gandhi, President, Madras Bar Association 2010 (5) SCALE 514

BOOKS RECOMMENDED:

1. I.P. Maasey, Administrative Law, EBC Publishers, 9th edi.
2. J.J.R.Upadhyaya,Administrative Law, CLA 7th edi.
3. S P Sathe, Administrative Law, 7th ed

References

1. Wade. Administrative law,(1988).
2. Dicey, Law of the Constitution, 8th ed.
3. Ivor Jennings, Law and the Constitution,(1969).
4. Griffith and Street, Principles of Administrative law (1967).

B.B.A.LL.B. (Hons.) Semester

ECONOMICS-IV (LECO-IV)
(THEORIES OF DEVELOPMENT & ECONOMIC ENVIRONMENT)

INTRODUCTION TO THE COURSE

"India is a developing country. Since Independence, till today India's economy has been continuously paving the way for Growth & development. We have witnessed an entirely new era as regards structural changes are concerned. During the transition as well as in current times our economy has witnessed several problems and constraints in the process of development. On the other hand India has also witness some forces acting as lubricants in development. The following paper makes an effort to study the various causes and paths through which an underdeveloped country can embark on the path of development. It studies economic models proposed by eminent economists and these models can lead us towards the target of growth. It is an attempt to provide insight to law students to enable them to understand the conditions conducive to economic growth and also its deterrents. Besides the paper also studies Economic Environment of Business in India, economic reforms, its impacts and various issues related to development.

OBJECTIVE OF THE COURSE

- To make student understand about the basic concepts of Economic growth & its factors.
- To understand the process through which economic development can be brought about.
- To understand the problems & obstacles of economic growth & development.
- To understand the economic environment in India and issues related to development.

TEACHING METHODOLOGY

As per the norms of the university in this course there will be 6 classes per week. Teaching methodology will include Lectures-cum-discussion, Assignments, Projects and Presentations.

COURSE OUTLINE

UNIT-1
Concept of economic Growth & Development

A. Introduction to the concepts of growth & Development
B. Factors affecting development
C. Indicators of growth – HDI, PQLI, & others

D. Features of Indian economy as underdeveloped & developing economy
E. Vicious cycle of poverty & determination of BPL in India
F. Unemployment – types & problems in India

Recommended Readings

1. Meier G M and James E Rauch, Leading issues in Economic Development, Oxford University Press, New York.
2. Jhingan, M L, The Economics of Development & Planning, Vrinda Publications Private Limited, New Delhi.
3. Ghsoh, B N, Contemporary Issues in Development Economics, Routledge Publishers, New Delhi.

UNIT-2
Theories of Economic Development

A. Lewis theory of surplus labour
B. Critical minimum effort thesis –Leibenstein
C. Concept of Balanced & Unbalanced Growth
D. Theories of Balanced & Unbalanced Growth
E. Theory of Big push

Recommended Readings

1. Jhingan, M L, The Economics of Development & Planning, Vrinda Publications Private Limited, New Delhi.
2. Todaro, Michael P and Stephen C Smith ., Economic Development, Pearson Education, London.
3. Ray, Debraj., Development Economics, Princeton University Press, New Jersey.
4. Taneja M L and R M Myer., Economics of Development & Planning, Shoban Lal N Chand and Company Educational Publishers, Jalandhar,

UNIT-3
Economic Environment of Business

A. Business Environment, meaning, nature & features
B. Internal Business Environment
   a) Value system of organization, financial capabilities, human resources
   b) Marketing Capabilities, Core competencies

C. External Business Environment
   a) Demographic Environment, Economic Environment, Political & Legal Environment
   b) Socio – cultural Environment, Technological Environment, Global Environment
D. Indian economic environment – concept, types, components & importance
E. New economic policy approach
F. Recent Industrial Policy.
G. Micro, Small & Medium Industries
H. Industrial Sickness

Recommended Readings

1. Cherrunillam, Francis., Economic Environment of Business, Himalaya Publications Limited.
2. Dutt Ruddar and K P M Sundharam., Indian Economy, S Chand and Company Limited, New Delhi.
3. Myneni, S R ., Indian Economics for Law students, Allahabad law Agency, Faridabad.
4. Lekhi, R K., The Economics of Development and Planning, Kalyani Publishers, Ludhiana.

UNIT-4
Economic Reforms in India

A. Globalization – Meaning, causes & effects
B. Liberalization – Meaning, impact
   Privatization - Meaning, impact
C. Disinvestment
D. Meaning & Types, Impact
E. Foreign Direct investment
   Meaning , Types, Methodology in India & Impact
F. Multinational Corporations - Meaning, Types & Impact
G. Special Economic Zones – various consideration & issues.

Recommended Readings

1. Aggarwal, A N., Indian Economy: Problems of Development & Planning, New Age International Publishers, New Delhi
2. Misra, S K and V K Puri., Indian Economy : Its Development Experience, Himalaya Publishing house, Mumbai.

3. Cherrunillam, Francis., Economic Environment of Business, Himalaya Publications Limited.

4. Dutt Ruddar and K P M Sundharam., Indian Economy, S Chand and Company Limited, New Delhi.

UNIT-5
Issues in India

A. Black money & corruption
B. Issues of food security & PDS in India
C. Planning in India – Various five year plans – success & failures
D. 12th five year plan & its evaluation.
E. Centre State financial relations

Recommended Readings

1.Agarwal, A N., Indian Economy: Problems of Development & Planning, New Age International Publishers, New Delhi

2.Misra, S K and V K Puri., Indian Economy : Its Development Experience, Himalaya Publishing house, Mumbai.

3. Cherrunillam, Francis., Economic Environment of Business, Himalaya Publications Limited.

4. Dutt Ruddar and K P M Sundharam., Indian Economy, S Chand and Company Limited, New Delhi.

Other Recommended Readings

1. Dobson, Wendey., Human Capital Formation and Economic Growth in Asia and the Pacific, Routledge, 2013

2. Worthington, Ian , Britton, Chriss.,The Business Environment, Pearson Education, 2009, sixth edition.

3. Gopal, Namita., Business Environment., Tata Mc Graw Hill, 2nd edition, 2009.

4. Paul, Justin., Business Environment : Text & cases, Tata Mc Graw Hill, 3rd edition, 2010.

5. Palmer Adrian, Hartley,Bob ., The Business Environment, Tata Mc Graw Hill, 1st edition, 2010

6. Todaro, Michael, Smith, Stephen., Economic Development, Pearson Education, 11th edition.

B.B.A.LL.B. (Hons.) Semester

CURRICULUM AND SYLLABI

(5th Semester)

LL.B
(Three-Year Program)

SCHOOL OF LAW

RAFFLES
UNIVERSITY

Japanese Zone, National Highway 48 Neemrana, Rajasthan 301020
www.rafflesuniversity.edu.in

(Law of Evidence)

INTRODUCTION TO THE COURSE

Evidences are the basis for any legal system. This paper aims to acquaint students about the different types of recognized forms of evidences and its sources which are indispensible for any legal professional.

OBJECTIVES OF THE COURSE

The law of evidence is an indispensable part of both substantive and procedural laws. It imparts credibility to the adjudicatory process by indicating the degree of veracity to be attributed to 'facts' before the forum. This paper enables the student to appreciate the concepts and principles underlying the law of evidence and identify the recognized forms of evidence and its sources. The subject seeks to impart to the student the skills of examination and appreciation of oral and documentary evidence in order to find out the truth. The art of examination and cross-examination, and the shifting nature of burden of proof are crucial topics. The concepts brought in by amendments to the law of evidence are significant parts of study in this course.

TEACHING METHODOLOGY

As per the norms of the University for this Course there will be 6 classes per week. Clinical and tutorial form of learning should be followed. Teaching methodology will include Lectures-cum-discussion, Assignments, Projects and Presentations.

THE EVALUATION SCHEME

• Continuous Assessment- 40%
• Mid-Term- 20%
• End Term- 40%

COURSE OUTLINE

MODULE 1
GENERAL ISSUES RELATING TO LAW OF EVIDENCE

- History of statutory Evidence Law in India – Pre and post Indian Evidence Act, 1872 realities – Role of Judiciary, particularly the appellate judiciary in up- dating the Evidence Law rules by judicial creativity.
- The main features of the Indian Evidence Act 1861.
- Relationship between law of Evidence and substantive laws (Criminal and Civil laws) and procedural laws (Code of Criminal Procedure and Civil Procedure Code
- Problem of applicability of Evidence Act
- Why rules of evidence have different significance under the Adversarial System and Inquisitorial System of Justice?

- Understanding the general concepts: ‘Facts’, ‘Facts in issue’, ‘Relevant Fact’, ‘Evidence-Oral and Documentary’, ‘Direct and Circumstantial’, ‘Proved’, ‘Disproved’ and ‘Not Proved’.

MODULE 2
RELEVANCY AND ADMISSIBILITY OF FACTS

- **Logically relevant facts**:
  - The Doctrine of Res gestae (Section 6,7,8)
  - Special class of relevant facts relating to Conspiracy – section 10
  - The problems of relevancy of “Otherwise" irrelevant facts (Section 11)
  - Relevant facts for proof of custom (Section 13
  - Facts concerning bodies & mental state (Section 14, 15)
- **Stated relevant facts**
  - Admissions and confessions
  - General principles concerning admission (Section 17, 23)
  - Differences between "admission" and "confession"
  - The problems of non-admissibility of confessions caused by "any inducement, threat or promise' (Section 24)
  - Inadmissibility of confession made before a police officer (Section 25)
  - Admissibility of custodial confessions (Section 26)
  - Admissibility of "information" received from an accused person in custody; with special reference to the problem of discovery based on a "joint statement" (Section 27)
  - Confession by co-accused (Section 30)
  - The problems with the judicial action based on a "retracted confession"
- **Dying Declarations**
  - The justification for relevance on dying declarations (Section 32)
  - The judicial standards for appreciation of the evidentiary value of dying declarations.
- Opinion of Third Person when relevant (Expert Opinion) - sections 45-51

Cases:

- State of Maharashtra v. Prafulla B. Desai (Dr.) (2003) 4 SCC 601
- R. M. Malkani v. State of Maharashtra, AIR 1973 SC 157
- Mirza Akbar v. Emperor, AIR 1940 PC 176
- BadriRai v. State of Bihar, AIR 1958 SC 953
- Mohd. Khalid v. State of W.B. (2002) 7 SCC 334
- Jayantibhai Bhenkerbhai v. State of Gujarat (2002) 8 SCC 165
- Bishwanath Prasad v. Dwarka Prasad, AIR 1974 SC 117
- Central Bureau of Investigation v. V.C. Shukla, AIR 1998 SC 1406
- Veera Ibrahim v. State of Maharashtra, AIR 1976 SC 1167
- PakalaNarayana Swami v. Emperor PC 1939
- AghnooNagesia v. State of Bihar, AIR 1966 SC 119 64
- PulukuriKottaya v. Emperor, AIR 1947 PC 67
- Bodhraj v. State of J. & K. (2002) 8 SCC 45
- KhushalRao v. State of Bombay, AIR 1958 SC 22
- Sudhakar v. State of Maharashtra (2000) 6 SCC 671

- Patel HiralalJoitaram v. State of Gujrat (2002) 1 SCC 22
- Laxman v. State of Maharashtra (2002) 6 SCC 710
- Ram Narain v. State of U.P., AIR 1973 SC 2200, (1973) 2 SCC 86
- Santosh Kumar Singh v. State Th. Cbi , 2010 SC
- State Tr.P.S.LodhiColony,New v. Sanjeev Nanda, 2012 Del. HC
- VikasYadav v. State of U.P &Anr, 2009 Del. HC
- Manu Sharma vs. State (NCT of Delhi) (2010) 6 SCC 1
- Rabindra Kr. Pal @ Dara Singh v. Republic of India, 2011 SC

MODULE 3
ON PROOF

- Facts which need not be proved – sections 56-58
- Facts which the parties are prohibited from proving
- Doctrine of Estoppel – sections 115-117
- Privileged communications – sections 122-129
- Oral and documentary evidence – sections 59-78
- Exclusion of oral by documentary evidence – sections 91-92

Cases:

- R. S. Maddanappa v. Chandramma (1965) 3 SCR 283
- Madhuri Patel v. Addl. Commissioner, Tribal Development, AIR 1995 SC 94
- SanatanGauda v. Berhampur University, AIR 1990 SC 1075
- M.C. Vergheese v. T.J. Ponnan, AIR 1970 SC 1876 136
- State of U.P. v. Raj Narain, AIR 1975 SC 865

MODULE 4
ACCOMPLICE EVIDENCE & WITNESSES & THEIR COMPETENCY

- Section 133 read with section 114 illustrations (b)
- Child Witness – section 118
- Dumb Witness – section 119
- Hostile Witness – section 154

Cases:

- BhuboniSahu v. The King, AIR 1949, PC 257
- Haroon Haji Abdulla v. State of Maharashtra, AIR 1975 SC 856
- Ravinder Singh v. State of Haryana, AIR 1975 SC 856

MODULE 5
EXAMINATION OF WITNESSES

- General principles of examination cross examination and re-examination (Section 135-166)
    - Leading questions (Section 141-143)
    - Lawful questions in cross-examination (Section 146)
    - Compulsion to answer questions put to witness
    - Impeaching of the standing or credit of witness (Section 155)

Cases:

- State of Bihar v. Laloo Prasad (2002) 9 SCC 626 176

MODULE 6
BURDEN OF PROOF

- The general conception of onus probandi (Section 101)
- General and special exceptions to onus probandi
- The justification of presumption and of the doctrine of judicial notice
- Justification as to presumptions as to certain offences (Section 111A)
- Presumption as to dowry death (Section 113-B)
- The scope of the doctrine of judicial notice (Section 114)

PRESUMPTIONS

- Sections 4, 41, 105, 111-A, 112, 113, 113-A, 113-B, 114 and 114-A

Cases:

- Goutam Kundu v. State of West Bengal, AIR 1993 SC 2295 178

IMPORTANT NOTE:

The topics and cases given above are not exhaustive. The students are required to study the legislations as amended up-to-date and consult the latest editions of books.

Prescribed Books:

- Rattan Lal, Dhiraj Law: Law of Evidence
- Sarkar and Manohar, Sarkar on Evidence
- Vepa P. Sarathi, Law of Evidence
- M. Monir, Law of Evidence
- Avtar Singh, Principles of the Law of Evidence, Central Law Publication
- Albert S.Osborn, The Problem of Proof
- P. Nageshwara Rao, Law of Evidence

Prescribed Legislation:

The Indian Evidence Act, 1872

Indian Penal Code, 1860

Code of Criminal Procedure, 1973

(INTERPRETATION OF STATUTES AND PRINCIPLES OF LEGISLATION)

OBJECTIVE:

Statutes are framed by the legislature with the help of legal experts in very clear and express terms and it is perceived that there would be no room for their interpretation. It is, however, found that the Courts are busy unfolding the meaning of the terms and provisions of the statutes. Therefore, the duty of the judges is to interpret the statutes, so that their provisions would become meaningful and devoid of lacunas. Generally, the statutes are designed to meet and solve the problems of society. Different statutes are passed by the legislature dealing with different aspects of society. Therefore, this paper aims to make the students understand how these statutes are interpreted by the Courts. This paper aims to provide the students with exposure to different rules of interpretation. The paper also offers an understanding of the principles of legislation in law-making.

TEACHING METHODOLOGY

As per the norms of the University for this Course, there will be 6 classes per week. Clinical and tutorial forms of learning should be followed. The teaching methodology will include Lectures-cum-discussion, Assignments, Projects and Presentations.

THE EVALUATION SCHEME

• Continuous Assessment- 40%
• Mid-Term- 20%
• End Term- 40%

COURSE OUTLINE

Module 1
Introduction

- Meaning of Interpretation
- Need for Interpretation
- Understanding Statutes: Its Commencement, Operation, Repeal and Revival etc.

Module 2
Rules of Statutory Interpretation

- **Primary Rules:** Literal (Grammatical) Rule of Construction-Golden Rule of Construction-Mischief Rule (Heydon's Rule) of Construction-Harmonious Rule of Construction.
- **Secondary Rule:** Construction *Expositio*-Construction in *Bonam Partem- Noscitur a Sociis-Expressio Unius* Rule-*Ejusdem Generis* Rule-*Redendo Singula Singulis*

Module 3
Aides to Construction

- **Internal (Intrinsic) Aides**: Title, Preamble, Heading, Marginal Notes, Schedule, Interpretation Clauses, Illustration, Explanation and Proviso.

- **External (Extrinsic) Aides**: Historical Setting-History Parliamentary Legislation-International Convention-Reference to Legislation-Objects and Reason of the Act-Dictionaries-Text Books.

Module 4
Construction of Different Statutes

- Penal Statute
- Taxing Statute
- Constitution
  - Harmonious Construction
  - Pith and Substance
  - Eclipse
  - Severability
  - Colourable legislation

Module 5
Principles of Legislation and Presumption in Statutory Interpretation

- **Law Making:** Legislature, Executive and Judiciary-Process of Law Making-Relevancy of Each Steps-Draft-Bill-Act-Assent

- **Principle of Utility**: Presumption as to Validity and Territorial Operation-Presumption as to Operation of Statutes (Prospective & Retrospective)-Presumption Regarding Court's Jurisdiction

Suggested Readings

1. Amita Dhanda: N S Bindra's Interpretation of Statutes, LexisNexis India, Gurgaon.
2. Avtar Singh & Harpreet Kaur: Introduction to Interpretation of Statutes, LexisNexis India, Gurgaon.
3. Justice G P Singh (Revised by Justice A. K. Patnaik): Principles of Statutory Interpretation (Also including the General Clauses Act, 1897), LexisNexis India, Gurgaon.
4. P. St. J. Langan: Maxwell on the Interpretation of Statutes, LexisNexis India, Gurgaon.
5. N. S. Bindra: Interpretation of Statutes LexisNexis India, Gurgaon.
6. P. M. Bakshi: Statutory Interpretation of Statutes, Orient Publishing Company, Orient Publishing Company.
7. P. S. Narayan: Statutory Interpretation, Asia Law House, Asia Law House, Hyderabad.
8. M. P. Tandon: Interpretation of Statutes & Legislation, Allahabad Law Agency, Allahabad.
9. Bawa & Roy: Interpretation of Statues, Allahabad Law Agency, Allahabad.
10. A. B. Kafaltiya: Interpretation of Statues, Universal Law Publishing Co Pvt. Ltd.

(PRINCIPLES OF TAXATION LAW)

INTRODUCTION OF THE COURSE

The course is designed to help students to understand the technicality of the Taxation system. The Indian tax system is well structured and has a three-tier federal structure. The tax structure consists of the central government, state governments, and local municipal bodies. When it comes to taxes, there are two types of taxes in India - Direct and Indirect tax.

OBJECTIVES OF THE COURSE

The basic objective of taxation is to raise resources for the State. It can be used to reduce inequalities, and accelerate economic development, as a tool to regulate consumption, imports, and exports, in addition to its basic objective of raising revenues.

TEACHING METHODOLOGY

A case-study method shall be the main method of learning to be followed. The dialectic method of mooting and argumentation plays a very convincing procedure in learning. The information sharing and flow of information among the teacher and teachers have to work as bonding of the entire course. Case comments and book reviews can also be a method of research writing in this paper.

COURSE OUTLINE

Module-I
Introduction

- Meaning of Tax
- History of tax law in India
- Fundamental principles relating to tax laws
- Governmental financial policy, tax structure, and their role in the national economy.
- Concept of tax:
- Nature and characteristics of taxes
- Distinction between:
- Tax and fee
- Tax and cess
- Direct and indirect taxes
- Tax evasion and tax avoidance
- Scope of taxing powers of Parliament, state Legislature, and local bodies.
- Canons of Taxation by Adam Smith and Additional/Modern Canons

Module-II
General Perspective

- Important Definitions
  a. Previous Year
  b. Assessment Year
  c. Income
  d. Assesse
  e. Person
  f. Company
  g. Average Rate of Income Tax
  h. Business
  i. Capital Asset
  j. Total Income

- Charge (Section 4)
- Residential Status of Assesses
- Scope of Total Income
- Basic Concept of Total Deduction at Source (TDS)

Module-III
Central Board of Direct Taxes & Central Board of Indirect Taxes and Customs

- Constitution of CBDT
- Functions of CBDT
- Constitution of CBIT&C
- Functions of CBIT&C

Module-IV
Tax Avoidance, Tax Evasion, and Tax Planning

- Basic Concept of Tax Avoidance, Tax Evasion, and Tax Planning
- Reason for Tax Avoidance, Tax Evasion
- Distinction between Tax Avoidance and Tax Evasion
- Effect of Tax Avoidance and Tax Evasion
- DTAA – Double Tax Avoidance Agreement
- Tax Holiday, Bailout Package, and Money Laundering.

Module –V
Income Tax Authorities

- Hierarchy
- Appointment
- Powers: Search and Seizure- Section 132
  a. Fulfillment of statutory Conditions
  b. Test of "Reason to believe".

Module –VI
Tax Policy for Developing Countries

- Tax Policy for Developing Countries
- Level of Tax Revenue
- Selecting the Right Tax System
- Tax Policy Challenges Facing Developing Countries

Case Studies:

1. SC upholds linking of Aadhaar number with PAN: [Justice K.S. Puttaswamy (RETD.) v. Union of India [2018] 97 taxmann.com 585 (SC)]
2. Discounts offered by Flipkart.com to buyers aren't intangible assets: ITAT: [Flipkart India Private Limited v. ACIT [2018] 92 taxmann.com 387 (Bangalore - Trib.)]
3. A gift received by an individual from HUF isn't exempt: ITAT: [Gyanchand M. Bardia v. ITO [2018] 93 taxmann.com 144 (Ahmedabad - Trib.)]
4. Sec. 68 additions not tenable on grounds that relatives gave gift without any occasion: High Court: [Pendurthi Chandrasekhar v. DCIT [2018] 91 taxmann.com 229 (Hyderabad)]
5. MasterCard shall have a PE in India and its fees for processing card payments are taxable as business income: AAR: [MasterCard Asia Pacific Pte. Ltd., In re. [2018] 94 taxmann.com 195 (AAR - New Delhi)]

6. The market value of other business assets is not relevant to determining the FMV value of unlisted shares of a co.: [Minda S M Technocast (P.) Ltd. v. ACIT [2018] 92 taxmann.com 29 (Delhi - Trib.)]
7. Domain registration fee received by 'GoDaddy' is taxable as royalty: ITAT: [Godaddy.com LLC v. ACIT [2018] 92 taxmann.com 241 (Delhi - Trib.)]
8. HC upheld additions on basis of 'window-dressed' financials prepared for bank loans: [Binod Kumar Agarwala v. CIT [2018] 94 taxmann.com 422 (Calcutta)]
9. 'Sachin Tendulkar' entitled to vacancy allowance as he failed to find a tenant for a vacant flat: [Sachin R. Tendulkar v. DCIT [2018] 96 taxmann.com 253 (Mumbai - Trib.)]
10. Sum received on relinquishment of 'right to sue is the non-taxable capital receipt: ITAT: [Bhojison Infrastructure (P.) Ltd. v. ITO [2018] 99 taxmann.com 26 (Ahmedabad - Trib.)]
11. AO should apprise counsel on all facts to avoid delays in the disposal of cases: HC: [PCIT v. Grasim Industries Ltd [2018] 94 taxmann.com 81 (Bombay)]
12. Mushroom farming is an agricultural operation even if vertical space is used instead of horizontal space on soil: [DCIT v. Inventaa Industries (P.) Ltd. [2018] 95 taxmann.com 162 (Hyderabad - Trib.)]
13. Delhi HC directs I-T Dept. to allow the filing of ITR without Aadhaar No.: [Shreyasen, & Anr. v. Union of India & ORS [2018] 95 taxmann.com 256 (Delhi)]
14. No capital gain tax on 'Power of Attorney holder just because the real owner didn't file ITR: ITAT: [Samir Trikambhai Patel v. ITO [2018] 96 taxmann.com 291 (Ahmedabad - Trib.)]
15. Brand promotion by 'Shilpa Shetty is not an international transaction in absence of a prerequisite agreement: [Shilpa Shetty v. ACIT [2018] 96 taxmann.com 443 (Mumbai - Trib.)]
16. The compensation received by 'Jackie Shroff for withdrawing the criminal case was a capital receipt and not taxable: [ACIT v. Jackie Shroff - [2018] 97 taxmann.com 277 (Mumbai - Trib.)]
17. Reopening of cases of Rahul Gandhi and Sonia Gandhi is valid as they failed to disclose shares allotted more than FMV: HC: [Sonia Gandhi v. ACIT [2018] 97 taxmann.com 150 (Delhi)]
18. ITAT grants stay of demand for non-deduction of tax by 'Uber' from the payment made to drivers: [Uber India Systems (P.) Ltd. v. JCIT [2018] 98 taxmann.com 199 (Mumbai - Trib.)]
19. Excess share premium not taxable in hands of closely held co. if its shareholders are relatives: ITAT: [Vaani Estates (P.) Ltd. v. ITO [2018] 98 taxmann.com 92 (Chennai - Trib.)]
20. No concealment penalty if the assessee has a bonafide belief that notional income isn't taxable: ITAT: [DCIT v. Shah Rukh Khan [2018] 93 taxmann.com 320 (Mumbai - Trib.)]
21. Australia has taxing rights under Australia-India DTAA even if there is no provision in its domestic law: Australian Court: [Satyam Computer Services Ltd. (Now Tech Mahindra Limited) v. Commissioner of Taxation [2018] 98 taxmann.com 358 (FC-Australia)]
22. Madras HC quashes proceedings initiated under Black Money Act against the Chidambaram family: [Srinidhi Karti Chidambaram v. PCIT [2018] 99 taxmann.com 181 (Madras)]
23. Sum received by Sushmita Sen as compensation for being sexually harassed is not taxable: [Sushmita Sen v. ACIT [2018] 99 taxmann.com 252 (Mumbai - Trib.)]
24. Payment of advance salary to defeat the purpose of demonetization won't come under the purview of Benami transaction: [G. Bahadur v. ACIT [2018] 100 taxmann.com 179

(PBPTA – AT)]

25. Priyanka Chopra shall pay tax on the car gifted to her by 'Toyota' for brand promotion: Mumbai ITAT: [Priyanka Chopra v. DCIT [2018] 89 taxmann.com 286 (Mumbai - Trib.)]

Text Book

1. Principles of Taxation Law 2019 By Thomson Reuters
2. Principles of Taxation & Tax Law-I - S.R Myneni 2017
3. Amar Law Publication's Principle of Taxation Law for LLB Paperback – 1 January 2017
4. Taxmann's Guide to Taxation Laws (Amendment) Act 2019 (2020 Edition) Paperback – 1 January 2019
5. V. K. Gupta's Income Tax Ready Reckoner AY 2020-21 and 2021-22 As Amended by Taxation Laws - Finance Act of 2020. - English Paperback. Paperback – 1 January 2020
6. Principles of Taxation Laws with Goods and Service Tax Act, 2017 (GST) by Prof. Ullas Kumar Saha | 1 January 2019

Reference Book

1. Principles of Taxation for Business and Investment Planning, 2014 Edition by Sally Jones and Shelley Rhoades-Catanach | 16 April 2013
2. Lectures on Law of Taxation (Income Tax and GST) by P.K. Singh | 1 January 2018
3. Principles of Taxation by V. Gaurishankar | 1 January 2007
4. Principles of International Taxation by Angharad Miller and Lynne Oats | 21 January 2015
5. A C Sampath Iyengar, The Law of Income Tax, Bharat Law House
6. Chaturvedi and Pithisaria’s Income Tax Law
7. Girish Ahuja & Ravi Gupta, Direct Tax- Law and Practice
8. Girish Ahuja & Ravi Gupta, Direct Taxes Ready Reckoner (Bharat Publication)
9. Kanga, Palkhiwala and Vyas, The Law and Practice of Income Tax (Lexis Nexis Butterworths)
10. Vinod K Singhania and Kapil Singhania, Taxman’s Direct Tax- Law and Practice.

(ALTERNATIVE DISPUTE RESOLUTION)

INTRODUCTION TO THE COURSE

The resolution of dispute forms a large part of the justice delivery system. India has a long tradition of resolving disputes through Alternative Dispute Resolution methods viz Nya Panchayat System. At present there are about 30 million cases pending in the Indian Courts.
A major step to expedite judicial process in this direction was initiated by the Central Government by enactment of the Arbitration and Conciliation Act, 1996 which made significant changes in the law of Arbitration. Institutions such as Lok Adalats have been given statutory recognition by the Legal Services Authorities Act, 1987. The Code of Civil Procedure, 1908 has been amended by incorporating Section 89 and Order X, Rules 1A, 1B, and 1C, making it obligatory on the courts to explore the settlement of disputes by ADR Methods in pending suits, which will create more demand for trained Arbitrators, conciliators and Mediators, to cater to the needs of more than 10,000 courts spread all over the country.

The need of the hour is to create an awareness of ADR Methods among the people and to prepare a large pool of trained professionals in the field of ADR who will be able to practice these ADR Methods to resolve disputes.

OBJECTIVE OF THE COURSE

The main objectives of the Course are
1. Understand the strengths and weakness of various dispute resolution methods.
2. Explain primary dispute resolution process and functions
3. Develop techniques and skill to make effective use of ADR methods.
4. Describe and explain the ADR movement.
5. Compare and contrast various legal implications of each method.
6. Train participants to be effective Arbitrators, Conciliators and Mediators.

TEACHING METHODOLOGY

As per the norms of the university in this course there will be 6 classes per week. Teaching methodology will include Lectures-cum-discussion, Assignments, Projects and Presentations.

THE EVALUATION SCHEME

- Continuous Assessment- 40%
- Mid-Term- 20%
- End Term- 40%

MODULE 1

ALTERNATIVE DISPUTE RESOLUTION (ADR)

- ADR – Concept and Meaning Objectives of Arbitration Historical Developments Differences of Arbitration with other methods, Relevance in the Present Scenario
- Conciliation – Appointment of Conciliator – Rights and Duties of Conciliator – Interaction between conciliator and parties – Communication – Confidentiality – Legal Counseling – Different facets of legal counseling – Duties and responsibilities of Counselor

- Mediation – Objectives of Mediation – Models and Approaches – Stages of Mediation –Mandate of the Mediator – Role of the Mediator – Duties and Responsibilities of the Mediator
- Negotiation – Theories of Negotiation–Different strategies of Negotiation – Models/Types of Negotiation – Duties and Responsibilities of Negotiator.
- Dispute Resolution through Lok Adalat – Different types of Lok Adalat – Nyaya Panchyats and Grama Nyayalayas – Important provisions of Legal Services Authorities Act, 1987 – Fast Track Arbitration – Section 89 of Civil Procedure Code, 1908.
- Criminal Justice System–Victim vis-à-vis Offender mediation and reparation–Offences–Plea Bargaining–Charge Bargaining–Sentence Bargaining–Fast Track Criminal Courts

MODULE 2

INDIAN LAW ON ALTERNATIVE DISPUTE RESOLUTION

- Arbitration – Types of Arbitration – Adjudicatory, Non – adjudicatory, Institutional and Ad-how mandatory Arbitration.
- Arbitration and Conciliation Act, 1996
- Arbitral Tribunals–Appointment of Arbitrators–Eligibility and qualifications of Arbitrators–Powers and functions–Competency and Jurisdiction of Arbitrators.
- Arbitral proceedings–Procedural justice for parties–Rules of procedure and Evidence, Statement of Claims and Defence; Hearings and Written proceedings–Interim Measures–Settlement Awards.
- Determination of Applicable Law–Choice of Law–Proper law of Contract and Conflict of law principles
- Awards–Kinds of Awards–Rules of Guidance–Form and contents of awards–Correction and
- Interpretation of award–Additional award–Setting aside of Awards–Appealable Orders–Enforcement of Awards–Legality and Fairness of Arbitral Awards–Reasoned Awards.
- Evolution of Conciliation as a mode of Dispute Settlement–Role of Conciliator–Conciliation proceedings–Scope and Nature of award by the Conciliator.
- Two Tier Arbitration Procedure under Indian Laws
- Scope and Extent of Judicial Intervention in Arbitration Process–Role of Courts-Setting Aside Arbitration Awards on Grounds of Public Policy, Fraud, and Partiality–Recent Trends and developments.

MODULE 3

INTERNATIONAL COMMERCIAL ARBITRATION

- Meaning and kinds of International Commercial Arbitration
- Development of International Arbitration – International Non-Commercial Arbitration and International Commercial Arbitration –International Commercial Arbitration Institutions viz. ICC, CiArb, DAC, ICA etc. – Rules of these Major International Arbitral Institutions- Global Application of International Arbitration Rules.
- Constitution of Arbitral Tribunal

- Appointment of Arbitrators–Powers, Duties and Jurisdiction of Arbitral Tribunal–Code of Conduct of Arbitrators–Rules of Arbitration Proceedings–Principle of Party Autonomy.
- Nationality of Parties–Applicable Law–The intervention of domestic courts in International Commercial Arbitration–Interim remedies by Courts–Conflict of Law Principles as applicable to International Arbitrations–Sovereign Immunity and International Commercial Arbitration
- UNCITRAL Model Law, 1985–Uniformity in International Commercial Arbitration Laws in various countries–Enforcement of Foreign Arbitral Awards–State practice with respect to enforcement of foreign arbitral awards–Geneva Convention, 1927 and New York Convention, 1958.
- International Arbitrations under the Arbitration and Conciliation Act, 1996–Comparative analysis of ADR system in selected Countries.
- Dispute Resolution under GATT–WTO Dispute Settlement Mechanism–ICSID Convention.

MODULE 4

CONCILIATION, MEDIATION & NEGOTIATIONS

- Conciliation: Introduction Overview, Purposes and Uses.
- Mediation: Introduction Overview, Purposes and Uses.
- Negotiations: Introduction Overview, Purposes and Uses

MODULE 5
PRACTICAL APPLICATION OF ADR METHODS IN DIFFERENT FIELDS AND AREAS

- Labour and Industrial Disputes
- Commercial and Financial Disputes
- Family and Matrimonial Disputes
- Consumer Disputes
- Accident Claims

(LABOUR LAWS)

Part – A: THE INDUSTRIAL DISPUTES ACT

Module I
Aims and Objects of the Industrial Disputes Act. 1947

- Investigation & Settlement of Industrial Disputes – General (section3-15)
- Dispute Settlement Machinery: Conciliation and Adjudication
- Conciliation/Mediation as a Dispute Settlement Mechanism
- Adjudication: Voluntary Adjudication/Arbitration and Compulsory Adjudication

Module II

Reference of the Industrial Dispute

- Nature & Scope of the Power of the Appropriate Government under section10, 10A
- Jurisdiction of Adjudicatory Authorities.

Module III

Awards and Settlements

- Settlement: Nature, Duration and Termination
- Awards: Nature and Duration
- Judicial Review of Industrial Awards

Module IV

Managerial Prerogative

- Domestic Enquiry and Disciplinary actions with special reference to the Industrial employment (Standing Orders) Act, 1946

Module V

Powers of the Adjudicatory Authorities

- Power in cases of Discharge/Dismissal (section 11A)
- Restraints on Managerial Prerogatives (section 33, 33A)

General Reading:

1. Report of the National Commission on Labour (1969)
2. Report of the Second National Commission on Labour (2002)
3. Report of the Committee on Fair Wages (1948)

Prescribed Legislations:

1. The Industrial Disputes Act. 1947
2. The Industrial Employment (Standing Orders) Act. 1946

PART – B WAGES

Module-VII

(i) The Minimum Wages Act, 1948

- Concept; kinds- (a) Minimum wage; (b) Fair Wage; (c) Living Wage
- Machinery under the Act for the Fixation of Minimum Wage

(ii) The Payment of Wages Act, 1936

- Salient Features, Authorised deductions (sec. 7-13),
- Authority for Adjudication of claims: (sec 17- 18),
- Penalty for offences under the Act.

Module VIII

Social Security; The Workmen's Compensation Act, 1923 (Sec.1-10, 12, 14, 14A, 17,20 & 25)

- **The Workmen's Compensation Act, 1923**: Definitions, Aims & Object, Liability of Employer, Notional Extension & Defences, Determination of Amount of compensation, Compensation when due-Penalty for default, Contracting Out (Sec.17), Appointment & Powers of Commissioner (Sec.19-31)

Prescribed Books:

1. P. Malhotra, *The Law of Industrial Disputes* (6th ed., 2004)
2. B. Pai, *Labour law in India* (2001)
3. L. Malik (Rev.), *K.D. Srivastava's Industrial Employment (Standing Orders)* Act. 1946 (4th ed., 2000)
4. L. Malik's *Industrial Law* (21st ed., 2008)
5. C. Srivastava (Rev.) Labour Law and Labour Relation: Cases and Materials (3rd ed., 2007)
6. D. Srivastava, Minimum Wages Act, 1948 (1995)
7. L. Malik, K.D. Srivastava's Commentaries on Payment of Wages Act, 1936(5th ed., 1998)

Prescribed Legislations:

1. The Minimum Wages Act. 1948
2. The Payment of Wages Act. 1936

CURRICULUM AND SYLLABI

(1st Semester)

B.A.LL.B. (Hons.)
(Integrated Law degree course)
(Session 2023-24)

SCHOOL OF LAW

RAFFLES
UNIVERSITY

Japanese Zone, National Highway 48 Neemrana, Rajasthan 301020

www.rafflesuniversity.edu.in

LEGAL METHODS
(BAL 101)

PRELUDE TO THE COURSE:
The course structure on Legal Methods seeks to orient the student to the scheme of law and the essential tools, principles and methods by which the legal system operates to deliver justice. The course will entail the study of sources of law, doctrine of precedents, legal reasoning, case briefing and analogizing and interpretation of statutes and the working of the judicial process. The course will also address basic questions such as where and how to start researching a problem, how to find authorities supporting one's proposition, how to read a case and prepare a case brief, and how to read a statute.

COURSE OBJECTIVE

The objectives of the Course are to:
1. Identify the various definitions of law and discuss the sources of law.
2. Classify the various components of the Indian Legal System.
3. Analyse the importance and types of legal research.
4. Apply skills in legal writing.

COURSE OUTCOMES

The students will be able to:
1. Understand the foundations of law.
2. Analyze the application of the components of the Indian Legal System.
3. Write research reports, using proper research tools.
4. Draft plaints & written statements as a part of the clinical Legal Education.

TEACHING PEDAGOGY:

The teaching in this course is done through lectures, seminars and tutorial sessions. The lecture series is devoted to a detailed study of the sources of law and the discussion of basic concepts of the legal system in India. Participation in class discussion is the primary mode of teaching/learning. One of the primary goals of the course is to encourage the habit of students to raise questions and develop liberal ideas of objectivity and neutrality. Encourage critical thinking Generally and apply the law, particularly with the aim of a practical approach. This course also facilitates indoctrination and stimulates lively debate about the concept of Law and Legal Methods. The student will also be involved in Practical Training for Drafting & Pleading.

COURSE OUTLINE

UNIT – I

INTRODUCTION TO LAW & STATE **Credit-6 (Hours 60)**

- Meaning and Definition of Law
- Purpose and Functions of Law

- Classification of Laws – Public and Private Law**,** Substantive and Procedural Law**,** Municipal and International Law
- Law and State: Meaning & Definition of State, Elements of State, Relationship between Law and State

UNIT- II
SOURCES OF LAW

- Meaning and Concept of Sources of Law
- **Custom**: Meaning, Kinds, Reasons for recognition of customs, Theories governing Customs
- **Precedent**: Meaning and Concept, Theories of Precedents, Advantages and Disadvantages of Precedent, Doctrine of Precedent: Ratio Decidendi and Obiter Dictum. Preliminary discussion.
- **Legislation**: Meaning and Concept, Kinds, merits and demerits, Difference between Legislation and Precedent, Legislation and Customs, Law Making Process.

UNIT- III
BASIC CONCEPTS OF THE INDIAN LEGAL SYSTEM

- **Common Law**: Meaning, Difference between Common and Civil Law, Basic Principles of Common Law
- **Constitution**: Meaning and Concept, Types of Constitution: Written, Unwritten, Federal and Unitary, Features of Indian Constitution, & Hierarchy of Indian Judicial System.

UNIT- IV
LAW, JUSTICE, ETHICS AND SOCIAL MORALITY

- The Relation of Justice of Law & Ethics
- Ethics and Social Morality
- Social Morality & Legal Order
- Law, Morality & Social Change

UNIT- V
LEGAL MATERIALS (Practical Training in Library)

- Case Law and Journals
- Statute & its Parts
- Citations – Importance and Usage [Students should be taught to use online databases like Manupatra, SCC Online, JSTOR, West Law etc.]
  Module 5 will be taught in Library through practical demonstration by the teacher In-charge

Text Books:

1. Legal theory W. Friedman
2. Mahajan, V. D. Jurisprudence, Allahabad Law Agency
3. Jhon Rawls, Theories of Jusctice

Reference Books:

1. Salmond – Jurisprudence, Lexis Nexis Publications
2. Paton – A Textbook on Jurisprudence, Universal Publications
3. Sharma SD, Vidhi Shastra; Government of India
4. W. Friedmann Legal Theory
5. Carl F. Stychin and Linda Mulcahy, Legal Methods & Systems.
6. Professor Tushar Kanti Saha, Legal Methods. Legal Systems & Research.

LAW OF TORTS, CONSUMER PROTECTION AND MV. ACT
(BAL 102)

PRELUDE TO THE COURSE

Independent of criminal or contract law, Tort law provides individuals and groups with redress for injury to every dimension of life from physical injury, to property damage, to personal insult etc. Over past decades no area of law within the civil justice system has experienced greater ferment than the law of Tort, this has resulted in vital changes in the thinking of tortuous liability.

The objective of the course is to formalize the students with the nature and extent of liability of the private enterprises, multinationals and the government authorities for the wrongs committed against the individual and their property, and to develop sound knowledge, skills and disposition amongst students of B.A. LL.B. on some of the contemporary issues of Specific Torts, cyber-Tort, and Economic Tort, and Product Liability etc.

COURSE OBJECTIVE

The objective of this course is to:

1. Understand the Nature of Tort
2. Examine the conditions of creating tortious liability and general defences
3. Discuss the specific torts and their available remedies

COURSE OUTCOMES

The students will be able to:

1. Identify the various conceptual aspects of the Law of Torts.
2. Apply various defences under tortuous liability and specific kinds of torts.
3. Enumerate the remedies available for specific torts.
4. Know the relation of torts with various other laws.

UNIT – I **Credit 6**
INTRODUCTION TO LAW OF TORTS **(Hours 60)**

- Definitions and Development of Torts, Actions under the torts in England and India
- Tort distinguished from Contract and Crime
- Constituents of Torts
- *Ubi Jus Ibi Remedium*
- *Injuria sine Damnum*
- *Damnum sine Injuria*

Leading case Laws

- Ashby v. Damno(1703) 2 Lord Raym, 938
- Gloucester Grammer School Case (1410) Y.B Hill 11 Hen, 4 of 47, p. 21, 36
- Ushaben v. Bhagyalakxmi Chitra Mandir, AIR 1978, Guj. 13
- Bhim Singh v. J & K, AIR 1986, SC 494
- Jethu Singh v. State of Rajasthan, AIR, 2014, Raj. 157

UNIT-II
GENERAL DEFENCES IN TORT

- *Volenti non fit Injuria*
- Act of God
- Inevitable Accident
- Necessity
- Private Defence
- Plaintiff the Wrong Doer
- Mistake

Leading case Laws

- Hall v. Brooklands Auto Racing Club, (1932) All E.R. Rep. 208
- Padmavati v. Dugganaika (1975) 1 Kam. 93. 1975, A.C.
- Smith v. Baker, (1891) A. C. 325.
- Thomas v. Quatermaine, (1887) 18 Q.B.D.658, at P.695, per Brown, L.J.
- Dann v. Hamilton, (1939) 1 K.B 509.
- Nichols v. Marsland, (1876) 2 Ex. D. 1.
- Stanley v. Powell, (1891) 11 Q.B. 86
- Bird v. Holbrook, (1823) 4 Bing. 628; 130 E.R. 91.

UNIT – III
LIABILITIES IN TORTS

- Strict Liability
- Absolute Liability
    (i) Absolute liability under the motor vehicles Act, 1988 (Sec. 140 to 143, 161 to 163)
- Vicarious Liability:
    - Master Servant Relationship
    - Principal-Agent Relationship
    - Relationship between the Partners

Leading case Laws

- Rylands v. Fletcher, (1868) L.R. 3 H.L. 330.
- M.C. Mehta v. Union of India, AIR 1987, SC 1086.
- Union Carbide Corporation v. Union of India, AIR 1992 S.C. 248.
- State Bank of India v.Shyama Devi, A.I.R. 1978 S.C.1263.
- Limpus v. London General Omnibus Co. (1862) 1 H. & C.526

UNIT- IV
SPECIFIC TORTS

- Defamation – Meaning and Types
- Negligence – Concept and the Defences available
- Nuisance – Meaning and Types

- Trespass
- Nervous Shock
- Remoteness of Damage
- Remedies under the Law of Torts

Leading case Laws

- Ram Jethmalani v. Subramaniam Swamy, A.I.R.2006 Del.300.
- Cassidy v. Daily Mirror Newspapers Ltd. (1929) 2 K.B.331.
- Donoghue v. Stevenson, (1932) A.C. 562.
- Campbell v. Paddington Corporation, (1911) 1 K.B. 869.

UNIT – V
CONSUMER PROTECTION ACT and MV ACT 1988

- Basic Concepts of Consumer
  - (i) Nature, scope & silent features
  - (ii) Doctrine of caveat Emptor
  - (iii) Caveat Venditor
- Consumer Dispute and Redressal Agencies
  Constitution, Jurisdiction and Procedure
- Registration and Licensing of Motor Vehicle
- Liability without fault, offences and penalties and Claim tribunals

Textbooks:

1. Lal, R & D, *Law of Torts*, Lexis Nexis Publications
2. R.K. Bangia, Law of Torts including Compensation under the Motor Vehicles Act and Consumer Protection Laws, Allahabad Law Agency, 2013
3. Avtar Singh: P. S. A. Pillai's Law of Tort, Eastern Book Company, Lucknow.
4. J. N. Pandey: Law of Torts, Central Law Publications, Allahabad.
5. Kumud Desai: Law of Torts (An Outline with Cases), N.M. Tripathi, Bombay.
6. R. F. V. Heuston & R. A. Buckley: Salmond & Heuston on the Law of Torts, Sweet &
7. Maxwell, London.
8. Ratanlal & Dhirajlal (Revised by Akshay Sapre): Ratanlal and Dhirajlal's The Law of
9. Torts, LexisNexis, Gurgaon
10. S. K. Kapoor: Law of Torts, Central Law Agency, Allahabad.

Reference Books:

1. W.V.H. Rogers, Winfield and Jolowicz on Tort, Sweet & Maxwell, 2010 (18th Edn)
2. Ramaswamy Iyer's, The Law of Torts, Lexis Nexis, 2007 (10th Edn)

GENERAL ENGLISH-I
(BAL 103)

PRELUDE TO THE COURSE:
The course provides an overview of the fundamentals of the English Language which involves grammar and its usage, the need and importance of legal language relevance of literature and language for law and some selected literary works to enable the students to have an analytical mind and also develop character study.

COURSE OBJECTIVES:
The course aims to:
1. Highlight the importance and usage of legal language.
2. Emphasize the usage of grammar in legal drafting.
3. Inculcate the skills necessary for drafting legal documents.
4. Make the students have an analytical approach to literature through prose & character study
5. Make the students have an analytical approach to literature through interpretation of poetry.

COURSE OUTCOMES:
After completion of the course, the students will be able to:
1. Describe importance of Legal Language.
2. Identify the correct usage of grammar in legal drafting.
3. Draft documents for legal correspondence.
4. Analyse characters of literary texts.
5. Apply skills of interpreting poetry.

PART –A LAW & LANGUAGE

UNIT-I **Credit 6**
INTRODUCTION TO LEGAL LANGUAGE **(Hours 60)**

(a) Importance of Language & Literature in Law
(b) Need and Importance of Legal Language
(c) Legal Language in India – attention and awareness of practical legal import of sentences
(d) Education: Indian & American by Anurag Mathur

UNIT- II
GRAMMAR

(a) Nouns, Pronouns & Adjectives
(b) Reported Speech
(c) Verbs, Adverbs, tenses & Agreement of the Verb with the Subject
(d) Articles

UNIT- III
LEGAL WRITING

(a) Legal Words – Suit, FIR, Plaint, Written Statement, Plaintiff, Defendant, Homicide, Genocide, Suicide, Vandalism, Prosecution, Defence, summons, Ultra vires, Intra vires, Alimony, Maintenance, Monogamy, Polygamy, Bigamy, Polyandry, Precedent, Contract, Agreement, Will

(b) Drafting a Complaint as a Consumer of Spurious Goods

- Drafting a Complaint as a Consumer of Deficiency in Services
- Drafting a FIR
- Drafting a RTI Application
- Writing an Article – Cyber Tort, Terrorism, Women Empowerment, Refugees in India, Consumer Protection and other relevant and emerging issues
- Letter Writing – Formal & Informal

PART – B LAW & LITERATURE

UNIT- IV
PROSE

(a) An Astrologer's Day – R. K. Narayan
(b) The Child – Munshi Premchand
(c) Kabuliwala – Rabindranath Tagore
(d) The Bar – M. C. Chagla
(e) The Chief Justice – M. C. Chagla

UNIT- V
POETRY

(a) The Gift of the Magi – O Henry
(b) Bangle Sellers – Sarojini Naidu
(c) The Princess & the Gypsies – Francis Crawford
(d) Where the Mind is Without Fear – Rabindranath Tagore
(e) Success is counted Sweetest – Emily Dickinson

Suggested Reading:

Sl. No.	Name of the Textbooks	Year of Publication
	TEXT BOOKS	
1.	Martinet, T. *A Practical English Grammar,* OUP	2016
2.	Orient Longman, *The Joy of Reading*	2015
3.	Chagla, M. C., *Roses in December,* Bhartiya Vidya Bhawan	2015
	REFERENCE BOOKS	
4.	Wren & Martin, High School English Grammar & Comprehension	2014

POLITICAL SCIENCE–I
(BAL 104)

PRELUDE TO THE COURSE

Political Science has a very close links with legal studies because legal instruments are formulated as a system of expression directly emanating from the political superstructure. History of Political Thought has a direct bearing with the process of Constitutionalism and development of Constitutional system in the Nineteenth and Twentieth centuries. A strong grounding of knowledge in Political Science certainly helps better appreciation of jurisprudential development in any legal system.

COURSE OBJECTIVE

This course has the following objectives:

1. To make students understand about the basic concepts of Political Theory
2. To discuss the functioning of different Ideologies in Governance
3. To elaborate the roles of Democracy, Equality and Liberty in civil society

COURSE OUTCOMES

The students shall be able to:

1. Enumerate the concepts associated with Political Theory
2. Correlate Political Science with Law
3. Conceptualize the associated concepts of Political Science
4. Know the relation of political science with law

UNIT- I **Credit 6**
INTRODUCTION TO POLITICAL SCIENCE **(Hours 60)**

(a) What is Political Theory? Meaning, Nature and Scope
(b) Relationship between Political Science and Law

UNIT- II
STATE & ITS ESSENTIALS

(a) Concept of State, Definition
(b) Theories of State:
- Divine Origin Theory
- Force Theory
- Organic Theory of State
- Social Contract Theory of state with reference to Hobbes, Locke and Rousseau
- Hindu Concept of State: Kautaliya's Saptang Theory

UNIT- III
CONCEPTS

(a) Citizenship,
(b) Sovereignty
(c) Rights
(d) Liberty
(e) Equality, Justice and Indian Constitutional provision dealing with it
(f) Concept of Political Obligation

UNIT- IV
POLITICAL IDEOLOGIES

(a) Liberalism
(b) Marxism
(c) Totalitarianism
(d) Fascism
(e) Nazism
(f) Gandhism

UNIT- V
CONSTITUTION

(a) Written and unwritten Constitution: Merits and Demerits
(b) Unitary and Federal Government: Merits and Demerits
(c) Parliamentary and Presidential Form of Government: Merits and Demerits

Text Books

1. A. C. Kapoor, Principles of Political Science, S. Chand & Co., New Delhi, 2008.

2. Eddy Ashirvartham and K.K Misra Political Theory S.Chand & Co. New Delhi, 2000

3. L. S. Rathore and Haqqui, Political Theory and Organization, EBC, Lucknow, 1988 (reprint 2006)

4. Political Theory Bhargava, Rajeev and Ashok Acharya (eds) Pearson Longman, 2008.

5. Politics Andrew Heywood Politics, New Delhi, Palgrave, 2004 (second Edition)

6. Political Ideologies Andrew Heywood, New Delhi, Palgrave Foundation

SOCIOLOGY – I
(BAL 105)

PRELUDE TO THE COURSE

Sociology originated as an intellectual response to the crisis confronting the mid-nineteenth century European society. Its development over a century and a half since then has been influenced by a variety of socioeconomic and political conditions where it has been taught and practiced. It is now established a multi-paradigmatic academic discipline, with its body of theoretical knowledge enriched and its methodological techniques and procedures systematized. Nevertheless some of its original concerns have persisted and some of its classical theoretical and methodological landmarks are relevant even now. This paper is intended to familiarize the students with the social, political, economic and intellectual contexts in which sociology emerged as a distinctive discipline. Its objective is to help students gain an understanding of some of the classical contributions in sociology and their continuing relevance to its contemporary concerns.

COURSE OBJECTIVE

This course has the following to:

1. Discover the historical overview of Sociology as a sub discipline of social sciences
2. Conceptualize the various theories of kingship
3. Discuss social anthropology as a sub discipline of sociology

COURSE OUTCOMES

The students shall be able to:

1. Understand the associated concepts of sociology
2. Know the essence of kingship in current scenario
3. Analyse the relevance of social anthropology
4. Apply the knowledge of sociology with law

UNIT- I **Credit 6**

INTRODUCTORY CONSIDERATIONS **(Hours 60)**

(a) Transition from social philosophy to sociology
(b) Enlightenment- The Socal, Economic and Political forces
(c) The French and Industrial Revolutions
(d) Relevance of Sociology
(e) Nature, Society and Culture
(f) Relationship with other social sciences; social anthropology, history, psychology
(g) Study of groups
(h) Institutionalization
(i) Structure of Social System

UNIT- II
SOCIAL ANTHROPOLOGY

(a) Introduction to Social Anthropology
(b) Its development
(c) Social differentiation
(d) Differences between societies

UNIT- III
CULTURE AND SOCIALIZATION

(a) Sociological concepts and perspectives
(b) Individual, groups, socialization
(c) Structure, function and process
(d) Culture, Institutions and roles
(e) Order, Conflict and Contradiction, Change
(f) Difference and Inequality
(g) Religious belief and rituals
(h) Religious groupings
(i) Religion in social structure

UNIT- IV
KINSHIP GROUPS AND SYSTEMS

(a) Marriage and Family
(b) Forms of Marriage
(c) Unisexual and Bisexual Marriage
(d) Divorce
(e) Consanguineal Kin groups and Clans
(f) Dynamics in Kinship

UNIT- V
SOCIAL STRATIFICATION

(a) Nature of social classes
(b) Family as the unit of class
(c) Class Endogamy
(d) Ranking and Occupation
(e) Functions and Dysfunctions of Social Stratification

Recommended Reading:

Aron. Raymond: Main Currents in Sociological Thought (2 volumes). Harmondsworth. Middlesex: Penguin Books
Barnes. H.E: Introduction to the History of Sociology, Chicago: The University of Chicago Press.
Cotterell. Roger: Oxford University Press, New Delhi
Freeman. Michael: Law and Sociology. Oxford University Press, New Delhi
Lucy Mair: An Introduction to Social Anthropology, Oxford University Press, New Delhi (chapter 1 & 2)
Marrison. Ken: Marx Durkheim. Weber: Formation of Modern Social Thought. London: Sage.
Ritzer. George: Sociological Theory, New Delhi: Tata McGraw Hill
Singh. Yogendra: Indian Sociology; Conditioning and Emerging Trends, New Delhi: Vistara.

ECONOMICS-I
(GENERAL PRINCIPLES OF ECONOMICS)
(BAL 106)

PRELUDE TO THE COURSE

Economics is the study of how individuals and societies make rational choices when confronted with scarce resources and an uncertain environment. As a science, economics provides a rigorous framework in which to organize observed economic phenomena so that we may come to some understanding of the world about us. Microeconomics is concerned with how individuals and firms make decisions within the context of an isolated market.
The course starts with basic training of mathematics which is vital to understand the different concepts of Economics. It covers the basic concepts and tools needed to undertake the analysis of problems that arise due to the law of scarcity. In addition, the functioning of competitive and non-competitive product markets is studied, as is the performance of the markets for resources.

COURSE OBJECTIVE

1. To make students understand about the basic concepts of Microeconomics and Macroeconomics
2. To understand the functioning of different market structure
3. To understand the impact of government intervention in the market
4. To make the students understand the different phases of business cycle and the concept of inflation

COURSE OUTCOMES

1. Conceptualize the various components of Micro and Macro Economics
2. Enumerate functioning of markets
3. Discuss the impact of lassiez faire state in Indian Economy
4. Able to understand the business cycle and the concept of inflation

UNIT- I **Credit 6**
INTRODUCTION TO MICROECONOMICS AND DEMAND ANALYSIS **(Hours 60)**

(a) **Introduction to Microeconomics:** Definition, Meaning, Nature and Scope of Microeconomics; Economic System

(b) **Demand Analysis:** Law of Demand, Demand Schedule and Demand Curve; Movement in Demand and Shifts in Demand curve

(c) **Elasticity of Demand:** Price and Income Elasticity of Demand; Types of Elasticity of Demand and their applications

UNIT- II
SUPPLY ANALYSIS AND MARKET EQUILIBRIUM

(a) **Supply Analysis:** Law of Supply, Supply Schedule and Supply Curve; Movement in Supply; Shifts in Supply Curves

(b) **Elasticity of Supply:** Price elasticity of Supply and applications

(c) **Market Equilibrium:** Market equilibrium with Demand and Supply; Shift in Demand and Supply curves

UNIT- III
CONSUMER AND PRODUCER BEHAVIOR & COST ANALYSIS

(a) **Consumer Behavior:** Cardinal and Ordinal Measurement of Utility; Law of Diminishing Marginal Utility; Law of Consumer Surplus; Indifference Curve Analysis

(b) **Producer Behavior**: Production Function; Law of Variable proportions; Law of Returns to Scale

(c) **Cost Analysis:** Cost Function; Types of Costs and cost curves; Economies and Diseconomies of Scale

UNIT- IV
MARKET STRUCTURES

(a) Introduction to Market Structure and Degree of Competition

(b) **Perfect Competition**: Characteristics, revenue curves, equilibrium of firm

(c) **Monopoly**: Characteristics, revenue curves, equilibrium of firm; Price Discrimination in Monopoly

(d) Monopolistic Competition and Oligopoly

UNIT- V
INTRODUCTION TO MACROECONOMICS

(a) **Introduction to Macro Economics:** Definition of Macroeconomics; Difference between Micro & Macro Economics; Various Concepts of National Income; Methods of measurement of NI

(b) **Output & Employment:** Concept of Aggregate Demand & Aggregate Supply; Keynesian theory of income & employment; Consumption function – APC, MPC, factors affecting MPC

(c) **Business cycles & Inflation:** Concept & phases of Business cycles; Inflation – Meaning, Types and Causes

Recommended Readings

1. Mankiw N. Gregory, Principles of Economics, Third Edition, Thomson, South-Western, 2004
2. Dornbusch R, Fischer S and Startz R, Macroeconomics, Eight Edition, Tata McGraw Hill, New Delhi, 2002
3. Dwivedi DN, Managerial Economics, Seventh Edition, Vikas Publishing House, New Delhi, 2008
4. Froyen RT, Macroeconomics: Theories & Policies, Sixth Edition, Pearson Education Asia, Delhi, 2001
5. Gould JP and Lazear EP, Ferguson and Gould's Microeconomic Theory, Sixth Edition, Richard Irwin, Homewood, 1980
6. K.K.Dewett, Modern Economic Theory, S.Chand & Company LTD, New Delhi. (pp242-311)
7. Mehta BC and Madnani GMK, Mathematics for Economists, Ninth Edition, Sultan Chand & Sons, New Delhi, 2008.
8. Melvin I Boyes, Microeconomics, Eighth Edition, Hughton Mifflin
9. Samuelson PA and Nordhaus WD, Economics, Seventeenth Edition, Tata McGraw Hill, New Delhi, 1998

B.A.LL.B VI SEMESTER

CURRICULUM AND SYLLABI

(6th Semester)

B.A.LL.B. (Hons.)
(Integrated Law degree course)

SCHOOL OF LAW

RAFFLES
UNIVERSITY

Japanese Zone, National Highway 48 Neemrana, Rajasthan 301020

www.rafflesuniversity.edu.in

B.A.LL.B VI SEMESTER

FAMILY LAW – II [MUSLIM LAW] (FML-II)

Objective: The course will assist students in understanding and reflecting on the nature and core principles of Muslim Law, as well as the difficulties that Muslim religious laws face due to national and international developments in the socio-political context. The course will also educate students on the legislative measures implemented by the government from the time of the British to the present administration, as well as the role of the judiciary in bringing reforms to improve the status of women, particularly in the laws governing divorce and maintenance.

UNIT - 1

INTRODUCTION TO MUSLIM LAW

A. Who is a Muslim?
B. **Muslim Law as Applied and Interpreted in India:** Operation of Muslim Law
C. Legislative Enactments-The Muslim Personal Law (*Shariat*) Application Act, 1937
D. **Primary Sources**: The Holy Quran-Hadith and *Sunnah*
E. **Secondary Sources:** Ijma (Consensus of Opinions) and *Qiyas* (*Analogy*)
F. Ijtehad and Taqlid
G. Equity, Justice and Good Conscience

UNIT - 2

MARRIAGE & DIVORCE

A. **Marriage:** Definition, Nature, Formalities-Legal Effects-Kinds of Marriages-Permanent and Temporary, Option of Puberty, Restitution of Conjugal Rights.
B. **Divorce:** Classification of Divorce, Talaq-i-Tafweez (delegated divorce) Divorce by Judicial Process, Effects of Divorce, Apostasy and Conversion as Grounds of Divorce-Iddat-Rationale and Utility-The Dissolution of Muslim Marriage Act, 1939-Triple Divorce-Position in other countries.

UNIT– 3

DOWER & MAINTENANCE

A. **Dower:** Definition, Nature & Kinds of Dower: Specified and Unspecified, Prompt and Deferred Dower-Subject matter of Dower-Widow's Right of Retention in lieu of Dower, Payment of Dower and Maintenance-Sections 125-127 of the Criminal Procedure Code, 1973.
B. **Maintenance:** Definition-Maintenance of Wife-of Descendants-of Ascendants of other Relations-Maintenance under Agreement-Maintenance under the Criminal Procedure Code-Maintenance under the Muslim Women (Protection of Rights on Divorce) 1986.

UNIT – 4

GUARDIANSHIP & LAW OF WILLS

A. **Guardianship:** Definition-Concept of Guardianship in Islam-Appointment of Guardian-Kinds of Guardianship-Guardianship of Person (Right of Custody)-Guardianship of Property-Guardianship in Marriage-Disqualification-Termination-

Power of Alienation-Movable and Immovable Property, Legitimacy, Section 112 of the Indian Evidence.

B. **Wills:** Definition-Concept: Creation- Capacity-Subject-matter of Will- Limitations to Will-Abatement of Legacies-Death-Bed Gifts-For whom Bequest can be made-Revocation of Wills-Bequests which are not Absolute-Interpretation of Wills.

C. **Gifts:** Definition-Essentials-Exceptions to the General Rule-Capacity, In whose favour, Subject-Matter, Gift of Musha-Exceptions, Conditional-Contingent-Future Gifts, Revocation of Gift-Life Interest-Life Estates.

UNIT – 5

WAQF, SUCCESSION & INHERITANCE

A. **Waqf:** Definition and Meaning, Origin, Kinds and Family Law of Waqfs, Essentials, Legal Incidents, Creation, Subject-Matter, Objects, Beneficiaries, Waqfs for Benefit of Humanity, Administration-Statutory and Non-Statutory; Mutawalli, Law before 1913 and after 1913-The Waqf Amendment Act, 2013.

B. **Succession and Inheritance:** Position Before Islam-Reforms brought by Islam-General Rules of Inheritance-Doctrine of Representation-Total and Partial Exclusion-Hanafi Law of Inheritance-Shia Law of Inheritance-Differences between the two laws of inheritance.

Suggested Readings

1. Abdur Raheem: Muhammedan Jurisprudence, Allahabad Law Agency, Faridabad.
2. Ameer Ali: Mahommedan Law, Vol. I, Kitab Bhavan, New Delhi.
3. B.R. Verma: Commentaries on Mohammedan Law in India, Pakistan and Bangladesh, Law Publishers (India) Pvt. Ltd., Allahabad.
4. Badruddin Tyabji: Muslim Law-The Personal Law of Muslims, N.M. Tripathi Pvt. Ltd., Bombay.
5. Dr. Paras Diwan & Peeyushi Diwan: Family Law, Allahabad Law Agency, Faridabad.
6. Dr. G.V. Subba Rao & Dr. Vijender Kumar: G. C. V. Subba Rao's Family Law in India, S Gogia & Company, Hyderabad.
7. Poonam P. Sexena: Family Law Lectures-Family Law II, LexisNexis India, Gurgaon.
8. Prof Kusum: Family Law Lectures-Family Law I, LexisNexis India, Gurgaon.
9. Sir Dinshaw Fardunji Mulla: Principles of Mahomedan Law- Incorporating the Wakf (Amendment) Act, 2013, LexisNexis India, Gurgaon.
10. Tahir Mahmood: Fyzee's outlines of Muhammedan Law, Oxford University Press, New Delhi.

Cases:

- Mt. *Ghulam Kubra Bibi* v. *Mohd. Shafi Mohd. Din*, AIR 1940 Pesh. 2 181
- *Chand Patel* v. *Bismillah Begum*, 1 (2008) DMC 588 (SC) 183
- *Saiyid Rashid Ahmad* v. *Mt. AnisaKhatun*, AIR 1932 PC 25 191
- *ShamimAra*v. *State of U.P*., 2002 Cr LJ 4726 (SC) 195
- *Masroor Ahmed* v. *Delhi* (NCT) 2008 (103) DRJ 137 (Del.) 200
- *GhulamSakina*v. *FalakSher Allah Baksh*, AIR 1950 Lah. 45 213

- *A. YousufRawther*v. *Sowramma*, AIR 1971 Ker. 261 217
- *Itwari*v. *Asghari*, AIR 1960 All. 684 227
- *DanialLatifi*v. *Union of India* (2001) 7 SCC 740 234
- *Noor Saba Khatoon*v. *Mohd. Quasim*, AIR 1997 SC 3280 249
- *Mohd. Ahmed Khan vs. Shah Bano Begum &Ors. AIR 1985 SC 945*

B.A.LL.B VI SEMESTER

LAW OF EVIDENCE (LOE)

INTRODUCTION TO THE COURSE

Evidences are the basis for any legal system. This paper aims to acquaint students about the different types of recognized forms of evidences and its sources which are indispensible for any legal professional.

OBJECTIVES OF THE COURSE

The law of evidence is an indispensable part of both substantive and procedural laws. It imparts credibility to the adjudicatory process by indicating the degree of veracity to be attributed to 'facts' before the forum. This paper enables the student to appreciate the concepts and principles underlying the law of evidence and identify the recognized forms of evidence and its sources. The subject seeks to impart to the student the skills of examination and appreciation of oral and documentary evidence in order to find out the truth. The art of examination and cross-examination, and the shifting nature of burden of proof are crucial topics. The concepts brought in by amendments to the law of evidence are significant parts of study in this course.

TEACHING METHODOLOGY

As per the norms of the University for this Course there will be 6 classes per week. Clinical and tutorial form of learning should be followed. Teaching methodology will include Lectures-cum-discussion, Assignments, Projects and Presentations.

THE EVALUATION SCHEME

• Continuous Assessment- 40%

• Mid-Term- 20%

• End Term- 40%

COURSE OUTLINE

UNIT-1

GENERAL ISSUES RELATING TO LAW OF EVIDENCE

- History of statutory Evidence Law in India – Pre and post Indian Evidence Act, 1872 realities – Role of Judiciary, particularly the appellate judiciary in up- dating the Evidence Law rules by judicial creativity.
- The main features of the Indian Evidence Act 1861.
- Relationship between law of Evidence and substantive laws (Criminal and Civil laws) and procedural laws (Code of Criminal Procedure and Civil Procedure Code
- Problem of applicability of Evidence Act
- Why rules of evidence have different significance under the Adversarial System and Inquisitorial System of Justice?

- Understanding the general concepts: 'Facts', 'Facts in issue', 'Relevant Fact', 'Evidence-Oral and Documentary', 'Direct and Circumstantial', 'Proved', 'Disproved' and 'Not Proved'.

UNIT-2

RELEVANCY AND ADMISSIBILITY OF FACTS

- **Logically relevant facts**:
  - The Doctrine of Res gestae (Section 6,7,8)
  - Special class of relevant facts relating to Conspiracy – section 10
  - The problems of relevancy of "Otherwise" irrelevant facts (Section 11)
  - Relevant facts for proof of custom (Section 13
  - Facts concerning bodies & mental state (Section 14, 15)
- **Stated relevant facts**
  - Admissions and confessions
  - General principles concerning admission (Section 17, 23)
  - Differences between "admission" and "confession"
  - The problems of non-admissibility of confessions caused by "any inducement, threat or promise' (Section 24)
  - Inadmissibility of confession made before a police officer (Section 25)
  - Admissibility of custodial confessions (Section 26)
  - Admissibility of "information" received from an accused person in custody; with special reference to the problem of discovery based on a "joint statement" (Section 27)
  - Confession by co-accused (Section 30)
  - The problems with the judicial action based on a "retracted confession"
- **Dying Declarations**
  - The justification for relevance on dying declarations (Section 32)
  - The judicial standards for appreciation of the evidentiary value of dying declarations.
- Opinion of Third Person when relevant (Expert Opinion) - sections 45-51

Cases:

- State of Maharashtra v. Prafulla B. Desai (Dr.) (2003) 4 SCC 601
- R. M. Malkani v. State of Maharashtra, AIR 1973 SC 157
- Mirza Akbar v. Emperor, AIR 1940 PC 176
- BadriRai v. State of Bihar, AIR 1958 SC 953
- Mohd. Khalid v. State of W.B. (2002) 7 SCC 334
- Jayantibhai Bhenkerbhai v. State of Gujarat (2002) 8 SCC 165
- Bishwanath Prasad v. Dwarka Prasad, AIR 1974 SC 117
- Central Bureau of Investigation v. V.C. Shukla, AIR 1998 SC 1406
- Veera Ibrahim v. State of Maharashtra, AIR 1976 SC 1167
- PakalaNarayana Swami v. Emperor PC 1939

- AghnooNagesia v. State of Bihar, AIR 1966 SC 119 64
- PulukuriKottaya v. Emperor, AIR 1947 PC 67
- Bodhraj v. State of J. & K. (2002) 8 SCC 45
- KhushalRao v. State of Bombay, AIR 1958 SC 22
- Sudhakar v. State of Maharashtra (2000) 6 SCC 671
- Patel HiralalJoitaram v. State of Gujrat (2002) 1 SCC 22
- Laxman v. State of Maharashtra (2002) 6 SCC 710
- Ram Narain v. State of U.P., AIR 1973 SC 2200, (1973) 2 SCC 86
- Santosh Kumar Singh v. State Th. Cbi , 2010 SC
- State Tr.P.S.LodhiColony,New v. Sanjeev Nanda, 2012 Del. HC
- VikasYadav v. State of U.P &Anr, 2009 Del. HC
- Manu Sharma vs. State (NCT of Delhi) (2010) 6 SCC 1
- Rabindra Kr. Pal @ Dara Singh v. Republic of India, 2011 SC

UNIT-3

ON PROOF

- Facts which need not be proved – sections 56-58
- Facts which the parties are prohibited from proving
- Doctrine of Estoppel – sections 115-117
- Privileged communications – sections 122-129
- Oral and documentary evidence – sections 59-78
- Exclusion of oral by documentary evidence – sections 91-92

Cases:

- R. S. Maddanappa v. Chandramma (1965) 3 SCR 283
- Madhuri Patel v. Addl. Commissioner, Tribal Development, AIR 1995 SC 94
- SanatanGauda v. Berhampur University, AIR 1990 SC 1075
- M.C. Vergheese v. T.J. Ponnan, AIR 1970 SC 1876 136
- State of U.P. v. Raj Narain, AIR 1975 SC 865

UNIT-4

ACCOMPLICE EVIDENCE & WITNESSES & THEIR COMPETENCY

- Section 133 read with section 114 illustrations (b)
- Child Witness – section 118
- Dumb Witness – section 119
- Hostile Witness – section 154

Cases:

- BhuboniSahu v. The King, AIR 1949, PC 257
- Haroon Haji Abdulla v. State of Maharashtra, AIR 1975 SC 856
- Ravinder Singh v. State of Haryana, AIR 1975 SC 856

B.A.LL.B VI SEMESTER

UNIT-5

EXAMINATION OF WITNESSES

- General principles of examination cross examination and re-examination (Section 135-166)
    - Leading questions (Section 141-143)
    - Lawful questions in cross-examination (Section 146)
    - Compulsion to answer questions put to witness
    - Impeaching of the standing or credit of witness (Section 155)

Cases:

- State of Bihar v. Laloo Prasad (2002) 9 SCC 626 176

UNIT-6

BURDEN OF PROOF

- The general conception of onus probandi (Section 101)
- General and special exceptions to onus probandi
- The justification of presumption and of the doctrine of judicial notice
- Justification as to presumptions as to certain offences (Section 111A)
- Presumption as to dowry death (Section 113-B)
- The scope of the doctrine of judicial notice (Section 114)

PRESUMPTIONS

- Sections 4, 41, 105, 111-A, 112, 113, 113-A, 113-B, 114 and 114-A

Cases:

- Goutam Kundu v. State of West Bengal, AIR 1993 SC 2295 178

IMPORTANT NOTE:

The topics and cases given above are not exhaustive. The students armust study the amended up-to-date legislationnd consult the latest editions of books.

Prescribed Books:

- Rattan Lal, Dhiraj Law: Law of Evidence
- Sarkar and Manohar, Sarkar on Evidence
- Vepa P. Sarathi, Law of Evidence
- M. Monir, Law of Evidence
- Avtar Singh, Principles of the Law of Evidence, Central Law Publication
- Albert S.Osborn, The Problem of Proof
- P. Nageshwara Rao, Law of Evidence

Prescribed Legislation:

The Indian Evidence Act, 1872
Indian Penal Code, 1860
Code of Criminal Procedure, 1973

B.A.LL.B VI SEMESTER

CORPORATE LAW- II (CRPL-II)

INTRODUCTION OF THE COURSE:

Corporate law is the base of the growing & dynamic economies of the world. In the current scenario it is an essential feature of the legal system. Corporate law has grown as a globally existent phenomenon essential to achieve a well-planned economic growth.

OBJECTIVES OF THE COURSE:

To acquire knowledge and develop understanding of the regulatory framework of companies with reference to various provisions of Companies Act 2013 and its schedules, rules, notifications, circulars, clarifications there under including case laws and secretarial standards

TEACHING METHODOLOGY:

Mainly, the doctrinal analysis method along-with the case and project based study shall be the main method of learning to be followed. Dialectic method of mooting and argumentation plays a very convincing procedure of learning. The information sharing and flow of information among the teacher and taught has to work as bonding of the entire course. Case comment and book review can also be a method of research writing in this paper.

COURSE OUTLINE:

UNIT 1

CORPORATE GOVERNANCE AND SOCIAL RESPONSIBILITY

- Significance of the concept of corporate governance
- Systems of the corporate governance
- Impact of the contemporary legal traditions and the rule of law on the corporate governance in India
- Legal reforms relating to the corporate governance in India
- Reports of the various committees constituted in respect to corporate governance in India
- Emerging trends addressing the recommendations of the committees constituted in respect to the Companies Act 2013 and the Listing Agreement with special reference to Clause 49.
- Corporate social and environmental responsibility

UNIT 2

CORPORATE FINANCE AND REGULATORY FRAMEWORK

- Historical growth of the security laws in India
- Securities Contracts (Regulation) Act, 1956- Significance, aims and objective, policy overview
- SEBI Act, 1992- constitution, powers and functioning and contribution

- Depositories Act, 1996- background, significance, aims and objective, policy framework
- The Securitization and Reconstruction of Financial Assets and Enforcement of Security Interest Act, 2002 (SAFAESI ACT)- background, importance, scope and policy framework

UNIT 3

REGULATORY FRAMEWORK FOR FOREIGN TRADE AND MULTI-NATIONAL CORPORATIONS

- Development of Foreign Trade Policy in India
- Foreign Trade (Development & Regulation) Act, 1992- background, significance, salient features, Export-Import Policy, Salient features of New Foreign Trade Policy
- UNCTAD Draft Model on Trans-national Corporations
- Control and Regulation of foreign companies in India
- Foreign collaborations and Joint Ventures

UNIT 4

FOREIGN EXCHANGE MANAGEMENT AND MONEY LAUNDERING

- Foreign Exchange Management Act, 1999- background, significance, reasons for shifting from FERA to FEMA, aims and objective, authorities, policy
- Prevention of Money Laundering Act, 2002- Background, objectives, significance, salient features, bodies , policy

UNIT 5

INSOLVENCY & BANKRUPTCY CODE, 2016

- Insolvency and Bankruptcy Code , 2016- Background, Significance, Aims and Objective
- Corporate Insolvency Resolution and Liquidation Process
- Offences and Penalties under the Code
- Insolvency and Bankruptcy Board of India- its constitution, powers and functions

BOOK REFERNCES:

- S R Myneni, Corporate Law-II,1st Ed., Asia Law House Hyderabad, 2012
- Akaant Kr. Mittal, Insolvency and Bankruptcy Code: Law and Practice,2nd Ed., EBC, 2022
- B P Singh Sehgal, Emerging trends in corporate governance: Legal issues & challenges, 1st Ed., Satyam Law International, 2022
- Avtar Singh, Company Law, 17th Ed., EBC, 2018
- A Ramaiya's Guide to Company Law, Lexis-Nexis India
- V A Awdhani, Investment and Securities Markets in India, 10th Ed., Himalaya Publishing House, 2017
- T R Ramamurthy, Guide to FEMA (Foreign Exchange Management Act, 1999), 5th Ed., Bharat Law House, 2014

- R K Narula & Udayan Mukerji, The Law of Prevention of Money Laundering, Oak Brdige Publishing, 2020
- Somesh Arora, Prevention of Money Laundering Act, 2002: A Commentary, Oak Bridge Publishing Pvt. Ltd, 2021
- Mukesh K Vyas, SARFAESI Act, 2002, 1st Ed., Rawat Publications, 2019

B.A.LL.B VI SEMESTER

PRIVATE INTERNATIONAL LAW (PRIL)

INTRODUCTION TO THE COURSE

Private international law, also known as conflict of laws in more common law-oriented jurisdictions, is the body of law that seeks to resolve certain questions that result from the presence of a foreign element in legal relationships. Examples of such relationships include contractual disputes between parties located in different jurisdictions, the marital status of partners of different nationalities, the legal status of real estate located in a foreign jurisdiction, and, in the intellectual property context, disputes between a copyright owner residing in one country and Internet users residing in other countries who are accused of making available, on servers located in multiple jurisdictions, copyrighted material for download by any person anywhere in the world, without the necessary permissions.

OBJECTIVE OF THE COURSE

Apart from private international law and substantive harmonization of national laws, there exist also other means of dealing with problems resulting from cross-border legal relationships which may be considered to fall in between those categories in terms of their effect on existing national laws. To make students understand about conflict of laws.

TEACHING METHODOLOGY

As per the norms of the university , there will be 6 classes per week in this course. Teaching methodology will include Lectures-cum-discussion, Assignments, Projects and Presentations.

THE EVALUATION SCHEME

- Continuous Assessment- 40%
- Mid-Term- 20%
- End Term- 40%

B.A.LL.B VI SEMESTER

COURSE OUTLINE

UNIT-1

Introduction

- Origin and development of Private International Law
- Nature and basis of Private International Law
  - Choice of jurisdiction
  - Choice of law
  - Recognition and enforcement of foreign judgment
- Distinction between Private International Law and Public International Law
- Theories of Conflict of Laws

UNIT-2

Domicile - Nationality - Residence – Property

- Fundamental Principles of Domicile - Nationality
- Domicile by origin and domicile by Choice
- Domicile of Independent Persons : England and India
- Domicile of Dependant Persons : England and India
- Domicile upon Marriage: England and India
- Property
  - Assignment of movable property
  - Testamentary Succession (Wills)
  - Trusts

UNIT-3

Matrimonial

- Marriage- Assignment of property on marriage
- Matrimonial causes and Disputes
  - Divorce
  - Nullity of Marriage
  - Judicial Separation
  - Restitution of Conjugal Rights
- Legitimacy – Legitimation and Adoption

UNIT-4

Doctrine of Renvoi

- Theories of Renvoi
- - Partial Renvoi
- - Foreign Court Theory
- Mutual Disclaimer Theory

UNIT-5

Foreign Law

- Recognition and Enforcement of

  - Foreign Judgments

  - Arbitral Award
- The limits of Application of Foreign Law

Recommended Readings

- R.H. Graveson, Conflict of Laws
- S.L. Khanna, Conflict of Laws
- Paras Diwan, Private International Law
- G.C.Chesire, Private International Law
- Atul M. Stelvad, Conflict of Laws

B.A.LL.B VI SEMESTER

TRANSFER PROPERTY LAW (TPA)

OBJECTIVE OF THE COURSE

1. Making aware with the basic principles of Transfer of Property.
2. Justifying the need of law relating to immovable property.
3. Making over with different kind of specific transfer of property.
4. Give over view of easmentary law in India.

COURSE OUTCOME

1. Able to understand and explain basic principles of transfer of property with real life examples.
2. Able to understand basics of transfer of property.
3. Demonstrate the various kinds transfer of properties with practical examples.
4. Able to draft various deeds relating to transfer of property.
5. Able to understand the easementary rights in India

As per the norms of the university in this course there will be 6 classes per week. Teaching methodology will include Lectures-cum-discussion, Assignments, Projects and Presentations.

THE EVALUATION SCHEME

- Continuous Assessment- 20%
- Mid-Term- 20%
- End Term- 60%

COURSE OUTLINE

UNIT- 1

1 Object and Scope of the Transfer of Property Act, 1882

2 Interpretation Clause (Section-3)

3 Definition of Transfer of Property

4 Subject Matter of Transfer, Transferable and non-transferable property,

Leading Case

1. Shanti Devi v. State Bombay AIR 1958 SC 53
2. LALA Kundan Lal v. Mst Mushrafi Begum AIR 193C PC 207
3. Lloyds Bank Ltd. v. P.E. Guzdev & Co AIR 1930 Cal. 22
4. Jujal Kishore v. Raw Cotton Co Ltd AIR 1955 SC 376
5. Muniappa Pillai v. Periasami (1975) MLJ 280 of Krishna Rao v. M.L. Narasikha Rao AIR 2003AP496
6. Samsuddin v. Abdul Hussain (1906) 31 BOM 165.
7. Amrit Narayan v. Gaya Singh (1918) 45 cal 590
8. Badrubatg v. Punna AIR 1979 SC 1314
9. Jaffer Meher Ali. V. Budge Jute Mills (1900) 33 Cal 702

10. M/S Mc Downalds & co. Ltd v. Dist. Registrar Vishakha Pattanam AIR 200 AP 374
11. Amriratham kudumbahv. Sarnnam Kundimbar AIR 1991 SC 1256.
12. Shankar Yadav v State of Jharkhand, AIR2012 Jhar 21
13. Shehammal v Hasan Khan,Rawther (2011) 9 SCC 223

UNIT-2

1 Condition subsequent

2 Transfer for the Benefit of Unborn Person and Rule Against Perpetuity,

3 Vested and Contingent Interests,

4 Conditional Transfer

5 Doctrine of Election

Leading Case

1. Doctrine of Election. Rosher v. Rohser (1984) 26 Ch. D. 801.
2. Mohammad Raza v. Abbas Bandi Bibi AIR 1932 PC 158
3. Mata Prasad v. Nageshar Sarai AIR 1925 PC 272
4. Laxmamma v. state of Karnatka AIR 1983 Karn 237
5. Raghuram Rao v. Eric P Mathias AIR 2000 SC 797
6. Ram Newaz v. Nankoo (1926) 92 I.C. 401
7. Ram Saran v. Ram Mohit AIR 1967 SC 744
8. Nafar Chand v. Kailash AIR 1925 PC 344
9. Stanley v. Leigh 1732 APPE R 917
10. Rajesh Kanta Rao v. Smt. Sahanti Devi AIR 1957 SC 255
11. Rukhamarbai v. Shivram AIR 1981 SC 1881 Cooper v. Cooper (1874) 7 H.L.53
12. Valliammai v.Najappa AIR 1967 SC 1153
13. Mohmmad Afzal v.Gulam Kasim (1903) 30 Cal 843
14. Dhanias v State of Chhattisgarh AIR 2015 Noc 837

UNIT- 3

1 Transfer of Property by Ostensible Owner,

2 Transfer by unauthorized

3 Fraudulent Transfer,

4 Doctrine of Lis- pendens,

5 Doctrine of Part-Performance

Leading Case

1. Emerald Valley v. Estate Ltd Bandaguli AIR, 2001 Kev 29, Bellami v. Sabine (1857) 1 De G & j 566
2. Faiyaz Hussain Khan v. Prag Narain (1907) 29 all 289
3. Rajendra Singh v. Santa Singh AIR 1937 SC 2537

4. N.C. Bhavia Gandevi v. Peoples Corporative Bank Ltd AIR 2002 G & J 209
5. Supereme general Film Exchange Ltd. V. Sari Nath Dev AIR 1975 SC 1816
6. Suresh Singh v. State of Bihar AIR 1994 pat 35
7. Mohammad v, Thyagraja Lal AIR 1958 mad 580
8. Chajmol Bhandari v. Deputy Commercial Tax Officer, Kurnol AIR 1976 SC 656
9. Abdul Goundan v. Arji Papa Rao AIR 1963 SC 1150
10. Kapini Goundan v. Sarasannapani 1916 Mao W.N. 288
11. Javvadi Narasim Lamurti v. Maharaja Pittapur AIR 1941 Mad 690
12. Maddisan v. Alderson (1883) 8 A.C. 467
13. Mohammad Musa v Aghave Kumar Gangnl: (1914) 42 Col. 801 Arif v. Jadnnath AIR 1931 Pc 79
14. Mian Pix Bux v. Sardar Mohammad Tafir AIR 1934 Pc 235
15. S. Veerabhadra Naiker v. Sambanda Naiker AIR 2003 Mod 19
16. D.S Marrathamma v. A Srinivasam AIR 2003 SC 3542
17. Roop Singh v. Ram Singh AIR 2000 SC 1485
18. Prabodh Kumar Das v. Dantamara Tea Co. Ltd. AIR 1940 PC

UNIT- 4

1 Definition of Sale, Rights and Liabilities of Buyer and Seller, Marshalling by Subsequent Purchaser

2 Definition of Mortgage and kinds of Mortgage

3 Rights of redemption and Equity of redemption

4 Rights of Foreclosure

5 Doctrine of subrogation and Rule against tacking

Leading Case

1 Pandit Chun Chun Jha v. Ibadat Ali (1995)1 SCR 174

2 Sibendra Pada v. Secretary of State (1907) 34 Cal. 207

3 Bishwanath Prasad v. Chandra Narayan (1921) 48 Cal. 509

4 Ram Dass v Sitabai AIR 2009 SC 2735

5 Suraj Lamp & Industries Pvt. Ltd. V State of Haryana AIR 2012 SC 206

6 Latif Estate Line India Ltd v Hadeeja Ahmad, AIR 2011 MD 66 (FB).

7 Tara Chand v Sagarbai AIR 2007 SC 2059

8 Stanley v. Wilde (1899) 2 Ch 474

9 Murarilal v. Deo Karan AIR 1965 SC 225

10 Gulab Chand v. Saraswati Devi AIR 1977 SC 242

11 Bigg's Case (1898) 2 Ch 307 5. Noakes Case (1902) AC 24

12 Bradley's Case (1903) AC 253

13 Krelinger v. New Patangfonia Meat etc. Co. (1914) AC 25

14 Aldrich v. Cooper (1803) Ves 382

15 Seth Gangadhar v Shankar Lal,AIR 2000 SC 770 10. Hasthimal & Sons v P. Tejraj Sharma AIR 2007 SC 3246

UNIT- 5

1 Meaning of Charge and Lease(Section 105 to 106)

2 Different Modes of Determination of Lease (Section 111)

3 Exchange and Gift defined

4 Transfers of Actionable claims (130)

5 Easements and its kinds, License and lease distinguished

Leading Case

1 Ramak Ram v Pishavi Singh, AIR 1990 SC 1892

2 Associated Hotel of India v R.N. Kapoor AIR 1959 SC 1262

3 Shafiquddin v Pyarelal AIR 1978 SC 298 12

4 Shanti Prasad Devi v Shankar Mehto AIR 2005 SC 2905

5 Nilesh Nand Kumar v Sikandar Aziz Patel AIR 2002 SC 3073

BOOKS RECOMMENDED:

1 D.F. Mulla,Transfer of Property Act,7th Ed.

2 Shukla S.N. - Transfer of Property

3 Sinha R.K. The Transfer of Property Act CLA, 11th Ed.

B.A.LL.B VI SEMESTER

ECONOMICS-VI (LECO-VI)
(INTERNATIONAL ECONOMICS)

COURSE OUTLINE

UNIT-1

Theories of International Trade

Theories of absolute advantage, comparative advantage; Heckscher - Ohlin Theory; Factor price equalization theory , Role of International trade in Economic development – Direct and Indirect benefits or Gains ,Measurement and distribution of gains , The contribution of trade to growth and development

UNIT-2

Terms of Trade and Commercial Policy

Meaning & Importance of Terms of Trade, Types of terms of trade – Factors Influencing Terms of trade, Free trade Vs Protection – Arguments for and against protection, Tariffs – Types, Quotes – Types, Tariff versus Quota; Other non-tariff barriers; Customs Union – Trade Creation & Trade Diversion.

UNIT-3
Balance of Trade and Balance of Payments & Foreign Trade in India

Balance of trade and balance of payments – Balance of payment always balances – Equilibrium and Disequilibrium in the balance of payments – Measures to correct disequilibrium. Volume, Composition and Direction of India's Foreign Trade, Trade Policy before and after reforms

UNIT-4
Foreign Exchange Market and Exchange Control

Functions and Transactions – Meaning of exchange rate – Determination of exchange rate – Purchasing power parity theory – Fixed exchange rate – Flexible or Floating exchange rate – Causes for fluctuations in exchange rate – Exchange Control – Meaning – Objectives – Direct and Indirect methods – Merits & Demerits

UNIT-5
International Financial Institutions and Trade Agreements

IBRD or World Bank – Functions – Objectives and its working, India & World Bank, IMF – Functions , Objectives and its working, India & IMF - GATT-WTO, Their impact on India – European Union – Constitution, Objectives, Functions , United Nations , SAARC, ASEAN

Essential Readings:

1. Salvatore, D.L., 1997, International Economics, Prentice Hall, Upper Saddle River, N.J.
2. Vaish, M.C. & S. Singh, 1995, International Economics.
3. Rana & Verma, International Economics, Vishal Publishing Co.

References:

1. Cherunilam Francis, International Economics (5th edition), Tata McGraw Hill Education Private Ltd, New Delhi.

2. Mithani, D.M., Money, Banking, International Trade & Public Finance, Himalaya Publisher.

3. Sundaram, K.P.M., Money, Banking, & International Trade, Sultan Chand.

4. Kindleberger, C.P., 1973, International Economics, R.D. Iruim, Homewood.

5. Sodersten, B.O. 1991, International Economics, McMillan Press Ltd. London.

6. Lindert, International Economics, All India Traveller Book Seller.

7. Chacholiades, M., International Trade- Theory & Policy, McGraw Hill, Kogabusha, Japan.

B.A.LL.B VIII SEMESTER

CURRICULUM AND SYLLABI

(8th Semester)

B.A.LL.B. (Hons.)
(Integrated Law degree course)

SCHOOL OF LAW

RAFFLES UNIVERSITY

Japanese Zone, National Highway 48 Neemrana, Rajasthan 301020

www.rafflesuniversity.edu.in

B.A.LL.B VIII SEMESTER

ENVIRONMENTAL LAW (ENVL)

INTRODUCTION TO THE COURSE

The concept of environment lay embedded in ancient ethos. Throughout the centuries there were invisible processes working for the maintenance and improvement of environment. Towards the close of the last millennium one finds widening dimensions of environmental protection strategies.

There gained ground the environmental consciousness. How do these developments stand reflected in formulation of policies and in following constitutional values in India? This is the thrust of the paper.

OBJECTIVE OF THE COURSE

In present industrial scenario Environment is the growing concern of developing as well as developed economies of the world. Environmental issues have always held central position in India with these issues being central to the holistic Hindu philosophy. Though medieval India saw some disinterest towards the environment but independent India took over the lax British laws and has tried to make them as successful as it can be. With a large country and as diverse as India, the success of a particular law can be a debate. Yet the highest judiciary of the country , there will be 6 classes per week in this coursek judgments which have tried to uphold the stringent measures of the laws that the legislature has passed over the years.

TEACHING METHODOLOGY

As per the norms of the university in this course there will be 6 classes per week. Teaching methodology will include Lectures-cum-discussion, Assignments, Projects and Presentations.

COURSE OUTLINE

Module-I

Dimensions of Environmental Problems, Pollution & its Kinds, Sustainable development, Constitutional Provisions & Judicial Activism (Principles-Precautionary principle, Polluter pays principle, public trust doctrine)

Module-II

The Water (Prevention & Control of Pollution) Act, 1974; Definition, Central and State Pollution Control Boards: Constitution, power and function; Sample of effluents, Citizen Suit Provision The Air (Prevention & Control of Pollution) Act, 1981; Definition, Central and State Pollution Control Boards: Constitution, power and function; Sample of effluents, Citizen Suit Provision

Module-III

The Environment (Protection) Act, 1986, The National Environment Tribunal Act, 1955 and The National Environment Appellate Authority Act, 1997

Module-IV

Indian Forest Act, 1927 Kinds of forest-private, Reserved, Protected and Village Forest, The Forest (Conservation) Act, 1980 The Wild Life (Protection) Act, 1972; Authorities to be appointed and constituted under the Act, Hunting of wild animals, Protection of Specified Plants, Trade or Commerce in Wild Animals, animals articles and trophies; Its prohibition.

Acts

1. The Water (Prevention and Control of Pollution) Act, 1974

2. The Air ((Prevention and Control of Pollution) Act, 1981

3. The Environment (Protection) Act, 1986

4. The National Environment Tribunal Act, 1955

5. The National Environment Appellate Authority Act, 1997

Recommended Readings

- Shyam Diwan, Armin Rosencranz, Environmental Law & Policy in India
- P. Leelakrishnan, The Environmental Law in India
- Dr.P.S.Jaswal, Environmental Law

- S.K.Nanda, Environmental Law, 2007
  C.M. Abraham, Environmental Jurisprudence in India (1999), Kluwer
- Madhav Gadgil and Ramachandra Guha, This Fissured Island: An Ecological History of India (1996), Oxford.
- R.B. singh & Suresh Misra, Environmental Law in India (1996), Concept Publishing Co., New Delhi.
- Kailash Thakur, Environmental Protection: Law and Policy in India (1997), Deep & Deep Publications, New Delhi.
- Richard L. Riversz, et. al. (eds.), Environmental Law, the Economy and Sustainable Development (2000), Cambridge.
- Christopher D.Stone, Should Trees Have Standing and other Essays on Law, Morals and the Environment (1996), Oceana
- Stuart Bell and Donald McGillivray, Environmental Law (2000), Blackstone Press.
- Charles A.R. Webster, Environmental Health Law (1981)
- Leelakrishnan, P et. al. (eds.) Law and Environment (1990), Eastern
- Leelakrishnan, P, The Environmental Law in India (1999), Butterworths-India
- Department of Science and Technology, Government of India, Report of the Committee for Recommending Legislative Measures and Administrative Machinery for Ensuring Environmental Protection (1980) (Tiwari Committee Report).
- Thomas J. Schoenbaum, Environmental Policy Law (1992), Foundation Press, Inc. Westbury,New York.
- Darryl D'Monte, Temples or Tombs Industry versus Environment: Three Controversies (1985),Centre for Science and Environment, New Delhi
- Indian Journal of Public Administration, Special Number on Environment and Administration, July-September 1988, Vol. XXXV, No.3, pp.353-801
- Khosho, Environmental Concerns and Strategies (1988), Ashish, Delhi
- Centre for Science and Environment, The State of India's Environment 1982, The State of India's Environment 1984-85 and The State of Indian Environment 1999-2000.
- World Commission on Environment and Development, Our Common Future (1987), Oxford.
- Garrett Hardin, The Ostrich Factor: Our Population Myopia (1998), Oxford

B.A.LL.B VIII SEMESTER

INSURANCE, BANKING & NEGOTIABLE INSTRUMENT (IBNL)

INTRODUCTION TO THE COURSE

The modern society functions, contrary to the old barter system, on monetary transactions. In a developing country like India, the banking system takes off and becomes quite common even among the common people. The services banks render to the general public do have a significant contribution to the development of the economy. Pari passu, the security to the assets money as well as other valuable belonging to individuals and family units is to a large extent assured through the service of the banks. The variety of assistance tended by the banks to the common people and business community cannot be overemphasized in this context. The process of the working of the banks and the legal control over them as well as the protection to the consumers of banking services are areas which a student of law is necessarily familiar with

OBJECTIVE OF THE COURSE

Objective of this paper is to well verse students with the emerging sector of banking & insurance laws. In developing countries like India where financial sector is growing speedily, a law student must have knowledge of these laws

TEACHING METHODOLOGY

The teaching methodology adopted for this course is class discussion, class presentations, discussion and debate on different concepts through moot courts, class lectures on certain topics etc. It will include discussions of important cases.

THE EVALUATION SCHEME

- Continuous Assessment- 40%
- Mid-Term- 20%
- End Term- 40%

B.A.LL.B VIII SEMESTER

COURSE OUTLINE

UNIT-1
Banking Regulation Act, 1949

A. Concept of Bank and Banker, Functions of Banks, Classification of Banks, Relationship between Bank and Customer, Control by government and it agencies,

B. Management of Banking companies, On account and audit, Reconstruction and reorganization of banking companies, Suspension and winding up of the business of banking companies,

C. Social control over banking, Banking Ombudsman, Recent Trends in Banking: Automatic Teller Machine and Internet Banking, Smart, Credit Cards, Banking Frauds.

UNIT-2
Reserve Bank of India Act, 1934

A. Incorporation, Capital, Management and Business of Banking Company, Central Banking function of Reserve Bank of India, Collection and furnishing of Credit Information, Control of Reserve Bank of India over Non-banking Institutions and Financial Institutions, Credit Control by Reserve Bank of India, General provisions and penalties.

UNIT-3
Negotiable Instrument Act, 1881

A. Definition and characteristic of Negotiable Instruments, Types of Negotiable Instruments,

B. Definition and Essentials of Promissory Note, Bill of Exchange and Cheque, Liabilities and Capacity of Parties of Negotiable Instrument,

C. Holder and Holder in due course, Transfer and Negotiation of Negotiable Instrument.- Crossing of Cheques and payment, Dishonour of Cheques, Presentment and Payment, Dishonour,

D. Noting and Protest of Negotiable Instrument, Endorsement: Definition, Essential of a valid Endorsement and its kinds, Rules of evidence and compensation.

UNIT-4
Insurance-I

A. Introduction, Meaning of Insurance, Historical Aspect, Characteristic of Insurance, Nature of Insurance Contract.

B. Theory of Cooperation, Theory of Probability, Principles of Insurance, Utmost Good Faith, Insurance Interest

C. **Types of Insurance-** Re-Insurance, Double Insurance, Insurance & Wages, Types of Insurance:

a) Life Insurance
b) Marine Insurance
c) Fire Insurance &
d) Miscellaneous Insurance

UNIT-5
Insurance-II

A. Indemnity, Subrogation, Causa Proxima, Mitigation of Loss, Attachment of Risk, Contribution

B. Constitution, Function and Powers of Insurance Regulatory and Development Authority

C. Application of Consumer Protection Act, 1986

Recommended Readings

- M.N.Mishra, Law of Insurance
- C.Rangarajan, Handbook of Insurance and Allied Laws
- Bashyam and Adiga, The Negotiable Instrument Act, 1997
- M.L.Tannen, Jannen's Banking Law & Practice in India, 2000
- Dr. Avtar Singh, Negotiable Instrument Act.
- S.N. Gupta, The Banking Law in Theory & Practice, 1999
- Sharma and Nainta, Banking Law & Negotiable Instruments Actira Carr/Cavendish Publishing House

B.A.LL.B VIII SEMESTER

LABOUR & INDUSTRIAL LAW –I (LL-I)

INTRODUCTION TO THE COURSE

Evidences are the basis for any legal system. This paper aims to acquaint students about the different types of recognized forms of evidences and its sources which are indispensible for any legal professional.

OBJECTIVES OF THE COURSE

The law of evidence is an indispensable part of both substantive and procedural laws. It imparts credibility to the adjudicatory process by indicating the degree of veracity to be attributed to 'facts' before the forum. This paper enables the student to appreciate the concepts and principles underlying the law of evidence and identify the recognized forms of evidence and its sources. The subject seeks to impart to the student the skills of examination and appreciation of oral and documentary evidence in order to find out the truth. The art of examination and cross-examination, and the shifting nature of burden of proof are crucial topics. The concepts brought in by amendments to the law of evidence are significant parts of study in this course.

TEACHING METHODOLOGY

As per the norms of the University for this Course there will be 6 classes per week. Clinical and tutorial form of learning should be followed. Teaching methodology will include Lectures-cum-discussion, Assignments, Projects and Presentations.

THE EVALUATION SCHEME

• Continuous Assessment- 40%

• Mid-Term- 20%

• End Term- 40%

COURSE OUTLINE:

UNIT-1

Introduction to Labour Law

A. Historical Perspectives on Labour & Trade Unionism in India
B. Concept of Labour Rights under Part III of Indian Constitution
C. Concept of Labour Welfare under DPSP

UNIT-2

Trade Unions & Collective Bargaining-1

A. Definition of Trade Unions & trade Dispute.
B. Registration of Trade Unions
- Legal Status of Registered Trade Union
- Mode of Registration
- Power & Duties of Registrar
- Amalgamation, Cancellation & Dissolution of Trade Union
- Procedure for Change of Name

UNIT–3

Trade Unions & Collective Bargaining-II

A. Disqualification of office-bearers: Rights and Duties of Office Bearers & Members
B. General & Political Funds of Trade Union
C. Recognition of Trade Union
D. Collective Bargaining
E. Unfair Trade Practices

UNIT –4

Standing Order

A. Concept and Nature of Standing Orders
B. Scope and Coverage of The Industrial Employment (Standing Orders) Act, 1946
C. Certification Process
- Procedure for Certification
- Appeals Against Certification
- Conditions for Certification
- Date of Operation of Standing Orders
- Posting of Standing Orders

D. Modification & Temporary Application of Model Standing Orders
E. Penalties & Procedure

UNIT –5

Resolution of Industrial Dispute and Code on Wages Act

A. Concept of Industrial & Individual Dispute
B. Area of Interaction & Participants: Industry, Workman & Employer
C. Settlement of Industrial Dispute
    1. Works Committee
    2. Conciliation Machinery
    3. Court of Enquiry
    4. Voluntary Arbitration
    5. Adjudication: Labour Courts, Tribunal & National Tribunal
D. Brief history of the code
E. Statement of object and reasons
F. Key definition and their salient aspect

G. Employer's obligations offences and penalties
H. Ambiguities compliances and challenges

IMPORTANT NOTE:

The topics and cases given above are not exhaustive. The students are required to study the legislations as amended up-to-date and consult the latest editions of books.

PRESCRIBED BOOKS:

John Bowers and Simon Honey ball, Text Book on Labour Law (1996), Blackstone, London

Srivastava K.D., Commentaries on Payment of Wages Act 1936 (1998), Eastern, Lucknow

Srivastava K.D., Commentaries on Minimum Wages Act 1948 (1995), Eastern, Lucknow

Rao.S.B., Law and Practice on Minimum Wages (1999) , Law Publishing House, Allahabad

Seth. D. D., Commentaries on Industrial Disputes Act 1947 (1998), Law Publishing House, Allahabad

Srivastava K.D., Disciplinary Action against Industrial Employees and Its Remedies (1990), Eastern, Lucknow

Srivastava. K .D. Commentaries on Factories Act 1948 (2000), Eastern, Lucknow

R.C. Saxena, Labour Problems and Social Welfare Chapters 1, 5 and 6. (1974)

V.V. Giri, Labour Problems in Indian Industry Chs. 1 and 15, (1972).

Indian Law Institute, Labour Law and Labour Relations (1987)

(1982) Cochin University Law Review, Vol. 6 pp. 153-210.

- Report of the National Commission on Labour. Ch. 14-17, 22, 23 and 24.
- O.P. Malhotra, The Law of Industrial Disputes (1998), Universal, Delhi.
- S.C. Srivastava, Social Security and Labour Laws Pts. 5 and 6 (1985).Universal, Delhi.
- S.C. Srivastava, Commentary on the Factories Act 1948 (1999) Universal, Delhi.

B.A.LL.B VIII SEMESTER

LAND & AGRICULTURAL LAWS (L & A)

Introduction:

India being an agricultural country, Land & Agricultural laws form a special feature of Indian Legal System. This paper has been introduce to well verse students about Land regulations of Rajasthan.

Methods of teaching-learning:

As per the norms of the university in this course there will be 6 classes per week. Teaching methodology will include Lectures-cum-discussion, Assignments, Projects and Presentations.

Evaluation Scheme

Continuous Assessment System- 40%

Mid-Term- 20%

End Term- 40%

COURSE OUTLINE

UNIT-1

Rajasthan Tenancy Act, 1955

Rajasthan Tenancy Act, 1955. Preliminary: Objects and Reasons, definition, Khudkasht (Sections I to 130), Ijredars, Grove Holder (section Sec.94 to 205): Classes of tenants (Section 14 to 17-A) : Conferment of rights on sub-tenants or tenants of KbudKasht (Sec.19), Primary right of tenants— (Section 31 to 37): Surrender, Abandonment and Extinction of tenancies of tenancles (Sections 55 to 64), Improvements and Trees (Sec.65 to 87), Declaratory suits (Sec. 88-92):

UNIT-2

Rajasthan Tenancy Act, 1955

Determination and modification of rent (Sec. 93-129), payment and recovery of Rent (Sec. 130-160): grounds for Ejectment of Tenants, Remedies for wrongful ejectment (Sections 169 to 188). Procedure and Jurisdiction of Courts (Sec 216 to 221). Provision for injunction and appointment of Receiver (Section 212). Appeal. Review, Revision (Sc. 222-232): Reference, Question of Proprietary Rights in Revenue Courts (S. 239): Question of Tenancy Right in Civil Court (S. 242). Conflict of Jurisdiction (Sec. 243).

UNIT-3

The Rajasthan Land Revenue Act, 1956

The Rajasthan Land Revenue Act, 1956: The Board of Revenue, Revenue Courts and Officers (Sec. 4—30) Appeal. Reference, Revision and Review (Sc. 74-87); Land (Sc. 88 to 105) survey (Sc. 100- 112) **Record of Rights.** Maintenance of maps and records, Annual Registers (SS. 113—137); Settlement operations; Rent Ratio. Determination of rent, Term 0f settlement (Sec.142-177); Collection or Revenue (ss. 224 to 257).

UNIT-4

Rajasthan Rent Control Act, 2002

Rajasthan Rent Control Act, 2001: Preliminary: object and reasons, Definition-Amenities, Landlord, Premises, Tenant. Revision of rent, limited period tenancy, eviction of tenants, right of landlord to recover immediate possession in certain cases, restoration of possession of illegally evicted tenant and procedure thereof, Constitution of tribunals, the procedure for revision of rent and eviction, Appeal and Execution Amenities.

UNIT-5

Land Acquisition Law

Preliminary: object and reason, Definition: affected family, agriculture land, cost of acquisition, displaced family, infrastructure project, marginal farmer, market value, a person interested, public purpose, and resettlement area. Determination of social impact and public purpose, special provision to safeguard food security, Notification and Acquisition, Rehabilitation and Resettlement Award and procedure relating to it. Procedure relating to land acquisition, rehabilitation and resettlement authority, apportionment and payment of compensation.

Leading Cases

1. Khemchand v. State and Others, 1999 DNJ Raj. 239.

2. Sarla Ahuja v. United Ins. Co. Ltd., AIR 1999 SC 100.

3. Nathu singh V. Laxman singh, 1995 RRD 124.

4. Panne Singh v. Guman Singh, 1964 RRD 101.

5. Bhonra v. Ganesh 1996 RRD 71.

6. Shivshankar v. Murli Sri Bade Muthuresthan, 1996 RRD 316

SUGGESTED READINGS:

1. Shyam Lal Gupta: The Rajasthan Tenancy Act.

2. Dutt, S.K.: Tenancy Law in Rajasthan

3. Dutt, S.K.: Rajasthan Land Revenue Act.

4. Suresh Chand H. Mathur: Law of Tenancy in Rajasthan

5. Karkara, G.S.: Rajasthan Land Laws (English &Hindi)

6. Babel, B.L.: Rajasthan Land Laws (Hindi)

7. Gehlot: The Rajasthan Tenancy Act. 1955.

B.A.LL.B VIII SEMESTER

[CORPORATE LAW GROUP]

CORPORATE & WHITE-COLLAR CRIME (H3)

COURSE OUTLINE

Crime & Criminology - White Collar Crime

UNIT-1

Definitions and Foundational Principles

- Definitions and Principles
  A. Definitions of White-Collar Crime, white-collar criminals.
  B. Individual Responsibility
  Mens Rea/Actus Reus,
  Principles of Corporate Liability
  C. from Individual Conduct to Corporate Responsibility Corporation, corporate structures as a way of limiting liability, Principles of Corporate Responsibility, Conspiracy. Principles of Individual Liability
  D. From Corporate Conduct to Individual Responsibility Individual Liability for Corporate/Collective Actions Willful blindness.

UNIT-2

Offenses

A. Mail and Wire Fraud
B. Elements and liability issues
C. Money Laundering
D. Perjury, Obstruction, False Statements

UNIT-3

Organized Crime

A. Nature, meaning and forms
B. Criminal syndicates
C. Organized crimes: Regional and international linkages
D. Problems of identification, investigation and prosecution
E. Prevention and control strategies.

UNIT-4

Cyber Crime

A. Copyright violation of software.
B. Nature, meaning, definition, forms and etiology
C. Internet frauds
D. Prevention, detection and prosecution of cybercriminals.

UNIT-5
Punishment

1. Concept of Punishment
2. Types of Punishment
3. Theories of Punishment
4. Punishment for White Collar Crime under different statute

Suggested Reading:

- S.P. Singh, Socio- Economic Offences (1st Ed., 2005, Reprint 2015)
- Ahmed Siddiqui, Criminology: Problems and Perspectives (4th Ed., 1997)
- Seth and Capoor, Prevention of Corruption Act with a treatise on Anti- Corruption Laws (3rd Ed., 2000)
- C. Mehanathan, Law on Prevention of Money Laundering in India (2014)
- N.V Paranjape, Criminology, Penology with Victimology, 16th Ed., 2014, Central Law Publications.

B.A.LL.B VIII SEMESTER

INDIRECT TAXATION (H4)

INTRODUCTION TO THE COURSE

Tax law is an area of legal study dealing with the statutory, regulatory, constitutional, and common-law rules that constitute the law applicable to taxation, which is the method by which the government levies on economic transactions. In modern economy, taxation laws are important in all walks of life. If you are starting a business, depositing the proceeds of a theft in a bank, embezzling or gambling, there are tax considerations that you should know about. If you are filing a tort action, there are tax ramifications. If you own property, there are tax consequences. If you work and earn a salary, there are tax consequences. If you find a diamond in the street and keep it, there are tax considerations. If you get an "extreme makeover" home, there are tax consequences. If your home is rented by tourists in town to see the Master's Golf tourney, the tax consequences will vary tremendously if the tenants are there for only 10 days versus if they are there for three weeks, even if you live in the house every other day of the year.

OBJECTIVE OF THE COURSE

In the context of a federal structure the distribution of the taxing powers assumes added significance. Obviously, a study of the constitutional framework on taxation becomes important. Along with this, an analysis of the different laws enacted in exercise of these powers with their safeguards and remedies sheds light on the mechanics of the taxation by the Union and the States.

TEACHING METHODOLOGY

As per the norms of the university, there will be 6 classes per week in this course. Teaching methodology will include Lectures-cum-discussion, Moot court, Assignments, Projects and Presentations.

B.A.LL.B VIII SEMESTER

COURSE OUTLINE

UNIT-1

The Customs Act, 1962

A. Historical background and Introduction to Customs Law in India
B. Administrative structure of Customs department Sections 3 to 6
C. Basic functions and objectives of the Customs Administration
D. 'Goods' under Customs Act
E. Territorial Waters and Customs Waters of India
F. Types Custom of Duties
G. Valuation of Goods
H. Introduction to Duty Drawback
I. Introduction to Baggage Rules and Import by Post and Courier
J. Search, Seizer, and Arrest; Offences; Penalties; Confiscation and Prosecution

UNIT-2

The Central Goods and Services Tax Act, 2017

A. Definitions
B. Administration
C. Levy and Collection of Tax
D. Time and Value of Supply
E. Input Tax Credit Registration
F. Tax Invoice , Credit and Debit Note
G. Payment of Tax

UNIT3

The Central Goods and Services Tax Act, 2017

A. Assessment
B. Inspection ,Search ,Seizure and Arrest
C. Liability to pay Certain cases
D. Advance ruling
E. Appeals and revision
F. Offences and penalties
G. Transitional Provisions

UNIT-4

The Integrated Goods and Services Tax Act, 2017

A. Definitions
B. Administration
C. Levy and Collection of Tax
D. Determination of the Nature of Supply
E. Place of Supply of Goods or Services or Both
F. Refund of integrated tax to international tourist
G. Zero-rated supply
H. Appointment of tax and settlement of funds

UNIT-5

Commodities not falling under GST

- Commodities not falling under GST in India and Provision of tax on the same.
- Computation of tax on such commodities.

Acts

- The Customs Act, 1962
- The Customs Tariff Act, 1975
- The Central Goods and Services Tax Act,2017
- The Integrated Goods and Services Tax Act,2017
- Related Rules and Forms.

Recommended Readings

- V. Ramachandran & T.A. Ramakrishnan (eds.) A.N.Aiyar's Indian Tax Laws (2000) Company Law
- Institute of India Pvt. Ltd. Chennai.
- S.Bhattacharya & H.R. Garg, Handbook of Direct Taxes (1990) Eastern Law House, Calcutta.
- C.A. Gularickar, Law and Practice of Wealth Tax and Valuation (1998), Gularikar, Mumbai.
- Walter R. Mahler, Sales and Excise Taxation in India (1970) Orient Longman, Delhi.
- R.V.Pattel, The Central Sales Tax Act (1966) Thripathi, Bombay.
- S.D. Singh, Principles of Law of Sales Tax (1973), Eastern, Lucknow
- Ahuja, Grish, : Direct Taxes Law and Practice, Bharat's Law House,
- 2010.
- Gabawala, Sunil.B, : Treatise on Service Tax, Bharat's Law House Pvt. Ltd.
- 2010.
- Jyoti Rattan, : WT, ST, CST, VAT, GST, Bharat's Law House Pvt. Ltd.
- 2010
- Kailash Rai, : Taxation Laws, Bharat's Law House Pvt. Ltd. 2010.
- N.A.Palkhivala : Income Tax Law, Modern Law House
- Vinod K. Sighania : Law and Practice of Income Tax, Taxmann Pub. (Pvt.) Ltd.
- V.S. Datey : Indirect Taxes Law and Practice (Taxmann's)
- V.S. Dubey – Taxman
- CA Rajat Mohan – Illustrated Guide to Goods and Services

B.A.LL.B VIII SEMESTER

CRIMINAL LAW GROUP

CORPORATE & WHITE-COLLAR CRIME (H3)

COURSE OUTLINE

Crime & Criminology - White Collar Crime

UNIT-1

Definitions and Foundational Principles

- Definitions and Principles
  A. Definitions of White-Collar Crime, white-collar criminals.
  B. Individual Responsibility
  Mens Rea/Actus Reus,
  Principles of Corporate Liability
  E. from Individual Conduct to Corporate Responsibility Corporation, corporate structures as a way of limiting liability, Principles of Corporate Responsibility, Conspiracy. Principles of Individual Liability
  F. From Corporate Conduct to Individual Responsibility Individual Liability for Corporate/Collective Actions Willful blindness.

UNIT-2

Offenses

E. Mail and Wire Fraud
F. Elements and liability issues
G. Money Laundering
H. Perjury, Obstruction, False Statements

UNIT-3

Organized Crime

F. Nature, meaning and forms
G. Criminal syndicates
H. Organized crimes: Regional and international linkages
I. Problems of identification, investigation and prosecution
J. Prevention and control strategies.

UNIT-4

Cyber Crime

E. Copyright violation of software.
F. Nature, meaning, definition, forms and etiology
G. Internet frauds
H. Prevention, detection and prosecution of cybercriminals.

UNIT-5
Punishment

5. Concept of Punishment
6. Types of Punishment
7. Theories of Punishment
8. Punishment for White Collar Crime under different statute

Suggested Reading:

- S.P. Singh, Socio- Economic Offences (1st Ed., 2005, Reprint 2015)
- Ahmed Siddiqui, Criminology: Problems and Perspectives (4th Ed., 1997)
- Seth and Capoor, Prevention of Corruption Act with a treatise on Anti- Corruption Laws (3rd Ed., 2000)
- C. Mehanathan, Law on Prevention of Money Laundering in India (2014)
- N.V Paranjape, Criminology, Penology with Victimology, 16th Ed., 2014, Central Law Publications.

B.A.LL.B VIII SEMESTER

POLICE LAW AND ADMINISTRATION (H4)

Objectives:
The area of police science for long has not been touched nor has been discussed. The concept of police and policing differs and the course focuses on the study of the historical development of police law in India, its hierarchical structure, the problems associated with police officers and the present position of police officers in India.

Unit –1
Introduction

A. Conceptualising Police and Policing & Theories of Policing
B. Traditional v. Modern Police: An Analysis
C. Police across Cultures – A Historical Study
   - U.K. – 17th Century to Present
   - U.S.A. – Colonial Period to Present
   - India – Colonial Rule to Present

Unit –2
Police Organisations

A. Hierarchical Division of Labour
B. Functions of the Police
C. Police Patrol Operations
D. Police Training

Unit –3
Police Culture: Issues in Concern

A. Police Role
B. Police Discretion
C. Police Stress and Hazards
D. Police Corruption

Unit-4
Policing and Legal Issues

A. Police and the Law
B. Police and the Criminal Justice System
C. Police and Investigation
D. Police and Terrorism

Unit –5
Contemporary Issues in Police and Policing

A. Community Policing
B. Restorative Policing
C. Police and Minority Relationships
D. Global Policing and Interpol

Suggested Readings:

Textbooks:

1. Paranjapayee, N.V. – Criminology and Penology along with Victimology
2. Siddique, A. – Criminology, Penology and Victimology
3. Giddens – Sociology
4. Magurie and Morgan – The Oxford Handbook of Criminology, Oxford University Press
5. Swamy, N. M. – Criminology and Criminal Justice System
6. Dogra, S. K. – Criminal Justice Administration in India
7. Deb, R. – Police Investigation – A Review
8. Veerendra Mishra – Community Policing: Misnomer or Fact?
9. Rowe, Michael – Introduction to Policing
10. P. J. Alexander – Policing in New Millennium

Articles:

1. Mitra, A. – Traditional v. Modern Police: Are they Congruent?
2. Mitra, A. – Job Stress in Police Organisations
3. Mitra, A. – Police Public Participation in North East India

Note: Although the paper is a Theory paper, but 20 marks are reserved for Police Station Visit and a Preparation of the Project Report after the Visit. This will be a part of their Internal Examination other than the Mid Term and End term Examination and Regular Class Tests as the faculty may take from time to time to review the progress of the student.

B.A.LL.B VIII SEMESTER

CONSTITUTIONAL LAW GROUP

ELECTION LAW (H3)

UNIT-1

Meaning and Concept of Election and Election Dispute

A. Challenge to Election: Whom and How to Made
B. Forum for filing Election Petition
C. Parties to Election Petition
D. Contents of Election Petition
E. Grounds of Challenge to Election
F. Trial of Election Petition
G. Recriminatory Petition
H. Withdrawal, Abetment and Appeal
I. Election to President and Vice President
J. Composition and Powers of Election Commission (Part XV-Article 324-329 of the
K. Constitution of India)

UNIT-2

Qualification and Disqualification of Candidates

A. Meaning and Distinction Between Qualification and Disqualification
B. Qualifications and Disqualifications Provisions under Indian Constitution and the
C. Representation of Peoples' Act, 1951
D. Office of Profit
E. Government Contract
F. Disqualifications on Convictions under the Representation of Peoples' Act, 1951
G. Anti-Defection Law

UNIT-3

Nomination (Sections 30-39, s 100(1)(c), s100(1)(d) of the Representation of Peoples' Act, 1951

A. Meaning of Valid Nomination
B. Procedure for Filing of Nomination Security Deposits etc.
C. Grounds of Rejection of and Withdrawal of Nominations
D. Voter's Right to Know Antecedent of the Candidates
E. Recognition of Political Parties and Election Symbols

UNIT-4

Corrupt Practices

A. Meaning and Distinction between Corrupt Practices and Electoral Offences
B. Substantive Corrupt Practice: Bribery, Undue Influence, Character, Assassination of
C. Candidates, Appeal on the Grounds of Religion, Race, Caste, etc.

D. 106
E. Needs of Educational Qualification for Candidates
F. Criminalization of Politics
G. Election Expenses
H. Model Code of Conduct
I. Use of Government/Private Electronic Media and Social Media by Political Parties
J. Opinion and Exit Polls
K. Defacement of Public and Private Properties
L. Reservation for Women in Parliament and State Legislatures

Text Books:

1. V.S. Rama Devi & S.K. Mehendiratta, *Election Law, Practice and Procedure*, Butterworths Publishers, 2013
2. P.C. Jain & Kiran Jain, *Election Law and Practice*, Chawla Publishers, 2012

References:

1. P.M. Bakshi, *The Constitution of India*¸ Universal Publishing Company Ltd., 2014
2. The Representation of Peoples' Act, 1950 (Bare Act), Universal Publishing Company Ltd., 2014
3. The Representation of Peoples' Act, 1951(Bare Act), Universal Publishing Company Ltd., 2014
4. The Presidential and Vice-Presidential (Election) Act, 1952(Bare Act), Universal Publishing Company Ltd., 2014
5. The Registration of Elector Rules, 1960(Bare Act), Universal Publishing Company Ltd., 2014
6. The Conduct of Election Rules, 1961(Bare Act), Universal Publishing Company Ltd., 2014

B.A.LL.B VIII SEMESTER

SERVICE LAW (H4)

COURSE OUTLINE

TEACHING METHODOLOGY

Dialectic system of learning would provide better appreciation of the constitutional governance in India through class room debate and moot court exercise after the basic issues are identified by lecture and discussion. Research of issue based conflict of interest through court cases may be an added advantage.

As per the norms of the University for this Course there will be 6 classes per week. Clinical and tutorial form of learning should be followed. Teaching methodology will include Lectures-cum-discussion, Assignments, Projects and Presentations.

EVALUATION SCHEME

- Continuous Assessment- 40%
- Mid-Term- 20%
- End Term- 40%

UNIT-1
Preliminary Matters

A. Scope of the treatise
B. Constitutional Provisions
C. Historical Background
D. Dominance of Rules
   - Relationship governed rules etc.
   - Article 309 and other Sources of Rule Making
   - Administrative instructions

UNIT-2

Creation of Relationship

A. Recruitment
B. Process of Selection
C. Public Service Commission

D. Reservation
E. Appointment
F. Probationer
G. Temporary Appointment
H. Regularisation
I. Absorption
J. Re-Employment

UNIT-3
Incidents of Relationship

A. Lien
B. Remuneration Pay and Pension
C. Transfer
D. Seniority
E. Confidential Reports
F. Promotion
G. Deputation
H. Reversion
I. Reduction in Rank
J. Leave
K. Break in Service

UNIT-4
Disciplinary Control

A. Introductory Overview
B. Suspension
C. Disciplinary Proceedings
D. Natural Justice and Disciplinary Proceedings
E. Punishment in Disciplinary Proceedings
F. Corruption and Criminal Liability of Public Servants

UNIT-5
End of Relationship

A. General Overview
B. Termination of Permanent Employee For Reasons other than Misconduct
C. Termination of Service of Probationers Temporary Employees and Tenure Employees
D. Termination by way of Punishment for Misconduct
E. Compulsory / Premature Retirement
F. Superannuation
G. Voluntary Retirement
H. Resignation
I. Abolition of Post
J. Abandonment of Service
K. Judicial Review and Public Interest Litigation

Text Books:

- Pal, S. (2011). *Law Relating to Public Service.* Third Edition: LexisNexis.
- Pancholi, D. P. (2012). *Public Interest Litigation Legal Aid And Para Legal Services.* Neha Publishers & Distributors.

B.A.LL.B VIII SEMESTER

(INTELLECTUAL PROPERTY LAW GROUP)

PATENT DRAFTING AND SPECIFICATION WRITING
(H3)

Course Objectives-

The objectives of the course are to;

1. Develop a proper understanding of the basics of patent and patent drafting.
2. Give practical knowledge of patent drafting and specification writings.

COURSE OUTLINE

UNIT-1

Basic of the Patent of law

A. Evolution of the Patent System
B. Basis for Protection
C. Criteria of Patentability;
    a. Invention
    b. Novelty
    c. Utility
    d. Inventive step/ Non-obviousness;
1. Non-patentable Inventions

UNIT-2

Patent Drafting

A. Basic of patent specification drafting
B. Provisional specification & complete specification
C. Contents of the complete specification

UNIT-3

Claim/Claims writing

1. Defining claims
2. Techniques of claim writing

UNIT-4

Drafting speciation on specific field part-1

1. Basic Chemistry patent
2. Basic pharmaceutical patent

UNIT-5

Drafting speciation on specific field part-2

1. Basic Biotechnology patent
2. Basic computing and computational patent

Text Books and references

1. Cornish, W. R., *Intellectual Property* (London: Sweet & Maxwell, 1996);
2. Cornish, Llewelyn & Aplin, Intellectual Property (Sweet & Maxwell, 2013)
3. Bently and Sherman, *Intellectual Property Law* (OUP, latest edition (currently 2008)
4. Law Relating to Intellectual Property Rights by V. K. Ahuja (latest 2013)
5. Prabudh Ganguli, *Gearing up for Patents*
6. Kalyan C. Kanaknala,Arun K. Narasani & Others, *Indian Patent Law and Practice,* (New Delhi; Oxford University Press,2010)
7. Office of the Controller General of Patents, Designs & Trade (CGPDTM) : Manual of Patent Office Practice and Procedure
8. WIPO : WIPO Patent Drafting Manual
9. https://www.icsi.edu/media/webmodules/publications/9.4%20Intellectual%20Property%20Rights.pdf

B.A.LL.B VIII SEMESTER

LAW RELATING TO DESIGN AND GEOGRAPHYCAL INDICATION
(H4)

The objectives of the course are to;

3. Develop a proper understanding of the student with the basic concept of law relating to the design and layout of integrated circuits
4. Make aware with the international and national treaties and laws dealing with them.
5. Develop critical understanding of the subject matters.
6. Make students understand when infringement takes place in relating to the above subject matter and what are remedies and defenses available in case of infringement.

COURSE OUTLINE

UNIT-1
Meaning, kinds and evolution of Trademarks Law

A. Historical evolution of Design law
B. International treaties and conventions dealing with Design law
C. Definition of design - Copyright in Design (duration)
D. Need for protection of industrial designs

UNIT-2
Conditions for Registration and procedure for registration of Design

A. Criteria for protection
B. Subject matter of protection
C. Procedure for obtaining design protection
D. Registration of design for articles

UNIT-3
International Registration and Effect of Registration

A. International Registration through Hague System
B. Rights in registered design
C. transfer of rights
D. Duration and renewal

UNIT-4

Infringement and remedies

A. Piracy or Infringement of copyright in Design
B. Cancellation of Design
C. Remedies

UNIT-5

The Semiconductor and Integrated Circuits layout

A. The Semiconductor Integrated Circuits Layout
B. Requirements and procedure for registration
C. Duration and effect of registration
D. Assignment and transmission

Text Books and Reference Materials

1. Ashwani Kumar Bansal, Design Law, Universal Law Publishing Company, 2012.
2. B L Wadehra : Law Relating to Patents, Trademarks, Copyright, Designs and Geographical Indications.
3. G.V.G Krishnamurthy : The Law of Trademarks, Copyright, Patents and Design.
4. Office of the Controller General of Patents, Designs & Trade (CGPDTM) : Manual of Designs Practice and Procedure

CURRICULUM AND SYLLABI

(9th Semester)

B.A.LL.B.
(Integrated Law degree course)

SCHOOL OF LAW

RAFFLES
UNIVERSITY

Japanese Zone, National Highway 48 Neemrana, Rajasthan 301020

www.rafflesuniversity.edu.in

LABOUR & INDUSTRIAL LAWS- II

Course Objectives:

This course has the following objectives

1. To provide provisions for equitable distribution of profits and benefits emerging from industry.
2. To safeguard workers' rights, promote trade union activities and make employment more secure.
3. To discuss the maternity and medical benefits
4. To protect workers' rights, ensure safe and healthy working conditions, promote fair wages, and prevent exploitation

Course Outcomes:

The students shall be able to:

1. Understand the basic concept of different labour Act
2. Resolve the labour welfare problems and Students will learn the laws relating to Industrial Relations.
3. Know the Social Security, private sector wages problems etc.
4. Identify the working conditions and also learn the enquiry procedural and industrial discipline.

Unit-I Credit 6
Workmen's Compensation Act, 1923 (Hours 60)

A. Conceptual framework of Social Security-Evolution and concept of Social Security, Scheme of Social Security, Workmen's Compensation Act, 1923, Aims & Object, Liability of Employer,

B. Notional Extension of Defense, Determination of Amount of Compensation, Compensation when due-Penalty for default, Contracting Out (Section.17), Appointment & Powers of Commissioner (Section.19-31)

Unit-II
Maternity Benefit Act, 1961 (Section 3-18)

A. Aims & Object, Definition, Restriction on employment,

B. Right to Maternity Benefit, Medical Bonus,

C. Leave Dismissal during Pregnancy (Section 10-16), forfeiture of Maternity Benefit, Leave for Miscarriage, Penalty for contravention of Act of Employer, Cognizance of offences.

Unit-III
The Payment of Gratuity Act, 1972

A. The Payment of Gratuity Act, 1972, Aims and Objects of Act, Definition, Controlling Authority,
B. Payment of Gratuity, Recovery of Gratuity, Determination of the amount of Gratuity
C. Conceptual frame work of Social Security-Evolution and concept of Social Security, Scheme of Social Security.

Unit-IV
The Code of on Wages 2019

Minimum Wages

A. Payment of Minimum rate of Wages
B. Fixation of Minimum Wages
C. Components of Minimum Wages
D. Procedure for fixing & revising of Minimum Wages
E. Wages of employers who work for less than normal working day
F. Minimum time rate Wages for Piece work
G. Fixing hours of work for the working day
H. Wages for two or More classes of work
I. Fixing hours of work for normal working days
J. Wages for overtime work
K. Deductions which may be mode from Wages fines

Unit-V
The Payment of Bonus

A. Eligibility for bonus, etc.
B. Disqualification for bonus
C. Payment of bonus out of available surplus
D. Set on & Set-off of available surplus
E. Adjustment of Customary or interim bonus
F. Time limit for payment of bonus
G. Non-Applicability of this chapter

Suggested Readings

1. A. J. Fonseca: Wage Determination and Organised Labours in India, Oxford University Press, New York.
2. Dr. S.R. Myneni: Labour Laws, Asia Law House, Hyderabad.

3. A. J. Fonseca: *Wage Determination and Organised Labours in India*, Oxford University Press, New York.
4. S. N. Misra: Labour & Industrial Law, Central Law Publication, Allahabad.
5. 15. S. D. Punekar: Labour Welfare, Trade Unionism and Industrial Relations, Himalaya Publishing House, Bombay.

EQUITY AND TRUST

Course Objectives:

This course has the following objectives:

1. To discuss the general concept of trust and equity.
2. There are also instances where even in the absence of specific trust, the law has to protect the beneficial interests of persons on equitable considerations.
3. Trusts may also be created for public purposes of charitable and religious nature.
4. The existing laws in respect of trusts, equitable and fiduciary relations connected with property are to be taught in detail.
5. Students should also be conscientious of the emerging public trust doctrine of common property resources.

Course Outcomes

The students shall be able to:

1. Understand the development and concept of equity.
2. Know the legal maxims and equitable rights
3. Analyses the provisions related to Duties of Trustees & Rights of Trustees, Powers of trustees
4. Apply critically the various laws regarding Religious Endowments

Unit I — Credit 6
General Concept of Equity — (Hours 60)

A. Origin, Growth & Concept of Equity
B. Definition, nature and scope of equity
C. Equity as a branch of law
D. Equity under the Indian Legal System
E. Classification of Equity Jurisdiction.

Unit II
Equitable Rights and Maxims

A. Nature of Equitable Rights and Interests
B. Difference between Legal and Equitable Estate “Choose in Action and" Choose in Possession"
C. Maxims of Equity.
    a) Equity will not suffer a wrong to be without a remedy
    b) Equity follows the Law
    c) He who seeks Equity must do Equity
    d) He who comes to Equity must come with clean hands
    e) Delay defeats equities
    f) Equity acts in personam
    g) Where the Equities are equal, the first in time shall prevail

h) Where there is equal Equity, the Law shall prevail

Unit III
General View of Trust

A. Introduction, Origin, Development and Definition of Trust.
B. Creation of Trust
C. Benefits of Trust
D. Charitable & Religious Trust

Unit IV
Trustee: Duties of Trustees & Rights of Trustees, Powers of trustees

A. Rights and Power, duties and Liability of Trustees
B. Disabilities of the Trustees
C. Rights and Liabilities of the beneficiary

Unit V
Religious Endowments

A. Definition and nature of religious endowments
B. Essentials of Valid Endowments
C. Object and Scope of Religious Endowment
D. Maths
a) Shebaitship,
b) Power and duties of shebait.
E. Wakf
a) Definition
b) Object of Wakf
c) Essentials of Wakf

Suggested Readings:

1) Equity by Hanbury
2) Trust and Trustees: Cases and Materials, R.H. Maudsley and E.H. Burn
3) Aqil Ahmad, Equity Trust and Fiduciary Relations
4) The Indian Trust Act, 1982
5) The Religious Endowments Act, 1863
6) The Wakf Act, 1995

ALTERNATIVE DISPUTE RESOLUTION

INTRODUCTION TO THE COURSE

The resolution of disputes forms a large part of the justice delivery system. India has a long tradition of resolving disputes through Alternative Dispute Resolution methods viz Nya Panchayat System. At present, there are about 30 million cases pending in the Indian Courts.

A major step to expedite the judicial process in this direction was initiated by the Central Government by the enactment of the Arbitration and Conciliation Act, 1996 which made significant changes in the law of Arbitration. Institutions such as Lok Adalats have been given statutory recognition by the Legal Services Authorities Act, 1987. The Code of Civil Procedure, 1908 has been amended by incorporating Section 89 and Order X, Rules 1A, 1B, and 1C, making it obligatory on the courts to explore the settlement of disputes by ADR Methods in pending suits, which will create more demand for trained Arbitrators, conciliators and Mediators, to cater to the needs of more than 10,000 courts spread all over the country.

The need of the hour is to create an awareness of ADR Methods among the people and to prepare a large pool of trained professionals in the field of ADR who will be able to practice these ADR Methods to resolve disputes.

COURSE OBJECTIVE:

This course has the following objectives:

1. To discuss the strengths and weakness of various dispute resolution methods.
2. Explain the primary dispute resolution process and functions
3. To discuss and describe the ADR movement.
4. To apply the maxims of equity for providing practical justice by understanding the real spirit of equity.

COURSE OUTCOMES:

The students shall be able to:

1. Understand the fundamental principles of equity, justice and good conscience
2. Know the real spirit of the equity which was prevailing in Great Britain. The application of these principles will analyse for providing real justice in India.
3. Apply the provisions of equity with reference to constitutional law in India.
4. Analyse the principles and maxims of equity for the application of the spirit of justice.

COURSE OUTLINE

UNIT-I Credit 6

Alternative Dispute Resolution (ADR) (Hours 60)

A. ADR – Concept and Meaning Objectives of Arbitration Historical Developments Differences of Arbitration with other methods, Relevance in the Present Scenario

B. Conciliation – Appointment of Conciliator – Rights and Duties of Conciliator – Interaction between conciliator and parties – Communication – Confidentiality – Legal Counseling – Different facets of legal counselling – Duties and responsibilities of Counselor

C. Mediation – Objectives of Mediation – Models and Approaches – Stages of Mediation –Mandate of the Mediator – Role of the Mediator – Duties and Responsibilities of the Mediator

D. Negotiation – Theories of Negotiation–Different strategies of Negotiation – Models/Types of Negotiation – Duties and Responsibilities of Negotiator.

E. Dispute Resolution through Lok Adalat – Different types of Lok Adalat – Nyaya Panchyats and Grama Nyayalayas – Important provisions of Legal Services Authorities Act, 1987 – Fast Track Arbitration – Section 89 of Civil Procedure Code, 1908.

F. Criminal Justice System–Victim vis-à-vis Offender mediation and reparation– Offences–Plea Bargaining–Charge Bargaining–Sentence Bargaining–Fast Track Criminal Courts

UNIT-II

Indian Law on Alternative Dispute Resolution

A. Arbitration – Types of Arbitration – Adjudicatory, Non – adjudicatory, Institutional and Ad-how mandatory Arbitration.

B. Arbitration and Conciliation Act, 1996

C. Arbitral Tribunals–Appointment of Arbitrators–Eligibility and qualifications of Arbitrators–Powers and functions–Competency and Jurisdiction of Arbitrators.

D. Arbitral proceedings–Procedural justice for parties–Rules of procedure and Evidence, Statement of Claims and Defence; Hearings and Written proceedings–Interim Measures–Settlement Awards.

E. Determination of Applicable Law–Choice of Law–Proper law of Contract and Conflict of law principles

F. Awards–Kinds of Awards–Rules of Guidance–Form and contents of awards–Correction and

G. Interpretation of award–Additional award–Setting aside of Awards–Appealable Orders–Enforcement of Awards–Legality and Fairness of Arbitral Awards–Reasoned Awards.

H. Evolution of Conciliation as a mode of Dispute Settlement–Role of Conciliator–Conciliation proceedings–Scope and Nature of award by the Conciliator.

I. Two Tier Arbitration Procedure under Indian Laws

J. Scope and Extent of Judicial Intervention in Arbitration Process–Role of Courts-Setting Aside Arbitration Awards on Grounds of Public Policy, Fraud, and Partiality–Recent Trends and developments.

UNIT-III

International Commercial Arbitration

A. Meaning and kinds of International Commercial Arbitration

B. Development of International Arbitration – International Non-Commercial Arbitration and International Commercial Arbitration –International Commercial Arbitration Institutions viz. ICC, CiArb, DAC, ICA etc. – Rules of these Major International Arbitral Institutions- Global Application of International Arbitration Rules.

C. Constitution of Arbitral Tribunal

D. Appointment of Arbitrators–Powers, Duties and Jurisdiction of Arbitral Tribunal–Code of Conduct of Arbitrators–Rules of Arbitration Proceedings–Principle of Party Autonomy.

E. Nationality of Parties–Applicable Law–The intervention of domestic courts in International Commercial Arbitration–Interim remedies by Courts–Conflict of Law Principles as applicable to International Arbitrations–Sovereign Immunity and International Commercial Arbitration

F. UNCITRAL Model Law, 1985–Uniformity in International Commercial Arbitration Laws in various countries–Enforcement of Foreign Arbitral Awards–State practice

with respect to enforcement of foreign arbitral awards–Geneva Convention, 1927 and New York Convention, 1958.

G. International Arbitrations under the Arbitration and Conciliation Act, 1996–Comparative analysis of ADR system in selected Countries.

H. Dispute Resolution under GATT–WTO Dispute Settlement Mechanism–ICSID Convention.

UNIT-IV

Conciliation, Mediation & Negotiations

A. Conciliation: Introduction Overview, Purposes and Uses.

B. Mediation: Introduction Overview, Purposes and Uses.

C. Negotiations: Introduction Overview, Purposes and Uses

UNIT-V

Practical Application of ADR Methods in Different Fields and Areas

A. Labour and Industrial Disputes

B. Commercial and Financial Disputes

C. Family and Matrimonial Disputes

D. Consumer Disputes

E. Accident Claims

(DRAFTING, PLEADING AND CONVEYANCING)

INTRODUCTION TO THE COURSE

By the art of legal drafting (also commonly called the legal composition) we mean the art of composing or writing all documents which are either expressly intended to be, or which frequently become the subject of legal interpretation. It is concerned chiefly, therefore, although not exclusively, with the documents which declare or regulate rights. This at once distinguishes the art of legal composition from the art of ordinary composition or literature, which deals not with rights but with thoughts or facts. Of course, the bases of literary composition and legal composition are all the same, grammar and logic. The latter, perhaps, more strictly than the former kind of composition is bound by the rules of the grammar and logician but we do not intend, except incidentally, to touch on the rules of grammar or logic. It is a composition as legal - as dealing with or affecting rights - which we have in view. This differs so much from a literary composition that, though they have a common basis, same rules do not apply to both. The style of good legal composition (for it has a style of its own) is free from all color, from all emotion, and from all rhetoric. It is impersonal as if the voice, not of any man, but of the law, dealing with the necessary facts. It disdains emphasis and all other artifices. It uses no metaphor or figure of speech. It is always consistent and never contradicts itself. It never hesitates or doubts. It says in the plainest language, with the simplest, fewest and fittest words, precisely what it means. These are qualities that might be used to advantage more frequently than is common in literature, and unfortunately, they are not to be found in many legal compositions, but they are essential to good legal composition and not essential to literary composition.

Pleadings are a statement in writing drawn up and filed by each party to a case, stating that his contentions will be at the trial and giving all such details as his opponent needs to know in order to prepare his case in answer. The function of pleadings is not simply for the benefit of the parties, but also and perhaps primarily for the assistance of the court by defining with precision the area beyond which, without the leave of the court and consequential amendment of the pleadings, the conflict must not be allowed to extend. The purpose of rules regarding pleadings is to advance justice and to prevent a multiplicity of proceedings.

Conveyancing is the process by which legal title to property is transferred. As a consequence, over time, conveyancing has become the description for the document affecting the such transfer. In many ways conveyancing is like Shakespeare's character, Autolycus in The Winter's Tale, 'a snapper-up of unconsidered trifles. Like this amiable rogue, conveyancing takes from here, there, and everywhere, from within the full gamut of the law. Conveyancing rests and has been built upon the three foundations of land law, contract law, and equity and trusts. Because of this, a confident appreciation of land law is crucial for success in conveyancing. You will also need to have a prior knowledge and understanding of the details concerning the formation of contracts, the formalities of written contracts, misrepresentation and remedies for breach of contract. A detailed understanding of the influence of equity as well as trust will always be a prerequisite for a successful conveyancer.

COURSE OBJECTIVE

This course has the following objectives:

1. To present substantive law under the Indian context of pleading.
2. To draft documents relating to various deeds.
3. To assess and analyse the rules of pleading
4. The course is framed to help the students for understanding the basics of practical aspects of pleading

COURSE OUTCOMES:

The students shall be able to:

1. Understand the basics of pleadings and conveyancing.
2. Apply the practical law in drafting the various kinds of deeds.
3. Know the law pertaining to the rules of pleading.
4. Analyse affirmative actions in practice.

COURSE OUTLINE

UNIT-I — Credit 6
Pleadings — (Hours 60)

A. Meaning and Importance
B. Functions of Pleadings - Order 6 of CPC
C. Essentials of Pleading Particulars of Pleading
D. Striking out pleadings- Signing and verification
E. Amendment in Pleadings
F. Applicability of Order 6 CPC in Other Proceedings.

Cases

1. Lakshmi Narayan Deo Vasti Temple vs. Narayan F. Marathy (1995) 2 Bom CR 610
2. Prabodh Verma vs. State of UP (1984) 4 SCC 251
3. Someswer vs. Tribhuban AIR 1934 PC 130

UNIT-II
Civil Pleadings - Substantive Aspects and Drafts

A. Plaint (Order 7 of CPC)
B. Written Statement (Order 8 of CPC)
C. Notice under Sec.80 of CPC
D. Injunction Application
E. Interlocutory Application
F. Revision Petition
G. Review Petition
H. Appeals

Cases

1. Phula Devi vs. Mangtu Maharaj AIR 1969 Pat 284
2. Jagjiban Das vs. Gunan Bhai AIR 1967 Guj 1
3. N.Naidu vs. K.Naidu AIR 1969 Mad 329

UNIT-III

Criminal Pleadings - Substantive Aspects and Drafts

A. Meaning - Criminal Pleadings in India
B. Complaint (Sec.2d of Cr PC)
C. Application for Bail (Sec.436, Sec. 437 of Cr PC)
D. Anticipatory Bail (Sec.438 of Cr PC)
E. Application U/S. 125 of the Code of Criminal Procedure, 1973

UNIT-IV

Other important Pleadings - Substantive Aspects and Model Forms

A. Complaints under Sec.138 of the Negotiable Instruments Act
B. Petition for Dissolution of Marriage under the Hindu Marriage Act
C. Suit for Permanent Injunction
D. Application for Temporary Injunction
E. Writ Petition under Article 226 of the Constitution of India

UNIT-V

Conveyancing

A. Conveyancing - Meaning and Definition
B. Sale Deed
C. Mortgage Deed
D. Lease Deed
E. Gift Deed
F. Partnership Deed

Suggested Readings

1. DK Gupta, *A Guide to Conveyancing, Drafting and Deeds*, Vol. 2- 8, 2nd Edn - 2005, Kamal Law House, Kolkata.
2. NS Bindra, *Conveyancing,* Vol.2-7, Delhi Law House, Delhi, 2008
3. GF Harwood, *Odgers on Pleadings and Practice, 20th* Edn- 1971, Universal Law Publishing Co. Pvt Ltd., Delhi.
4. Rodney D. Ryder, *Corporate and Commercial Agreements Drafting Guidelines, Forms and Precedents,* Universal Law Publishers, New Delhi 2005.

HONOURS PAPER

CONSTITUTIONAL LAW GROUP

AFFIRMATIVE ACTION AND DISCRIMINATIVE JUSTICE

TEACHING METHODOLOGY

A dialectic system of learning would provide a better appreciation of constitutional governance in India through classroom debate and moot court exercises after the basic issues are identified by lecture and discussion. Research of issue-based conflict of interest through court cases may be an added advantage.

As per the norms of the University for this Course, there will be 6 classes per week. Clinical and tutorial forms of learning should be followed. The teaching methodology will include Lectures-cum-discussion, Assignments, Projects and Presentations.

COURSE OBJECTIVES:

This course has the following objectives:

1. To teach the historical concept of affirmative action and discriminative justice.
2. Classroom discussion about the international position of affirmative action.
3. To learn about real justice in relation to the privileged class of society
4. To compare the judgment of the competent court pertaining to affirmative action for the betterment of society

COURSE OUTCOMES:

The students shall be able to:

1. Understand the applications of real justice in the development of society
2. Know the principles of protective discrimination for the upliftment of the privileged class.
3. Apply the principles of affirmative action and principles of equity.
4. Examine the reservation policy as existing in the global legal framework.

UNIT-I **Credit 4**

Historical Aspect **(Hours 40)**

A. Introduction
B. Origin of Affirmative Action
C. Need for Affirmative Action
D. Reverse Discrimination

UNIT-II
International Position Regarding Affirmative Action

A. Position in the USA
B. Comparison between caste in India and Race in the USA
C. Position in the UK
D. Position in Canada

UNIT-III
National Position

A. Position of OBC, SC, and ST in India
B. Caste as the basis for affirmative action in India
C. Gender as a basis for affirmative action in India
D. Minority as a basis for affirmative action in India
E. Constitution of India
F. Article 14, Article 15, Article 16, Article 29 and Article 41
G. Kalekar Commission
H. Mandal Commission
I. Rangnath Commission
J. Sachar Committee
K. Reasonable classification

UNIT-IV
Affirmative Action in Practice

A. Reservation in promotion
B. Implementation of affirmative action
C. Role played by Judiciary
D. Strengths and Weaknesses of the Affirmative Action Program in India

Reference Books

P.M. Bakshi, Constitution of India, Universal
M.P. Jain Indian Constitutional Law, Wadhwa
Granville Austin The Constitution of India, Oxford
Basu Constitutional Law of India, Prentice Hall of India 200

GENDER JUSTICE AND FEMINIST JURISPRUDENCE

COURSE OUTLINE:

This subject will help the learners to gain an understanding of the issues, legal policy framework and action plans that focus on the empowerment of vulnerable genders including Female and Transgender Persons. The issues that have a strong bearing over these section's empowerment, protection and eradication of gender-based inequalities would form the base of this subject.

COURSE OBJECTIVES:

This course has the following objectives:

1. To describe the gender-sensitive legal knowledge and skills among students.
2. To study the domestic and international standards of gender equality jurisprudence.
3. To deals with the history and development of the gender justice system in India.
4. To provide various legal provisions in regard to gender equality and feminism.

COURSE OUTCOMES:

The students shall be able to:

1. Understand the basic concept and law related to the gender justice system.
2. Know the controversial issues, theories and texts with a critical lens and an open mind.
3. Develop the ability to research and write substantive analytical research papers
4. Apply the professional activities in the national and international law in the Indian legal system

UNIT I **Credit 4**

HISTORICAL EVOLUTION **(Hours 40)**

A. Gender Justice and Feminism- Meaning, nature and Scope
B. Gender Theories- Conflict, Integrationists and Hermeneutic approaches
C. Feminist Theories- Liberal Feminism, Cultural Feminism, Radical Feminism and Post-Modern Feminism
D. Notions of Patriarchy, Sex and Gender, Gender Discrimination, homophobia, labour division- Global and Indian Perspectives
E. Feminist Justice Movement in Europe, USA and India- Status, impact and significance

UNIT II

GENDER JUSTICE AND HUMAN RIGHTS:

A. Historical critique of gender discrimination- Global and Indian Views
B. UNO and Gender Equality- UN Charter, UDHR, UN Convention on Traffic in Women and Children 1949, UN Sub-Commission on the Status of Women, ILO and Gender Justice, ICCPR 1966, ICESCR 1966, CEDAW 1979

C. EU Human Rights Law and Gender Discrimination
D. Sexual Harassment and discrimination at Workplace, Domestic Violence, Sex Traffic and Prostitution, Forced Marriage, Sexual Reproductive Rights, Surrogacy, Marital Rape and Consent
E. Feminist Perspective on Global Environmental Issues and Judicial Response

UNIT III

FEMINIST JURISPRUDENCE IN INDIA:

A. Gender Equality under Indian Constitution- Preamble, Fundamental Rights and Directive Principles of State Policy
B. Critique of selective Offences provided under IPC 1860- Kidnapping, Abduction, Rape-Gang Rape-Custodial and Marital Rape, Stalking, Acid Attack and Adultery

UNIT IV

FEMINIST JURISPRUDENCE IN INDIA

A. Women's Labour Rights and Healthy Working Conditions
B. Gender and Marital Rights in the Family- A Critique of the Deviations in Hindu, Muslim and Christian Personal Laws
C. Adoption, Guardianship and Maintenance Issues

UNIT V

GENDER JUSTICE FOR LGBTQIA PERSONS:

A. Notions of LGBTQIA, Transgender, Homosexuality
B. Historical Analysis of the Human Rights Movements for LGBTQIA persons- Indian and Global Scenario
C. Status of Legal Protection
D. Same-Sex Marriage Unions and the Family
E. Problems faced by LGBTQIA community-Socio-economic and political exclusion, hate crimes, discrimination and violence
F. How to achieve gender equality-gender and sustainable development goal (2015-2030).

RECOMMENDED READINGS:

- Patricia Smith, Feminist Jurisprudence
- Gender Justice & Feminist Jurisprudence by Dr. Sheetal Kanwal, Amar Law Publication
- Bina Agrawal, Introduction of the Structures of Patriarchy
- Kamla Bhasin & Nighat Said Khan, Some Question on Feminism and their relevance in South Asia
- Maria Mies, Patriarchy and Accumulation on a World Scale
- S K Kuba, Status of Women in International Law
- Alison M Jaggar, Feminst Thought and Human Nature (Sussex Harvester Press)

- Ratna Kapoor & Brenda Cossman, Sub-Serve Sites- Feminist Engagements with Law in India (Sage Publications New Delhi 1992)
- Jenifer Perce, Gender Trials: Emotional Lives in Contemporary Law Firms, University of California Press 1996
- D Kelly Weisberg, Feminist Legal Theory: Foundations, Temple University Press 1993
- Annie M O Griffiths, In the Shadow of Marriage: Gender and Justice in an African Community, University of Chicago Press 1998
- Adrien Wing, Critical Race Feminism: A Reader, 2nd Edition, NYU Press 2003
- Vandana Shiva, Staying Alive: Women, Ecology and Development, London Zed Books 1989
- Nomita Agrawal, Women and Law in India, New Century Publications Delhi 2002
- Rashmi Agrawal and BVLN Rao, Gender Issues- A Road Map to Empowerment, Shipra Publications, New Delhi 2004
- Kamala Bhasin, Understanding Gender, New Delhi 2000
- Maitrayee Chaudhary (ed.), Feminism in India, New Delhi 2004
- Anjani Kant, Women and the Law, APH Publishing Corporation New Delhi 1997
- Cook, Rebecca J., ed. Human Right of Women: National and International Perspectives, University of Pennsylvania Press 2012
- Grabe Shelly, ed., Women's Human Rights: A Socio-Psychological Perspective on Resistance, Liberation and Justice, Oxford University Press, 2017
- Ross S. D., Women's Human Rights: The international and comparative law casebook, University of Pennsylvania Press 2008

OPTIONAL READINGS:

- Charlesworth H (2005), Not Waving but Drowning: Gender Mainstreaming and Human Rights in United Nations, Harvard Human Rights Journal, 18.
- MacKinnon, C.A., (1991), Reflections on Sex Equality under Law, Yale Law Journal, 100 (5), 1281-1328
- Muravyeva, M (2014), Traditional Values and Modern Families: Legal Understanding of Tradition and Modernity in Contemporary Russia, Journal of Social Policy Research, 124
- Universal Declaration of Human Rights 1948
- Convention on the Elimination of All Forms of Discrimination against Women, 1979

CRIMINAL LAW GROUP

INTERNATIONAL CRIMINAL LAW)

Course Objectives:

This course has the following objectives:

1. To Widespread violations of International Humanitarian Law as it becomes a practice in the contemporary world.
2. To teach crime and its conceptualised aspect as applicable in international criminal law.
3. Lectures on war crime and preventive mechanism
4. To disseminate knowledge about the procedure and practice of international tribunals and courts.

COURSE OUTCOMES:

The students shall be able to:

1. Understand the principles of International Criminal law for its application.
2. Know the legal provisions of the International Criminal courts.
3. Examine the procedure and practice of remedial forums related to International Criminal law.
4. Analyse the contemporary issues on the International Criminal law regime.

Unit – I Credit 4

Introduction (Hours 40)

A. Historical Background and Development of International Criminal Law
B. Individual Criminal Responsibility – Historical Development
   - Treaty of Versailles
   - Nuremberg and Tokyo Trials
   - Genocide Convention, 1948
   - Geneva Convention, 1949
C. State Sovereignty and International Criminal Law

Unit – II
Crimes and Elements of Crimes

D. General Principles of International Criminal Law
E. Elements of Crimes
F. Genocide – Article 6 of ICC Statute – Prosecutor v. Akayesu (ICTR 1998)
G. War Crimes – Article 7 of ICC Statute
H. Crimes Against Humanity

Unit – III
Courts and Tribunals

A. International Criminal Court – Rome Statute
B. International Criminal Tribunal for Yugoslavia (ICTY)
C. International Criminal Tribunal for Rawanda (ICTR)

Unit – IV
Certain Specialised Tribunals

A. The Iraqi Special Tribunal
B. Special Court of Sierra Leone
C. Extraordinary Court of Cambodia

Unit – V
Contemporary Issues

A. Response of South Asian Countries to ICC
B. Indian Perspectives of ICC
C. The Future of ICL

Suggested Readings:

1. Cryer, Robert, Friman, Hakan, Robinson, Darryl and Wilmshurst, Elizabeth; *An Introduction to International Criminal Law and Procedure;* Oxford University Press
2. Cassese, A. International Criminal Law, Oxford University Press
3. Schabas, W. An Introduction to International Criminal Court, Cambridge University Press

COMPARATIVE CRIMINAL LAW

Course Objectives:

This course has the following objectives:

1. To teach the introductory principles of comparative criminal law.
2. Lectures on pre-trial procedures under the various criminal legal system.
3. Trial procedure, the role of judges, prosecutor and role of defence attorney under the criminal administrative justice
4. To interpret the provisions of remedy as available under the various provisions of criminal law.

COURSE OUTCOMES:

The students shall be able to:

1. Understand the comparative legal provisions of crime
2. Know about the trial procedure under the legal regime of various criminal systems.
3. Analyse and assess the legal mechanism related to the remedy available under the comparative criminal system
4. Examine the reformative legal techniques under the criminal law.

Course Outline

Unit-I **Credit 4**

Introduction **(Hours 40)**

A. Organization of courts and prosecuting Agencies
B. Hierarchy of criminal courts and their jurisdiction, organization of prosecuting agencies, prosecution and the policy.

Unit II

Pre-Trial Procedure

A. Arrest and questioning of the accused
B. Rights of the accused
C. Evidential value of statements or articles collected by police.
D. Role of the prosecutor and judicial officer in investigation.

Unit III

Trial Procedure

A. The accusatory system of trial and the inquisitorial system
B. Role of the judge, prosecutor and defence attorney in the trial main features of session's trial, weren't
C. Trial and summons trial
D. Summary trial and plea bargaining.

Unit-IV
Appeals, References and revisions

A. Appeals: Reference and revisions.
B. Provision as to Bails and Bail Bonds

Unit-V
Substantive Comparative Criminal Law

A. Summary of the substantive criminal law of Japam
B. Application of substantive portion of criminal law of USA
C. Summary of substantive portion of criminal law in UK

Note:- The Comparative study will be with the Criminal Law of Japan, U.S.A. & U.K. with reference to the above-mentioned four Modules.

IPR GROUP

PATENT AND PATENTABILITY OF BIOTECHNOLOGICAL INVENTION

Course Objectives

The objectives of the course are:

1. To develop an understanding of the basics of intellectual property law.
2. To give an overview of the domestic and international legal regimes dealing with intellectual property law.
3. To understand the current norms relating to bioethics and bio-safety in the context of patenting.
4. To understand the interplay between intellectual property and bioethics.

Course Outcomes:

The students shall be able to:

1. Understand the basics of intellectual property law.
2. Analyse the Legal System and solve the problem relating to intellectual property rights.
3. Know the registration process of patents, copyright trademarks etc.
4. Context the cases relating to the IPR before the appropriate forum

Course Outline

UNIT-I **Credit 4**

Introduction **(Hours 40)**

A. Intellectual Property-Origin Development and Objectives,
B. Classification of Intellectual Property-Patents, Copyright, Trademark, Industrial Design, Geographical Indications, *sui-generis* rights (Protection of Plant Varieties and Traditional Knowledge),
C. Relevance of Intellectual Property Rights for Science and Technology

UNIT-II

International IP Law and Indian IPR Legislations

A. International Conventions relating to Intellectual Property;
B. General Agreement on Trade and Tariff (GATT);

C. Trade Related Aspects of Intellectual Property Rights (TRIPS);
D. Establishment of WIPO – Mission and Activities;
E. Indian Position on WTO Regime
F. Indian IPR legislations - National Intellectual Property Policy and Unfair Competition

UNIT-III
Patent and Patentability of Biotechnological Invention

A. Nature, Origin and Scope of Patents;
B. Essentials of Patents- Patentability Criterion-Discovery and Invention, Patentable Subject Matters; Novelty, Utility (Industrial Applicability), Non-Obviousness (Inventive Step), Product Patents vis-à-vis Process Patents;
C. Patentability of Biotechnology Inventions;
D. Patent Laws in Indian and International Perspective;
E. Indian Patent Act 1970 (Patent Amendment Acts-1999, 2002 and 2005)
F. -Patentable Inventions, Patent Application, Procedure, Patent Claims and Specification and Infringement of Patents
G. Patent Case study: Basmati Case, Neem Controversy, Turmeric Case

UNIT-IV
Bio-safety

A. Bio-safety: Definition and requirement;
B. Bio-safety in relation to human health, environment, transgenic research and applications; International Legal Instruments on Bio-safety-Cartagena Protocol on Bio-safety, Nagoya Protocol
C. Laws relating to Bio-safety in India: The Biological Diversity Act, 2002, Bio-safety procedures, rules and guidelines under Environment (Protection) Act 1986 and Rules 1989;
D. Bio-safety Regulation: Principles and Practices in Microbial and Biomedical Labs;
E. Guidelines for research involving DNA molecules;
F. Regulatory bodies at the National and International level

UNIT-V
Bio-ethics and Bio-piracy

A. Nature, Concept and Relevance of Bioethics;
B. Basic Principles of Bioethics;
C. Legal, Social and Economic Impacts of the Products and Techniques in Biotechnology;
D. Bioethics in Plants, Animals and Microbial Genetic Engineering;
E. Ethical issues in Healthcare;
F. Biopiracy and Bioethics: Application of IPR regime to Biological Resources and Biopiracy, Access to Biological Resources, Benefit Sharing and Informed Consent

Text & References

1. Cornish, W. R., *Intellectual Property* (Latest Edition)
2. *Intellectual Property Rights* by Paul Goldstein
3. *Intellectual Property Rights by* K. R. G. Nair, Ashok Kumar, K. R. G. Nair
4. Kilner, John, et.al, eds., *Cutting-Edge Bioethics*. Eerdmans 2002.
5. B.L. Wadera, *Patents, Trademarks, Copyright, Designs and Geographical Indications*
6. S. Ignacimuthu, *Bioethics*, Alpha Science International, Limited (2009)
7. Matthew Rimmer, *Intellectual Property* and Biotechnology: Biological Inventions (2008)
8. Arthur L. Caplan, Robert Arp, *Contemporary Issues in Bioethics* (2014)
9. Kshitij Kumar Singh, *Biotechnology and Intellectual Property Rights: Legal and Social Implications* Springer (India) (2014) (in press)
10. Refer to Periodicals, Industry directories, Articles and report in journals on the regulatory issues,
11. "Biotechnology" series by Rehm & Reed.
12. Nuffield Council on *Bioethics* (2002), *The Ethics of Patenting DNA*, A Discussion Paper, London: Nuffield Council on *Bioethics*
13. Kshitij Kumar Singh "Human Genome and Human Rights: An Overview", *Journal of Indian Law Institute (JILI),* Vol. 50 No.1 (Jan-Mar) 2008 pp. 67-80;

INTELLECTUAL PROPERTY RIGHTS & PHARMA INDUSTRY

Course Objectives

The objectives of the course are:

1. To develop an understanding of the nature, scope, and importance of the pharmaceutical industry in India
2. To give an overview of the domestic and international legal regimes dealing with intellectual property law, particularly pharmaceutical patenting.
3. To understand the role of intellectual property rights law in pharmaceutical research and development.
4. To understand the interplay between intellectual property and the right to health in particular access to essential medicine.

Course Outcomes:

The students shall be able to:

1. Understand the basic concept of the pharmaceutical industry in India.
2. Know the domestic and International legal regime in relation to IPR
3. Critically analyse the role of IPR law in pharmaceutical development in India.
4. Analyse the role of IPR and the right to health in particular access

Course Outline

UNIT-I **Credit 4**
Introduction **(Hours 40)**

A. Brief Introduction of Intellectual Property Rights;

B. Nature and Scope of Pharmaceutical Industry;

C. Pharmaceutical Industry in India: Background, Importance and Current Status;

D. IPRs and Pharmaceutical Industry;

E. The Role of Intellectual Property Rights in Pharmaceutical Research and Development

UNIT-II
Pharmaceutical Patents under International Patent Regime and India's Obligations to TRIPS

A. International Patent Regime: GATT, WTO and TRIPS, Doha Declaration;

B. Patentability of Pharmaceuticals under TRIIPS;

C. Patent Term Extension;

D. Mail Box and Exclusive Marketing Rights;

E. Generic Medicine and Grace Period;

F. TRIPS Plus-Free Trade Agreements;

G. India's Obligations to TRIPS;

H. Implications of TRIPS on the Indian Pharmaceutical Industry

UNIT-III
Patentability of Pharmaceuticals: A Comparative Study

A. Nature, Scope and Essentials of Patent;

B. Patentability of Chemical, Biotechnological and Pharmaceutical Inventions;

C. Patentability of Pharmaceuticals in the United States and United Kingdom;

D. Patentability of Pharmaceuticals under Indian Patent Act 1970;

a) Status of Pharmaceutical Patents Before 1995
b) Pre-Product Patent Regime (Grace Period: 1995-2005)
c) Product Patent Regime: Patentability Aspect of Innovations
d) Section 3(d) - Defining the Enhanced Therapeutic Efficacy of Pharmaceutical Products and Ever-greening-Novartis Case,

E. India's Position on Doctrine of Equivalents (DOE) and Examining its Link to Infringement

UNIT-IV
Implications of Pharmaceutical Patents on Access to Essential Medicines and Health

A. IP-Related Issues in Access to Essential Medicines;

B. Implications of Pharmaceutical Patents on Innovators;

C. The Doha Declaration on TRIPS and Public Health;

D. Negotiations on TRIPS Agreement and Public Health: From Seattle to Doha;

E. Trade Disputes Relating to Pharmaceutical Patents;

F. Role of Compulsory Licensing in Ensuring Access to Essential Medicine;

G. Compulsory Licensing Relating to Pharmaceuticals and Health

Text and References:

1) Sudip Chaudhari, *The WTO and India's Pharmaceutical Industry* (Oxford University Press, 2005)
2) Kenneth C. Shadlen, Samira Guennif et.al, Intellectual Property Pharmaceuticals and Public Health-Access to Drugs in Developing Countries (Cheltenham, Edward Elgar Publishing Ltd., 2011)
3) Subba Rao Chaganti, Pharmaceutical in India (New Delhi, Gitam Institute of Foreign Trade in Association with Excel Books Pvt. Ltd., 2005)
4) Jakkrit Kuanpoth, Patent Rights in Pharmaceuticals in Developing Countries-Major Challenges for the Future (Cheltenham, Edward Elgar Publishing Ltd, 2010)

5) Philip W. Grubb, Peter L. Thomsen et. al., ―Patents for Chemicals, Pharmaceuticals and Biotechnology-Fundamentals of Global Law, Practice and Strategy (Oxford University Press, 2010)
6) Journal of Intellectual Property Rights (NISCAIR)
7) The WIPO Journal Oxford Journal of Intellectual Property Law & Practice

CORPORATE LAW GROUP

LAW OF MERGER & ACQUISITIONS

Course Objectives:

This course has the following objectives:

1. To study the basic concept of the law of merger & acquisition.
2. Study how to enforce provisions encapsulated in the mergers and acquisitions agreement in the event of non-compliance.
3. To expand the economy, increasing market capitalization, valuations, and demand and supply.
4. By taking on or combining the assets of another business, regardless of its size, your business will increase its market share.

Course Outcomes:

The students shall be able to:

1. Understand legal obligations in terms of mergers and acquisitions.
2. Know the Corporate Restructuring and implication for society and economy.
3. Appreciate the importance of merger and acquisitions (M&A) in the present corporate world.
4. Analyse the process of M&A, essentialities of valuation and various methods thereof in case of Mergers and Acquisitions.

UNIT-I **Credit 4**

Corporate Restructuring **(Hours 40)**

A. Why Restructuring
B. How Restructuring/Implication for society / Economy)
C. Type of Restructuring

UNIT-II

Introduction of Merger and Acquisition

A. Merger and Acquisition –Definition
B. History related to Mergers and Acquisitions in India
C. Types of Mergers and Acquisition
    a) Non-Banking Companies
    b) Banking Companies

D. Difference between Merger and Acquisition

UNIT-III
Law of Merger and Acquisition

A. Company Act 2013

B. Competition Act

C. Take Over Code

UNIT-IV
Law of Merger and Acquisition

A. Foreign Exchange Law

B. Taxation

C. SEBI Guidelines

UNIT-V
Due Diligence in Merger and Acquisition

A. Documentation Issues in Merger and Acquisition

B. Indian Case Studies

C. International Case Studies

INTERNATIONAL TRADE LAW

Course Objectives:

This course has the following objectives:

1. To study the basic concept of International Trade Law.
2. To describe the concept related to Payments in International Trade and the Carriage of Goods by Sea.
3. To provide the provisions of Global Economics and International Trade Law
4. To discuss the law related to Trade Remedies under WTO and Dispute Settlement Procedures.

Course Outcomes:

The students shall be able to:

1. Understand basic concept of International Trade Law.
2. Know the procedure of Payments in International Trade and the Carriage of Goods by Sea.
3. Analyse the legal regime under the Global Economics and International Trade Law.
4. Analyse the various remedies provided under WTO and Dispute Settlement

Unit-I Credit 4

International Trade Law: Meaning and Concept (Hours 40)

A. Meaning and Evolution of International Trade Law
B. Types of International Trade Law
C. INCOTERMS, 2020
D. Formation and Enforcement of International contracts under CISG
E. Rights Liabilities of Panies to International sales Contracts

Unit-II

Payments in International Trade and Carriage of Goods by Sea

A. Bills of Exchange; law Relating to Bills of Exchange
B. Bank Guarantee in International trade transactions

C. Commercial Credit in International Trade; Letter of Credit: Types and the Law Relating to Commercial Credit

D. Carriage Of Goods and Trade Barriers

E. Bills of lading and Charter Parties, Rights and Liabilities of the Parties to Contract of Carriage

Unit-III

Evolution of GATT & WTO

A. Global Economics and International Trade Law

B. GATT and Rounds of Negotiations

C. The WTO: Objective, Function and Structure of WTO. Decision Making Process.

Unit-IV

Evolution of GATT & WTO

A. The Principle on Non-Discrirainationin GATT, Most-favoured-Nation Treatment (MFN), Exceptions to MIN

B. National treatment principle (NT) Article Ill, GATT; Regional Trade Agreements and WTO.

Unit-V

Trade Remedies under WTO and Dispute Settlement Procedures

A. Anti-dumping and WTO, Subsidies and WTO, Safeguards and WTO

B. Dispute settlement under GATT: Article XXII, Article XXIII, its merit & de-merit

C. Difference between the GATT and WTO dispute settlement procedures

D. Dispute Settlement Procedure under the WTO charter

E. DSU and India and its reform

Treaties/Conventions

1. UN Convention on Contracts for the International Sale of Goods
2. INCOTE'RMS, 2020
3. Marrakesh Agreement Establishing World Trade Organization and its Annexes
4. UCP 600
5. Indian Carriage of Goods Sea Act, 1925

6. Foreign Trade Policy of India

Prescribed Books:

1. Leo D' Arcy et al, *Schmitthoff's Export Trade*: The Law and Practice of Internal Trade, Sweet and Maxwell, London, 2007.
2. Peter Van den Bossche and Werner Zdour, The Law and Policy of the World Trade Organization: Text, Cases and Materials, Cambridge University Press
3. Autar Krishen Kati, A Guide to the W.T.O. and GATT: Economics, Law, and Politics, Kluwer Law International

Reference Books

1. Raj Bhaia, International Trade Law: An Interdisciplinary Non-Western Textbook (Vols I & 2) Lexis Nexis
2. J.C.T. Chuah, *Law of International Trade*, Sweet and Maxwell: London
3. Ingeborg Schwenzer Peter Schlechiriem, Commentary on the UN Convention on the International Sale of Good's (CISG), Oxford University Press, New York. 2010
4. John H. Jackson, The World Trading System: Law and Policy of International Economic Relations, 2nd edition (Cambridge: MIT Press, 1997), 1-30, 133-148, and 189-202.
5. Simon Lester and Bryan Mercurio (ed.), World Trade Law- Text, Materials and Commentary Universal Law Publishing C. Pvt. Ltd. New Delhi

B.A.LL.B 10th Semester

CURRICULUM AND SYLLABI

(10th Semester)

B.A.LL.B. (Hons.)
(Integrated Law degree course)

SCHOOL OF LAW



RAFFLES
UNIVERSITY

Japanese Zone, National Highway 48 Neemrana, Rajasthan 301020
www.rafflesuniversity.edu.in

B.A.LL.B 10th Semester

INSOLVENCY AND BANKRUPTCY LAWS

Course Objectives and learning outcome:

- Course aim to facilitate the students with an in-depth understanding and hands-on approach in relation to the legal and practical approach of Insolvency and Bankruptcy
- Its aim is to better understand the coherent and speedy process for early identification of financial distress and resolution.
- It seeks to impart skills required to practice insolvency law with effective drafting and pleadings with parties by providing a comprehensive and holistic solution.
- It will also encourage the students to engage in critical scholarship on law and policy issues.
- To attain a sound understanding of best practices in the field of legal and professional ethics.

Course learning outcome: At the end of the course the students will be able

- To identify and describe various concepts relating to Bank Insolvency and Bankruptcy
- To understand and comprehend the necessity of Bank Insolvency and Bankruptcy law in India
- To appreciate and be able to anywise the insolvency and liquidation process.
- To evaluate and assess the concept of the insolvency resolution process and Bankruptcy Board.

Pedagogy for Course Delivery:
Blended mode of lectures, discussions, case studies, presentations, assignments etc.
Lectures 60 Sessions, Presentations/seminars 5 sessions. Mid-Term Test, End Term Exam 2 Sessions Quizzes 6 sessions

Unit 1

INTRODUCTION

A. Origin and Development of Law pertaining to Insolvency and Bankruptcy in India,
B. Need and Objectives of Insolvency and Bankruptcy Cod-2016
C. Definitions, charge, Claim, Debt, Financial Information, Financial Products,, Financial Institutions, Financial Services, Insolvency Professionals, Insolvency Professionals Agency, Person,

Unit. 2

CORPORATE INSOLVENCY RESOLUTION PROCESS

A. Person who may initiate corporate insolvency resolution Process.
B. Institution of Corporate insolvency resolution process by financial creditors.
C. Insolvency Resolution by operational Creditors.

B.A.LL.B 10th Semester

UNIT 3

RESOLUTION PROCESS BY CORPORATE APPLICANT

A. **I**nstitution of Corporate insolvency resolution process by corporate applicant.
B. Time Limit for incorporation insolvency resolution process
C. Moratorium
D. Interim Resolution Professional and Resolution Professionals.

Unit 4

LIQUIDATION PROCESS AND ADJUDICATING AUTHORITY

A. Liquidation Process:
   (a) Institution of Liquidation
   (b) Appointment of Liquidator.
   (c) Powers and duties of Liquidator.
   (d) Claims
   (e) Orders in case of preferential transactions, undervalued transactions,
   (f) Distribution of Assets.
B. Adjudicating Authority for Corporate persons
   (a) Adjudicating Authority for Corporate persons
   (b) Appeal and Appellate Authority

UNIT 5

INSOLVENCY RESOLUTION PROCESS AND BANKRUPTCY BOARD OF INDIA

A. Fast Track Insolvency Resolution Process
   (a) Fast Track Corporation of Insolvency Resolution Process
   (b) Time period for completion of Corporate Insolvency Resolution Process
   (c) Manner of initiating of Fast Track Corporate Insolvency Resolution Process
B. Insolvency and Bankruptcy Board of India
   (a) Establishment of Board
   (b) Powers and function of Board.

Bank Insolvency and Bankruptcy Code 2016
C.S (Dr.) D.K. Jain
Vinod Kothari & Shikha Bansal
Jyoty Singh and Vishnu Shriram
M.S.Sahu
Taxmann
Datey V,S
Saeed Manzar S.K.Thakur
Wahi V,S.
Insolvency Acts

B.A.LL.B 10th Semester

CLINICAL & PRACTICAL-III
(PROFESSIONAL ETHICS)

INTRODUCTION TO THE COURSE

"In law a man is guilty when he violates the rights of others. In ethics he is guilty if he only thinks of doing so."

A lawyer's job is as important as that of a doctor's as both of them have power to save the life of a person who comes to seek their professional service. Vested with vast powers, legal Professionals are also imposed with vast duties and responsibilities to which they are morally as well as legally bound. Failure of such duty can invite criticism as well as legal sanctions including suspending such advocate from practicing and removing his name from the Roll of Advocates. Hence, knowledge of such duties, responsibilities and sanctions is indispensable for an advocate to have a better professional career.

Legal profession developed at various stages, which underwent vast changes during the period of British rule in India. The course throws light upon the scenario of legal profession in India during different periods - ancient, medieval and modern period. Hence the nature of legal education and legal profession and its development will be analyzed in the course. The impact of globalization on legal education, profession and practice will also be a part of curriculum. An Advocate shall, at all times, comport himself in a manner befitting his status as an officer of the Court, a privileged member of the community, and a gentleman, bearing in mind that what may be lawful and more for a person who is not a member of the Bar, or for a member of the bar in his non-professional capacity may still be improper for an Advocate, without prejudice to the generality of the foregoing obligation, an Advocate shall fearlessly mentioned both in letter and in spirit. A lawyer being a member of the legal profession owes certain duties towards the society, court and country at large. The sources of such duties including code of ethics, statutes like Advocate's Act, Bar Council of India Rules, etc will be a part of the course.

Every profession has rules of ethics to which its members are bound and the one who violates them will be imposed with liability in various forms. Likewise, a lawyer who does not follow Ethical and other rules of professional conduct can be censured and can also be suspended from law practice or even disbarred. The role played by Bar Councils in regulating legal profession and the provisions of law including those from The Advocates Act, 1961 will be the core module of

the course. The powers vested with Bar Council, provisions dealing with regulation of legal profession and legal education, issues relating to contempt proceedings will be discussed in detail.

OBJECTIVE OF THE COURSE

This course will introduce students to the rules of professional ethics which applies to lawyers in India. This course is designed with a main purpose of making law students [on the verge of completing their law course] to get acquainted with, analyze and critically examine such rules of professional ethics.

TEACHING METHODOLOGY

As per the norms of the university in this course there will be 6 classes per week. Teaching methodology will include Lectures-cum-discussion, Assignments, Projects and Presentations.

COURSE OUTLINE

The course shall comprise of the following:

Unit-1
Introduction

- Historical Perspective and Regulation of Legal Profession.

Unit -2
The Advocate Act, 1961

- Admission,
- Enrolment
- Rights of Advocate,
- Bar Councils.

Unit -3
Ethics of Legal Profession

- Meaning, Nature and Need
- Professional Ethics
- Punishment for breach

Unit -4
Contempt of Court

- Civil Contempt
- Criminal Contempt

- Punishment for Contempt
- Defences against Contempt.
- Constitutional Validity of Contempt Law.
- Contempt by Lawyers, Judges, State, and Corporate Bodies
- Strike by the Lawyers

Unit -5

Extent of Professionalization of Legal Profession

- Code of Ethics for Lawyers
- Professional Misconduct and its Control
- Bar-Bench Relations
- Accountability of Lawyers towards Court, Clients and Society
- Role of Law and Legal Profession in Social Transformation
- Writs Jurisdiction

Selected major judgments of the Supreme Court

1. In the matter of D, An Advocate, AIR 1956 SC 102
2. P.J.Ratnam v. D. Kamikaram, AIR 1964 SC 244.
3. N.B Mirzan v. The disciplinary committee of Bar Comcil of Maharastra and Another, AIR 1972 SC 46.
4. Bar Council Of Maharastra v. MVDebholkar afc., AIR 1976 SC 242.
5. VC Rongadurai v. D.Goplan and others, AIR 1979 SC-201
6. Chandra ShekharSoni v. Bar Council of Rajasthan and Chers, AIR 198 SC 1017
7. In Re on Advocate, AIR 1989 SC 245.
8. In Re Vinay Chandra Mishra, 1995 (Vol-1) IBR 118.
9. Supreme Court Bar Associations. Union of India, AIR 1998 SC 1895
10. Ex Capt. Harish Uppalv. Union of India AIR 2003 SC 739/

Selected bibliography

1. Raju Ramachandran, Professional Ethics: Changing Profession and Changing Ethics
2. (LexisNexis,Butterworths).
3. Dr. P. B. Mukharji, Professional Ethics of The Advocate (University of Burdwan).
4. P. Ramanatha Aiyer,Legal & Professional Ethics – Legal Ethics, Duties & Privileges of a
5. Lawyer (Wadhwa Publications, Nagpur).
6. Justice V. R. Krishna Iyer, Law, Lawyers and Justice (b. R. Publishing Corpn, Delhi).
7. Stephen Gillers, Regulation of Lawyers: Problems of Law & Ethics(Little, Brown & Com
8. Boston Toronto, London).
9. 6. Ross Grauston (ed.), Legal Ethics & Professional Responsibility(Clarendon Press, Oxford).
10. Gupta S.P., Professional Ethics, Accountancy for Lawyers & Bench Bar Relations.
11. Rai Kailash, Professional Ethics, Accountancy for Lawyers & Bench Bar Relations.
12. Sirohi (Dr.), Professional Ethics, Accountancy for Lawyers & Bench Bar Relations

B.A.LL.B 10th Semester

CLINICAL & PRACTICAL-IV
(MOOT COURT & ART OF PERSUADING JUDGES)

OBJECTIVE OF THE COURSE

This paper is aimed at imparting the practical skills of research, case analyses and strategy, witness handling, and presentation of arguments at the trial and appellate stages of a case. The teaching methods used in the course will include hypotheticals, role plays, simulation, and court visits. This course has been divided into four components dealing with Moot courts, Mock trials, Court visits and Viva Voce. The students will be working in teams. Your active participation will create and maximise learning opportunities.

EVALUATION SCHEME & COURSE OUTLINE

This paper shall have three components of 30 marks each and a viva for 10 marks.

(a) Moot Court (30 marks). Every student may be required to do at least three moot courts in a year with 10 marks for each. The moot court work will be on assigned problem and it will be evaluated for 5 marks for written submissions and 5 marks for oral advocacy.

(b) Observance of Trial in two cases, one Civil and one Criminal (30 marks);

Students may be required to attend two trials in the course of the last two or three years of LL.B. studies. They will maintain a record and enter the various steps observed during their attendance on different days in the court assignment. This scheme will carry 30 marks.

(c) Interviewing techniques and Pre-trial preparations and Internship diary (30 marks).

Each student will observe two interviewing sessions of clients at the Lawyer's Office/Legal Aid Office and record the proceedings in a diary, which will carry 15 marks.

Each student will further observe the preparation of documents and court papers by the Advocate and the procedure for the filing of the suit/petition. This will be recorded in the diary, which will carry 15 marks.

(d) The fourth component of this paper will be Viva Voce examination on all the above three aspects. This will carry 10 marks.

BOOKS RECOMMENDED

1. Dr. Kailash Rai: Moot Court, Pre-Trial Preparations & Participation in Trial Proceedings(Central Law Publications)
2. Prof. S.K. Awasthi: Practical Training of Law, Moot Court & Viva-Voce (Agra Law Agency)

3. R.N. Chaturvedi:
   A. Pleadings, Drafting & Conveyancing (Central Law Publications)
   B. The Advocates Act 1971
   C. The Legal Services Authorities Act, 1987
   D. Indian Penal Code, 1860
   E. Code of Criminal Procedure, 1973
   F. The Indian Evidence Act, 1872
   G. Code of Civil Procedure, 1908

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B.A.LL.B 10th Semester

(CONSTITUTIONAL LAW GROUP)

MEDIA LAW (H7)

OBJECTIVES

This paper deals with the interaction between law and mass media. The objective of this course is to examine the major laws, regulations and court decisions affecting the media. It aims to familiarise the theoretical debates on media, law and ethics in the Indian context. It also attempts to evolve an understanding of the complexities of ethical and legal media practice.

TEACHING METHODOLOGY

Teaching methodology will comprise class room debates and moot court exercise after the basic issues are identified by lecture and discussion. Research of issue based conflict of interest through court cases may be an added advantage.

As per the norms of the University for this Course there will be 6 classes per week. Clinical and tutorial form of learning should be followed. Teaching methodology will include Lectures-cum-discussion, Assignments, Projects and Presentations.

EVALUATION SCHEME

- Continuous Assessment- 40%
- Mid-Term- 20%
- End Term- 40%

UNIT 1

MEDIA & PUBLIC POLICY

A. Understanding the concept of Media History of Media Theories of Media Evolution of Media
B. History of Media Legislation
C. Media Legislation - British experience Media Legislation in U.S. Media Legislation in Indian Context
D. Media in the Constitutional Framework
E. Development of laws relating to Mass Media vis a vis International regime

(a) Censorship of films

(b) Censorship under Constitution

(c) Censorship under the Cinematograph Act.

(d) Pre-censorship of films

UNIT 2

FREEDOM OF SPEECH AND EXPRESSION -ARTICLE 19 (1) (A)

A. An introduction to Freedom of expression

B. Issues of Privacy

C. Evolution of Freedom of Press

D. Restrictions under Constitution

(a) Article 19 (2)

(b) Government Power to legislate - Article 246 read with the Seventh Schedule

(c) Power to impose Tax -licensing and licence fee

(d) Advertisement & Ethics: Misleading Advertisement vis-à-vis Consumers rights

UNIT 3

MEDIA - REGULATORY FRAMEWORK

A. Legal Dimensions of Media

B. Media & Criminal Law

(a) Defamation

(b) Obscenity

(c) Sedition

(d) Media Trial and Administration of Criminal Justice

C. Media & Tort Law (Defamation & Negligence)

D. Media & Legislature – Privileges of the Legislature

E. Media & Judiciary – Contempt of Court Media & Executive – Official Secrets Act

F. Media & Journalists – Working Journalists (Conditions of Service) Act & Press Council Act

G. Media and Ethics Self-Regulation Vs Legal regulation

H. Media & Human Rights Issues relating to entry of Foreign Print Media

B.A.LL.B 10th Semester

UNIT 4

CONVERGENCE & NEW MEDIA

A. Understanding Broadcast Sector
B. Evolution of Broadcast Sector Airwaves and Government control Open Skies policy Licensing issues in Broadcast Sector
C. Legislative efforts on Broadcast sector
D. Prasar Bharti Act 1990 Broadcasting Bill Cinematography Act 1952 Cable T.V. Networks (regulation) Act of 1995
E. Opening of Airwaves
F. Public policy issues on Airwaves Community Radio Advocacy Telegraph Act and Broadcast interface
G. The New Media of Internet
H. Evolution of Internet as New Media Regulating the Internet IT Act of 2000 and Media Convergence Bill (to be enacted)
I. Regulatory Commissions of New Media Indian Telegraph Act of 1885

UNIT 5

MEDIA, ADVERTISEMENT & LAW

A. Concept of Advertisement Advertisement & Ethics Advertisement Act of 1954
B. Indecent Representation (Prohibition) Act, 1986
C. The Drugs and Magic Remedies (objectionable) Advertisements Act of 1954
D. Issues of Consumer Protection Competition Bill and impact on Advertisements

Recommended Readings:

Introduction to Media Laws And Ethics, Juhi P. Pathak

Media Law, Dr. S.R. Myneni

Law of the Press, Dr. D.D. Basu

Advertising Law and Ethics, Justice P B Sawant

B.A.LL.B 10th Semester

GENDER JUSTICE AND FEMINIST JURISPRUDENCE (H8)

COURSE OUTLINE:

This subject will help the learners to gain understanding of the issues, legal policy framework and action plans that focus over empowerment of vulnerable genders including the Female and Transgender Persons. The issues that have their strong bearing over these section's empowerment, protection and eradication of gender-based inequalities would form the base of this subject.

TEACHING METHODOLOGY:

As per the norms of the University for this Course there will be 6 classes per week. Clinical and tutorial form of learning should be followed. Teaching methodology will include Lectures-cum-Discussion, Assignments, Projects and Presentations.

LEARNING OBJECTIVES:

The Course aims at forming gender sensitive legal knowledge and skills among students with a special focus on expert knowledge of domestic and international standards of gender equality jurisprudence.

PROGRAMME OUTCOMES:

1. **Students must gain knowledge on:**
   - Substantive understanding of law's view about itself and its relationship with sex and gender
   - Introduce the students to reading critical theory and legal analysis
   - Introduce students to reading criminal and constitutional law, cases and facts
2. **Students must gain skills and abilities:**
   - Foster student's ability to approach controversial issues, theories and texts with a critical lens and an open mind
   - Develop the ability to research and write substantive analytical research papers
   - Foster ability and confidence to think critically
3. **Students should gain the following competencies:**
   - Ability to work with information (search, evaluate, use information necessary for fulfillment of scientific and professional tasks including application of the systematic approach
   - Ability to carry out professional activities in the national and international environment
   - Learn how to work cooperatively in the groups

B.A.LL.B 10th Semester

EVALUATION SCHEME:

• Continuous Assessment- 20%

• Mid-Term- 20%

• End Term- 60%

UNIT 1

HISTORICAL EVOLUTION

A. Gender Justice and Feminism- Meaning, nature and scope
B. Gender Theories- Conflict, Integrationists and hermeneutic approaches
C. Feminist Theories- Liberal Feminism, Cultural Feminism, Radical Feminism and Post-Modern Feminism
D. Notions of Patriarchy, Sex and Gender, Gender Discrimination, homophobia, labour division- Global and Indian Perspectives
E. Feminist Justice Movement in Europe, USA and India- Status, impact and significance

UNIT 2

GENDER JUSTICE AND HUMAN RIGHTS:

A. Historical critique of gender discrimination- Global and Indian Views
B. UNO and Gender Equality- UN Charter, UDHR, UN Convention on Traffic in Women and Children 1949, UN Sub-Commission on the status of Women, ILO and Gender Justice, ICCPR 1966, ICESCR 1966, CEDAW 1979
C. EU Human Rights Law and Gender discrimination
D. Sexual Harassment and discrimination at Workplace, Domestic Violence, Sex Traffic and Prostitution, Forced Marriage, Sexual Reproductive Rights, Surrogacy, Marital Rape and Consent
E. Feminist perspective on Global Environmental Issues and Judicial Response

UNIT 3

FEMINIST JURISPRUDENCE IN INDIA:

A. Gender Equality under Indian Constitution- Preamble, Fundamental Rights and Directive Principles of State Policy
B. Critique of selective Offences provided under IPC 1860- Kidnapping, Abduction, Rape-Gang Rape-Custodial and Marital Rape, Stalking, Acid Attack and Adultery
C. Women's Labour Rights and Healthy Working Conditions
D. Gender and Marital Rights in the Family- A Critique of the deviations in Hindu, Muslim and Christian Personal Laws
E. Adoption, Guardianship and Maintenance Issues

UNIT 4

GENDER JUSTICE FOR LGBTQIA PERSONS:

A. Notions of LGBTQIA, Transgender, Homosexuality
B. Historical Analysis of the Human Rights Movements for LGBTQIA persons- Indian and Global Scenario
C. Status of Legal Protection
D. Same-Sex Marriage Unions and the Family
E. Problems faced by LGBTQIA community-Socio-economic and political exclusion, hate crimes, discrimination and violence
F. How to achieve gender equality-gender and sustainable development goal (2015-2030).

RECOMMENDED READINGS:

- Patricia Smith, Feminist Jurisprudence
- Gender Justice & Feminist Jurisprudence by Dr. Sheetal Kanwal, Amar Law Publication
- Bina Agrawal, Introduction of the Structures of Patriarchy
- Kamla Bhasin & Nighat Said Khan, Some Question on Feminism and their relevance in South Asia
- Maria Mies, Patriarchy and Accumulation on a World Scale
- S K Kuba, Status of Women in International Law
- Alison M Jaggar, Feminst Thought and Human Nature (Sussex Harvester Press)
- Ratna Kapoor & Brenda Cossman, Sub-Serve Sites- Feminist Engagements with Law in India (Sage Publications New Delhi 1992)
- Jenifer Perce, Gender Trials: Emotional Lives in Contemporary Law Firms, University of California Press 1996
- D Kelly Weisberg, Feminist Legal Theory: Foundations, Temple University Press 1993
- Annie M O Griffiths, In the Shadow of Marriage: Gender and Justice in an African Community, University of Chicago Press 1998
- Adrien Wing, Critical Race Feminism: A Reader, 2nd Edition, NYU Press 2003
- Vandana Shiva, Staying Alive: Women, Ecology and Development, London Zed Books 1989
- Nomita Agrawal, Women and Law in India, New Century Publications Delhi 2002
- Rashmi Agrawal and BVLN Rao, Gender Issues- A Road Map to Empowerment, Shipra Publications, New Delhi 2004
- Kamala Bhasin, Understanding Gender, New Delhi 2000
- Maitrayee Chaudhary (ed.), Feminism in India, New Delhi 2004
- Anjani Kant, Women and the Law, APH Publishing Corporation New Delhi 1997
- Cook, Rebecca J., ed. Human Right of Women: National and International Perspectives, University of Pennsylvania Press 2012
- Grabe Shelly, ed., Women's Human Rights: A Socio-Psychological Perspective on Resistance, Liberation and Justice, Oxford University Press, 2017
- Ross S. D., Women's Human Rights: The international and comparative law casebook, University of Pennsylvania Press 2008

OPTIONAL READINGS:

- Charlesworth H (2005), Not Waving but Drowning: Gender Mainstreaming and Human Rights in United Nations, Harvard Human Rights Journal, 18.
- MacKinnon, C.A., (1991), Reflections on Sex Equality under Law, Yale Law Journal, 100 (5), 1281-1328
- Muravyeva, M (2014), Traditional Values and Modern Families: Legal Understanding of Tradition and Modernity in Contemporary Russia, Journal of Social Policy Research, 124
- Universal Declaration of Human Rights 1948
- Convention on the Elimination of All Forms of Discrimination against Women, 1979

B.A.LL.B 10th Semester

(CRIMINAL LAW GROUP)

LAW OF WOMEN AND CHILDREN (H7)

PRELUDE TO THE COURSE:

In an era where offences against women have reached the pivot, there is a need for having a sound system for the perpetrators and victims of crimes against women. The paper aims to give an overview of the various crimes committed against women and the national and international efforts undertaken to preserve women.

OBJECTIVES OF THE COURSE: The aims of this course is to:

1. Make the students aware of the protection available to women at the national and International level
2. the students with procedural safeguards available to the women
3. Have an understanding of the legal position of women in India in the 21st century

OUTCOMES OF THE COURSE:
After completion of the course, the students will be able to:

1. Understand the concept of legal protection to women.
2. Discuss national and international perspectives of women rights.
3. Interpret the rights of women at national and international level.

TEACHING PEDAGOGY:

The teaching in this course is done by way of lectures, seminars and tutorial sessions. The lecture series is devoted to detailed study of the national and international perspectives on the protection of women rights. The course will incorporate with understanding of the concepts of women rights and its protection in domestic and international regime. Participation in class discussion is the primary mode of teaching/learning.

THE EVALUATION SCHEME

• Continuous Assessment- 40%
• Mid-Term- 20%
• End Term- 40%

COURSE OUTLINE:

B.A.LL.B 10th Semester

UNIT-1

Introduction

A. Status of Women in India and Abroad
B. Constitution of India and Women

UNIT-2

Personal Law

A. Rights of women
B. Rights of Children
C. Guardianship
D. The Prohibition of Child Marriage Act, 2006

UNIT– 3

Criminal Laws

A. Rape
B. Outraging Modesty
C. Domestic Violence
D. Prostitution: Typology, Causes & Legislative Measures
E. The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013 – Salient Provisions & Penalties
F. Protection Of Children from Sexual Offences Act, 2012
G. Arrest of a Woman
H. Section 177 CRPC, Section 164A, Section 26, Section 198A, Section 125 CRPC
I. Juvenile Justice (Care and Protection of Children) Act, 2015

UNIT – 4

Women Welfare Laws in India

A. Labour Laws and Women Welfare
B. The Pre-Conception and Pre-Natal Diagnostic Techniques (Prohibition of Sex Selection) Act, 1994
C. The Indecent Representation of Women (Prohibition) Act, 1986
D. The Domestic Workers Welfare and Social Security Act, 2010
E. The Immoral Traffic (Prevention) Act, 1956

UNIT-5
Rights of Child and International Law

A. Declaration of the Right of the Child-1959
B. Convention on the Right of Child, 1989
C. The World Summit for Children 1990

D. World Conference on Human Right 1993
E. ILO- Conventions regarding Minimum Age

References:

1. SC Tripathi and Vibha Arora, Law relating to Women and Children, Central Law Publication, 2006
2. DK Tiwari & Mahmood Zaidi, Commentaries on Family Courts Act, 1984, Allahabad Law Agency, 1997
3. BN Chattoraj, Crime against Women: A Search for Peaceful Solution, LNJN-NICFS, 2007
4. Nomita Agarwal, Women and Law, New Century Publishing House, 2005
5. Manjula Batra, Women and Law & Law Relating to Children in India, Allahabad Law Agency, 2001

Bare Acts:

1. The Indian Penal Code, 1860
2. The Hindu Laws (Bare Act)
3. The Guardianship and Wards Act, 1890
4. The Pre-Conception and Pre-Natal Diagnostic Techniques (Prohibition of Sex Selection) Act, 1994
5. The Indecent Representation of Women (Prohibition) Act, 1986
6. The Domestic Workers Welfare and Social Security Act, 2010
7. The Immoral Traffic (Prevention) Act, 1987
8. The Family Courts Act, 1984

B.A.LL.B 10th Semester

FORENSIC SCIENCE (H8)

COURSE OUTLINE

Unit 1

Introduction, Criminal Justice System & forensic science in India;

A. History and Development of Forensic Science
B. Definition of Forensic Science
C. Scope of Forensic Science and Need of Forensic Science
D. Basic Principles of Forensic Science
E. Tools and Techniques of Forensic Science.

Unit 2

Crime Scene Investigation:

Response to Crime Scene, Plan of action, Secure the scene, Preliminary Survey, Photography, sketch, chain of custody,

Evidences collection

A. Blood, Semen & other Biological fluids
B. Viscera
C. Shoe impressions, Tool marks, Tyre marks
D. Bite Marks
E. Hair – Animal & Human, Fibres & Fabrics
F. Glass, Soil, pollen Paint

Unit 3

Forensic Ballistics and vehicular accident reconstruction

A. Firearms & Their Classification
B. Ammunition, Projectiles, Mechanism of Firing
C. Bullet, Weapon & Cartridge case Identification
D. GSR-Detection and analysis
E. Nature of Injuries – Entry & Exit wounds
F. Range of Fire and factors affecting it
G. Primary causes of vehicular accidents
H. analytical tools to evaluate accidents

Unit 4
Body fluids, DNA and Finger Impression

A. **DNA**-Introduction, source of DNA in Forensic case work, Extraction of DNA, Techniques of DNA fingerprinting- RFLP, STR, PCR. DNA fingerprinting in paternity disputes, mass disaster and other forensic case work, legal issues in DNA fingerprinting, case study.

B. Finger Printing: Type of Finger Prints, Classification of Finger Prints, Latent Finger Print, Causes of Formation of latent Finger Prints, Comparison of Finger Prints, ridge details. Presentation of Expert Evidence: Data, Reports, Evidence in the Court

Unit 5

Methods of Interview and Interrogation

A. **Narco analysis**: theory, forensic significance of narco-analysis, admissibility in court, future prospect, case study.

B. Brain mapping- introduction, EEG, P-3000 wave, brain mapping in forensic Science, Limitation of technique, admissibility in court, case study.

C. Polygraph: Principle and technique polygraph as a forensic investigative tool, NHRC guidelines for a polygraph test, case study.

Books for Reference

1. Ramanujan T. Prevention Detection of Crime
2. Sullivan: Police Science.
3. Swenson and Wendell: Techniques of Crime Scene Investigation.
4. De Angeles: Crime Scene Investigation.
5. Sodderman and O'Connell: Modern Criminal Investigation.
6. Horgan: Criminal Investigation.
7. SheshagiriRao: Prevention and Detection of Crime

B.A.LL.B 10th Semester

(INTELLECTUAL PROPERTY LAW GROUP)

PROTECTION OF PLANT VARIETIES, FORMER'S AND BREEDER'S RIGHTS & TRADITIONAL KNOWLEDGE
(H7)

Course Objectives-

1. Students will be imparted complete understanding and knowledge about the development of Plant Varieties & Traditional Knowledge related laws.
2. Students will be learning about the functioning of international organizations related to Plant Varieties & Traditional Knowledge.
3. Students will be imparted knowledge about the contemporary issues related to Plant Varieties & Traditional Knowledge.

COURSE OUTLINE

Unit 1
Introduction

A. Introduction to Plant Varieties – Law& Science
B. Evolution of Plant Patents & Plant Varieties Protection
C. Justification for IP Protection
D. UPOV

Unit 2
Kinds and criteria for protection under PVFR

A. Concepts of Different kinds of Varieties in PVFR
B. Criteria of Protection Objectives
C. Requirements for Protection
D. Period of Protection

Unit 3
Rights, Limitations & Infringement

A. Exclusive Rights
B. Breeders' Rights v. Farmers' Rights
C. Researcher's Rights; Farmers' rights and Rights of Communities
D. Compulsory Licence
E. Benefit Sharing
F. Infringement & Remedies

Unit 4
Traditional Knowledge: Meaning, Nature and Need for Protection..

A. Meaning, Nature, and Characteristics
B. Need for protection of TK
   a) Equity Considerations
   b) Conservation Motive
   c) Preservation of Traditional Practices and Cultures
   d) For Indigenous Peoples' Participation in Development Process
   e) To Facilitate Access
   f) For the Conservation of Environment and Management of Bio-Diversit
C. International Initiatives on TK Protection
D. International bodies and Institutions responsible for the Protection of TK

Unit 5
Interface between IPR and TK and Options for Protection

A. Interface between IPR & TK
   a) Protection of Traditional Knowledge under the Existing Modes of Intellectual Property and Issues thereof.
   b) Concepts of Prior Informed Consent (PIC) and Agreement to befit sharing (ABS) National Initiatives
B. Defensive protection of TK through legislative efforts:
   a) Constitutional Provisions, The Biological Diversity Act, 2002;
   b) Protection of Plant Varieties and Farmers' Rights Act, 2001;
   c) The Patent Amendment Acts 2002 and 2005;
   d) The Geographical Indications of Goods (Registration and Protection) Act, 1999;
   e) The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, etc.
C. TKDL
D. Need for a sui generis protection

Text Books and Reference Material

1. Anthony J. Stenson and Tim S. Gray, The Politics of Genetic Resource Control,
2. Macmillan Press Ltd., London, 1999
3. Brush S.B & D. Stabinsky (ed.), Valuing Local Knowledge- Indigenous people andIntellectual Property Rights, Island Press, Covelo, California, 1996
4. Carlos M Correa, Traditional knowledge and Intellectual Property, Issues and
5. Options Surrounding the Protection of Traditional Knowledge, Quaker United
6. Nations Office, Geneva, 2001

7. David Downes, Using Intellectual Property as a Tool to Protect Traditionally
8. Knowledge: Recommendations for Next Steps, Center for International EnvironmentalLaw, Washington, DC, 1997
9. P. Drahos and M. Blakeney (ed.), Perspectives on Intellectual Property: IP in
10. Biodiversity and Agriculture, Sweet and Maxwell, London, 2001
11. Vandana Shiva, Biopiracy: The Plunder of Nature and Knowledge, South Press, 1997
12. Vandana Shiva, Protect or Plunder: Understanding Intellectual Property Rights,Zed Books Ltd., London, 2001

B.A.LL.B 10th Semester

IPR MANAGEMENT & LITIGATION
(H8)

Prelude to the Course:

IPR Management has played a pivotal role in the recent decade. The process of management of the various Intellectual Property Rights is indeed an important and integrating factor contributing to the growth of IPRs and research in the field of IPR. The course aims to acquaint the students with the same.

Unit 1
Introduction

Economics of Innovation: Classical Theories – Neo-classical Theories – Exogenous and Endogenous Growth Theories – Schumpeterian Growth Theories – Human Capital Theories Evolutionary Growth Theories

Unit 2
Domain of Public Funded Research

Industrial Classification: Traditional v. Knowledge Based Industries – Intangible Assets – Definition & Characteristics – Intangible Assets & Accounting Standards – Intellectual Property as Strategic Corporate Assets

Unit 3
Commercialization of Intellectual Property

Traditional IP and Evolving IP - Assignment – Licensing – Cross License – Patent Pool – Negotiations – Defensive Publications – Technical Disclosures – Patent Pooling – Patent Trolling - Brand Management- Brand and Pricing Strategies – Patent Mining – Patent Landscaping and Patent Mapping

Unit 4
Strategic Management of Intellectual Property

Defensive & Offensive Strategies – Intellectual Asset Management - Intellectual Property Audit – Identification & Grouping of Intangible Assets into Bundles - Intangible Asset Management Plan – Value Maximization Strategies – Value Extraction Strategies – Licensing Process and Management

Unit 5
Valuation of Intellectual Property & Litigation

Need for IP Valuation – Approaches of IP Valuation – Cost Approach – Income Approach – Market Approach – Methods of IP Valuation – “25% Rule” Method - Industry Standards Methods

- Ranking Method - Surrogate Methods - Disaggregation Methods - Monte Carlo Method - Real Options Methods - The CAV Method - Market Value Method -Collateralization of IPA

Reference Books

1. Sunita K. Sreedhararn, An Introduction to Intellectual Asset Management
2. Patrick H. Sullivan, Profiting from Intellectual Capital: Extracting Value from Innovation
3. Tulika Rastogi, IP Audit: Your Way to Healthy Organisation
4. Gordon V. Smith and Russell L. Parr, Valuation of Intellectual Property and Intangible
5. Bruce Berman, From Assets to Profits: Competing for IP Value and Return (Intellectual Property-General, Law, Accounting & Finance, Management, Licensing, Special Topics)
6. Loganathan, E.T. “IPR” (IPRS), TPIPS Agreement and Indian Laws

CURRICULUM AND SYLLABI

(5th Semester)

B.A.LL. B
(Integrated Law degree course)

SCHOOL OF LAW

RAFFLES
UNIVERSITY

Japanese Zone, National Highway 48 Neemrana, Rajasthan 301020

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FAMILY LAW – I

INTRODUCTION TO THE COURSE

India being a country of rich cultural and religious diversity offers personal laws pertaining to each religion, be it Hindus, Muslims, Christians, etc. Personal laws govern matters like marriage, divorce, adoption, succession, maintenance etc. Family Law I deals with the sources and development of Hindu Law. This course is a study of the fundamentals of Hindu Law and includes the Hindu Marriage Act, 1955, the Hindu Adoptions and Maintenance Act, 1956, the Hindu Minority and Guardianship Act, 1956 and the structure of Family Courts in India.

COURSE OBJECTIVES

This course has the following objectives

1. To evaluate the strength of the family system in India.
2. and the extent of legal support provided to the same and also to examine when and how and to what extent the constitutional directive of Uniform Civil Code enables to regulate a religious part of family life if any, may emerge. Besides this to give an overview of some of the current problems arising out of the foundational inequalities.

TEACHING METHODOLOGY

As per the norms of the University for this Course, there will be 6 classes per week. Clinical and tutorial forms of learning should be followed. The teaching methodology will include Lectures-cum-discussion, Assignments, Court room exercises, Projects, and Presentations.

THE EVALUATION SCHEME

- Continuous Assessment- 40%
- Mid-Term- 20%
- End Term- 40%

COURSE OUTLINE

Unit-I Credit 6

Concept of Hindu law & Sources of law (Hours 60)

Philosophy & Concept of Hindu law, Schools of Hindu law, Sources of Hindu law, who is a Hindu, un codified general law among the various religious groups of people of India.

Unit-II

The Hindu Marriage and Divorce

A. Applicability of Legislation (Section 2)
B. Concept and forms of Marriage (Section 5 R/w Section 7)
C. Conditions for the Validity of Marriage (Section 5 R/w Section 3 R/w Section 18)
D. Solemnization of Marriage (Section 7)
E. Section 3 of PCMA R/w Section 9 of PCMA
F. Child Marriage R/w Provisions of POCSO
G. Void and Voidable Marriages (Section 11 and Section 12)
H. Registration of Marriage (Section 8)
I. Restitution of Conjugal Rights (Section 9 R/w Article 21 of Indian Constitution)
J. Judicial Separation (Section 10) R/w 13 (1A)
K. Status of sologamy?
L. Unisex Marriages and Question of living together?

Divorce (Hindu Marriage Act, 1955)

A. Theories of Divorce- Guilt Theory and Consent Theory
B. Grounds of Divorce Cruelty, Desertion, Adultery along with Joseph Shine vs. UOI, 2018, SC
C. Study on Section 13
D. Options of Puberty, Breakdown of Marriage, Mutual Consent (Section13B), Grounds for Divorce for Woman Only (Section 13(2))
E. Irretrievable Breakdown of Marriage as a ground of Divorce.

Cases:

- *Dr. Surajmani Stella Kujur*v. *DurgaCharanHansdah* AIR 2001 SC 938
- *S. Nagalingam*v. *Sivagami*(2001) 7 SCC 487 4
- *Bhaurao Shankar Lokhande*v. *State of Maharashtra*, AIR 1965 SC 1564 8
- *Lily Thomas* v. *Union of India*, AIR 2000 SC 1650 12
- *PinnintiVenkataramana*v. *State*, AIR 1977 AP 43 23
- *AshaQureshi*v. *AfaqQureshi*, AIR 2002 MP 263 33
- *P*. v. *K.*, AIR 1982 Bom. 400 37
- *BabuiPanmatoKuer*v. *Ram Agya Singh*, AIR 1968 Pat. 190 47
- *Seema*v. *Ashwani Kumar* (2006) 2 SCC 578 51
- *Javed&Ors. v. State of Haryana &O*rs. AIR 2003 SC 3057
- *Kailashwati*v. *AyudhiaParkash*, 1977 C.L.J. 109 (P.& H.) 55
- *SwarajGarg*v. *K.M. Garg*, AIR 1978 Del. 296 66
- *Saroj Rani* v. *Sudarshan Kumar*, AIR 1984 SC 1562 74
- *N.G. Dastane*v. *S. Dastane*, AIR 1975 SC 1534 81
- *Samar Ghosh* v. *Jaya Ghosh*, 2007 (3) SCJ 253 101
- *Bipin chandra Jaisingh bai Shah* v. *Prabhavati*, AIR 1957 SC 176 122
- *Dharmendra Kumar* v. *Usha Kumar*, AIR 1977 SC 2213 139
- *T. Srinivasan* v.*T. Varalakshmi*, 1 (1991) DMC 20 (Mad.) 142
- *Hira chand Srinivas Managaonkar*v. *Sunanda*, AIR 2001 SC 1285 149
- *Sureshta Devi* v. *Om Prakash*, 1 (1991) DMC 313 (SC) 155

Unit-III

Hindu Adoptions and Maintenance

ADOPTION

A. Law on the legitimacy of children and adoption.

B. Legitimacy of the issue in void and voidable marriage and the rights of such children

C. Issues relating to custody of children

D. Requisite of Valid Adoption- Conditions for giving in, taking of person adopted procedure and conditionality.

E. When adoption is complete

F. Effects of Adoption

G. Inter-Country adoption

H. Adoption in different religious groups.

MAINTENANCE

A. Maintenance during the pendency of the suit.

B. Maintenance after the dissolution of marriage and conditions of permanent alimony (Section 24 R/w Section 25 HMA, 1955, Section 18 HAMA, 1956, Section 125 CrPC, Section 20 DVA)

Unit-IV
Hindu Minority and Guardianship Act, 1956

A. Guardian under the Guardian and Wards Act
B. Who can be appointed
C. Procedure of application – who can apply – what are powers – what matters court would consider for appointment of a guardian – cessation of authority
D. General and special liability of a guardian
E. Natural guardian and his/her power

Unit-V

The Hindu Succession Act,

A. Origin and Nature of Joint Family and Coparcenary
B. Characteristic features of Coparcenary
C. Classification of Property
D. Karta: Position, Power and Liabilities, Privileges and Obligations.
E. Partition: Definition, Persons entitled to demand partition, Reopening and Reunion.

Cases:

- *Brijendra*v. *State of M.P.*, AIR 2008 SC 1058 164
- *Amar KantaSen*v. *SovanaSen*, AIR 1960 Cal. 438 159
- *Padmja Sharma* v. *Ratan Lal Sharma*, AIR 2000 SC 1398 162
- *GithaHariharan*v. *Reserve Bank of India* (1999) 2 SCC 228 169

Recommended Readings

Aqil Ahmad, *Mohammedan Law*, (Central Law Agency, 24th ed. 2011)

R.K. Agarwala, *Hindu Law*(Central Law Agency, 22nd ed. 2007)

ParasDiwan, *Law of Intestate and Testamentary Succession* (1998), Universal

Basu, N.D., *Law of Succession* (2000), Universal

Kusem, *Marriage and Divorce Law Manual* (2000) Universal

Machanda.S.C.*Law and Practice of Divorce in India* (2000) Universal

P.V.Kane, *History of Dharmasastras* Vol.2 pt.1 at 624-632 (1974)

A.Kuppuswami (ed.) *Mayne's Hindu Law and Usage*Ch.4(1986)

B.Sivaramayys, *Inequalities and the Law*, (1985)

K.C.Daiya, "*Population control through family planning in India, "Indian Journal of Legal Studies,*85 (1979)

J.D.M. Derrett, *Hindu Law: Past and Present*

J.D.M. Derrett, *Death of Marriage Law*

A.A.A.Fyzee, *Outline of Muhammadan Law*, (1998)

AlladiKuppuswami,(ed.) *Mayne's Hindu Law and Usage*, (1986)

J.D.M.Derret, *A Critique of Modern Hindu Law*, (1970)

ParasDiwan, *Hindu Law* (1985) Law 45

S.T.Desai (ed.) *Mulla's Principles of Hindu Law*, (1998) -Butterworths-India.

Pares Diwan, *Family Law: Law of Marriage and Divorce in India*, (1984).

A.M.Bhattacharjee, *Muslim Law and the Constitution* (1994) Eastern Law House, Calcutta.

CRIMINAL LAW-III
CRIMINAL PROCEDURE CODE

INTRODUCTION TO THE COURSE

The primary objective of criminal law is to maintain law and order in society and to protect the life and liberty of people. It is for this reason that people place their ultimate reliance on this branch of law for protection against all injuries that human conduct can inflict on individuals and institutions. Due to these reasons, the penal law cannot afford to be weak, ambiguous or ineffective. Nor can it be harsh and arbitrary in its impact. The application of criminal law has to be uniform regardless of any discrimination on grounds of class, caste, religion, sex or creed etc. of either the criminal or the victim.

COURSE OBJECTIVE

This course has the following objectives

1. Identify the stages in investigation and procedure of trial in criminal cases.
2. Explain the powers, functions, and limitations of the police investigation.
3. To study procedural nuances of criminal court inquiry and trial.
4. Make the distinction between different types of trials provided under the code.
5. To use their skill of knowledge to protect and promote the basic fundamental rights provided by our constitution.

COURSE OUTCOMES

The students shall be able to;

1. Understand the nature and scope of the code.
2. Analyze the drawbacks of complicated procedural requirements of the code.
3. Develop necessary understanding of procedural knowledge of court proceedings.
4. Apply necessary skill set to assist the court and law enforcement agencies

Unit-I Credit 6

INTRODUCTORY (Hours 60)

a) Object and Importance of Cr.P.C
b) Functionaries under the Cr.P.C
c) Basic Concepts: Bailable Offence, Non-Bailable Offence, Cognizable Offence,

d) Non-cognizable Offence, Complaint, Charge, Police Report, Investigation, Inquiryand Trial, Summons Case, Warrant Case
e) Constitution & Powers of Criminal Courts & Offices
f) Public Prosecutor

Unit-II

PRE-TRIAL PROCEEDINGS

a) Information to Police & their Powers to investigate
b) Jurisdiction of Criminal Courts in Inquiries & Trials
c) Conditions requisite for Initiation of proceedings
d) Complaints to Magistrates
e) Commencement of proceedings before Magistrates
f) Provisions as to Bail & Bonds
g) The Criminal Procedure (Identification)Bill, 2022

Unit-III

TRIAL PROCEEDINGS

a) Framing of Charge & Joinder of Charges
b) Trial before a Court of Session
c) Trial of Warrant cases by Magistrates
d) Trial of Summons cases by Magistrates
e) Summary Trials
f) Evidence in Inquiries & Trials & General provisions

Unit-IV

MISCELLANEOUS

a) Appeals
b) Reference & Revision
c) Inherent Power of Court
d) Transfer of Criminal cases & Execution, Suspension, Remission & Commutation of Sentences
e) Irregular Proceedings & Limitation for taking Cognizance of certain offences
f) Plea Bargaining
g) Maintenance of Public Order and Tranquillity
h) Security for peace and good behaviour
i) Maintenance of wives, children and parents
j) Compounding of Offences

Unit-V

SPECIAL PROVISIONS RELATED TO PROBATION AND JUVENILE JUSTICE

a) **Probation of Offenders Act, 1958**

Concept of Probation System-Origin and Development in India

b) **Juvenile Justice (Care and Protection of Children) Act,2000**

Power, composition, functions and procedure to be followed by the Juvenile Justice Board.

Text Books:

1. Rattan Lal & Dhirajlal- Code of Criminal Procedure

2. R.V. Kelkar - Code of Criminal Procedure

3. Chandrasekharan Pillai, Kelkar Lecturer on Criminal Procedure, 1998 Eastern Book Co.

4. Woodroffe, Commentaries on Criminal Procedure Code, 2000 Universal

5. Sarkar on Criminal Procedure Code

6.N.K. Chakrabarti- Probation System in the Administration of Criminal Justice

7. Ved Kumari- Juvenile Justice System s – (sections 441 – 462)

CORPORATE LAW-I

INTRODUCTION OF THE COURSE

The course is designed to understand the formation, management, and other activity of the companies. Because of the changing facts of global governance corporate governance plays a vital role in the development of an economy at both national and international levels. The companies Act 1956 has not been repealed but certain provisions replaced by the new Act of 2013. The notified sections which replace the provisions of the Companies Act 1956 will be highlighted. Accordingly, the paper aims to introduce to the students the nuance of corporate law and its obligations of it toward society in discharging its trade relations and being a good corporate citizen. Therefore, the paper needs to be taught in light of the new companies Amendment Act 2013.

COURSE OBJECTIVES

This course has the following objectives

1. To acquire knowledge and develop the regulatory framework of companies
2. To study various provisions of the Companies law
3. To differentiate between schedules, rules, notifications and circulars etc.
4. To develop legal skills about the dimensional issues of company law.

COURSE OUTCOMES

The students shall be able to;

1. Apply the practical aspect of company law in the global system of economic
2. Understand multinational companies in the legal system.
3. Frame the legal requirement for registration for companies.
4. Contest the cases pertaining to corporate law

COURSE OUTLINE

Unit-I **Credit 6**
Company and its Nature and Scope **(Hours 60)**

- Meaning, Definition, and characteristics of the company.
- Historical background of the company
- Kinds of companies
- Merits and Demerits of Incorporation of a company - Lifting the corporate veil.

Unit-II
Procedure for Incorporation of companies

- Role of promoters, Legal Position of Promoter
- Pre-incorporation contracts

- Memorandum of Association - Meaning, Purpose, Contents, Ultravires, and Doctrine of Ultra-vires
- Articles of Association - Meaning Purpose, Content. Alternation, Constructive Notice.
- Doctrine of Indoment Exceptions

Unit-III

Prospectus, Shares, and Debentures

- Meaning - Formalities of issue Prospectus - Misrepresentation of Prospectus - Golden Rule
- Shares - Meaning, Types of Shares, and Transfer of shares
- Share Capital, Meaning, Kinds, Alternation, Reduction, and Voting Rights
- Debenture - Meaning, Types, Charge-Fixed and Floating, Crystallization of Floating charge
- Borrowing Powers - Effective of unauthorized borrowings

Unit-IV

Members, Membership Rights &Management and Administration of Company

- Modes of acquiring Membership
- Rights and Privileges of Members and Shareholders
- Transfer and Registration of Transfer of Securities
- Transmission of Securities
- Dividend - Rules as to Payment of Dividend
- Directors - Appointment, Qualifications, Types, Position, Powers, Functions
- Duties and Liabilities of Directors
- Meetings, Kinds, Requisites of Valid Meeting
- Audit and Accounting System - Legal Position of Audit

Unit-V

Oppression, Mismanagement &Amalgamation and winding up

- Meaning of Oppression and Mismanagement
- Prevention of Oppression and Mismanagement - Rule in Foss v/s Harbottle (1843)
- Powers of the Company Law Board and Central Government
- Inspection and Investigation
- Role of Serious Fraud Investigation Office (SF10).
- Merger and Demerger of the Company
- Amalgamation, Compromise, and Arrangement
- Winding up - Meaning, Types, Procedure
- Payment of Liabilities in the event of winding up
- Role of Official Liquidator, Court, and National Company Law Tribunal

Case Studies:

1. Salomon v. Salomon & Co., Ltd. (1897) A.C. 22 (H.L.) :(1895-95) All ER Rep. 33
2. R.C. Cooper v. Union of India (1970) 3 SCR 530
3. *Kelner v Baxter* (1866) LR 2 CP 174
4. *Ashbury Railway Carriage* and Iron Co Ltd v Riche (1875) LR 7 HL 653

5. *Royal British Bank v Turquand* (1856) 6 E&B 327
6. Regal Hastings Ltd. V. Gulliver, [1942] 1 All ER 378
7. Foss v. Harbottle (1843) 2 Hare 461 : (1843) 67 ER 189
8. Nagappa Chettiar V. Madras Race Club, ILR 1949 Mad 808
9. JonesV. Ahman Son (1970) 70 Col LR 1079
10. Derej Vs Peale

Act and Statute (As Amended)

- The Companies Act, 2013

Text Book

1. C.A.Kamal Garg, Bharat's Corporate and Allied Laws, 2013
2. Institute of Company Secretaries of India, Companies Act 2013, CCH Wolter Kluver Business, 2013
3. Lexis Nexis, Corporate Laws 2013 (Palmtop Edition)
4. Avtar Singh: Company Law
5. Dutta on Company Law
6. N.D. Kapoor on Company Law, Charles Wild, and Stuart Weinstein Smith and Keenan, Company Law, Pearson Longman, 2009
7. The Companies Acts from 1956 to 2014 as amended up to the date.
8. The New Company Law, Dr. N.V. Paranjape, Central Law Agency.

Reference Book

1. Smith and Keenan's, Company Law (2002)
2. Andrew Lidbetter, Company Investigations ad Public Law (1999)
3. Saleem Sheikh & William Rees, Corporate Governance & Corporate Control (2002).
4. Gower's Principles of Company Law 8thEdition 2008, R. Cambray & Co. Pvt. Ltd.
5. Smith and Keenan's Company Law.
6. S. K. Verma & Suman Gupta, Corporate Governance and Corporate Law Reform in India. (2005).
7. Companies Act, 1956
8. Suman Gupta: Shareholder's Democracy: Fact or Fiction. (1992)
9. Paul L. Davies, Gower and Davies Principles of Modern Company Law (8th ed., 2008)
10. Avtar Singh, Indian Company Law (2008), Eastern, Lucknow.
11. L.C.B. Gower, Principles of Modern Company Law (1997) Sweet and Maxwell, London
12. Ramaiya, Guide to the Companies Act, (2007), Wadha.

INTELLECTUAL PROPERTY LAW

COURSE OUTLINE

Objective: Intellectual property in the modern world is not confined only to the protection of intellectual creations or inventions. Rather now it has become a powerful tool of economic growth and prosperity by stimulating creative and innovative ideas, of generating revenue, promoting investment, enhancing literary, social and cultural values of mankind. It prevents 'brain-drain', and nurture over-all economic health. Every sphere of life is getting molded by intellectual properties. It has become an important component of business transactions. The developments in international telecommunications have increased its importance and put new challenges to the protection of intellectual property. With such an importance of IP, well-crafted IP courses require to be devised. The objective of the current draft is to impart knowledge the substantive intellectual property law and infuse with the skill of applying and construing the law to different factual situations. On theoretical level, students should be able to have the basic understanding of the IP. Subsequently they are required to engage in a critical discourse on the policy factors of each and every kind of intellectual property to become aware of their rights for the protection of their creations and inventions. Apart from the introductory levels, students should be increasingly exposed to international aspects of IP law. As a summary of the objectives are as follows:

1. To study the conceptualization of IPR
2. To focus on the investment, enhancing literary knowledge and cultural values of mankind.
3. To go through the substantive portion of IPR for the depth study.
4. To increase the international aspect of IPR

COURSE OUTCOMES

The students shall be able to;

1. Understand the international origin of IPR
2. Think over the Indian IPR law in relation to the International legal system.

3. Critically analyses the IPR law for protecting the intellectual property
4. Apply critically the principles of IPR laws for the protection creative activities.

Unit- I **Credit 6**

Introduction **(Hours 60)**

1. The meaning of Intellectual property
2. Competing rationales of the legal regimes for the protection of intellectual property
3. The main forms of intellectual property: copyright trademarks, patents, designs
4. Introduction to the leading international instruments concerning intellectual property rights:

a. The Berne Convention
b. The Paris Convention
c. Universal Copyright Convention
d. TRIPS Agreement
e. WCCT
f. WPPT

5. The role of the World Intellectual Property Rights Organisation (WIPO) and UNESCO in IP Protection.

Unit- II
Copy Rights Law

1. Historical evolution of copyrights law
2. Meaning of copyright; idea and expressions dichotomy
3. Subject matter of copyrights

a. Copyright in literary, dramatic, and musical works and artistic works
b. Copyright in sound records and cinematograph films
c. Copyright in computer programme
d. Copy right in data
e. Copy right in computer-created work and artificial intelligence

4. Rights protected by copyright
5. Moral Rights
6. Related rights
7. Acquisition, transfer &protection of Copyright
8. Limitations and exceptions to Rights
9. Notion of infringement
10. Criteria of infringement
11. Importation and infringement
12. Remedies, especially, the possibility of Anton pillar injunctive relief in India.

13. The Folklore: The cultural expressions meaning and justification for protestation through sui generis Community IP legislation

Unit- III
The Law of Intellectual Property: Patents

1. Historical view of the patents law in India
2. Patent defined
3. Criteria for patenting;

a. Invention
b. Inventive steps
c. Obviousness non
d. Patentable and non-patentable invention

4. Process of obtaining a patent: application, examination, prior publication or anticipation opposition and sealing of patents: general introduction
5. Procedure for filing patents under Patent co-operation treaty
6. Ground for pre-grant and post-grant opposition
7. Duration of patents: law and policy considerations
8. Compulsory licenses
9. Defences in suits for infringement
10. Traditional knowledge:Need and justification for community IP
11. Plant varieties and farmers rights: Criteria and procedure for protection

Unit- IV
Intellectual Property in Trademarks

1. The rationale of protection of trademarks
2. Definitions and concept of trademarks
3. Criteria for registration

a. Absolute grounds for refusal
b. Relative grounds for refusal
c. Procedure for Registration of Trade Marks

4. Process of International registration: the Madrid System
5. The doctrine of deceptive similarity
6. Protection of well-known marks
7. Domain name and its registration process
8. Passing off and infringement of trademarks and domain name
9. Remedies
10. Geographical Indications and Appellation of Origin
11. The Lisbon treaty and registration of the Appellation origin

Unit- V

Designs- The Designs Act, 2000

1. Definition of design - Copyright in Design (duration)
2. Need for protection of industrial designs
3. Subject matter of protection and requirements
4. Procedure for obtaining design protection
5. Process of International Registration of Industrial design:The Hague System
6. Registration of design for articles
7. Cancellation of Design
8. Infringement of copyright in Design
9. Remedies
10. Trade secret meaning and essetails

Recommended readings

- Cormish W.R., Intellectual Property, Patents, Trade Marks, Copy Rights and Allied Rights (1999),
- Asia Law House, Hyderabad.
- Vikas Vashishth, Law and Practice of Intellectual Property (1999), Bharat Law House, Delhi.
- P. Narayanan, Intellectual Property Law (1999), (ed) Eastern Law House, Calcutta.
- Bibeck Debroy (ed.) Intellectual Property Rights (1998) Rajiv Gandhi Foundation, Delhi.
- U.I.F. Anderfelt, International Patent Legislation and Developing Countries (1971).
- W.R. Cornish, Intellectual Property(3rd ed.) (1996) Sweet and Maxwell
- W.R. Mann, Transfer of Technology (1982)
- Mata Din, Law of Passing off and Infringement Action of Trade Marks (1986).
- P.S. Sangal and Kishore Singh, Indian Patent System and Paris Convention: Legal Perspectives(1987).
- K. Thairani, Copyright: The Indian Experience (1987)
- W.R. Cornish, Para and Materials on Intellectual Property (1999), Sweet &

PUBLIC INTERNATIONAL LAW

INTRODUCTION TO THE COURSE

Public international law concerns the structure and conduct of sovereign states; analogous entities, such as the Holy See; and intergovernmental organizations. To a lesser degree, international law also may affect multinational corporations and individuals, an impact increasingly evolving beyond domestic legal interpretation and enforcement. Public international law has increased in use and importance vastly over the twentieth century, due to the increase in global trade, environmental deterioration on a worldwide scale, awareness of human rights violations, rapid and vast increases in international transportation and a boom in global communications.

COURSE OBJECTIVE

This course has the following objectives

1. To provide the fundamental standing of international law
2. To study the law of treaty and the law of the sea
3. To learn the provisions of international relations among the nations
4. To examine the international provisions of state recognition

The objective of this course is to provide a basic understanding of the present scenario to the student so that they are able to understand the complete aspects of international relations among the nations.

COURSE OUTCOMES

The students shall be able to:

1. Understand the basic concept and sources of international law
2. Demonstrate knowledge and understanding of the international rights frame work, its origins and justifying theories
3. Establish the capacity to assess how specific human rights may be asserted, enforced or violated.
4. Critically evaluate the relationship between international and domestic law

COURSE OUTLINE

Unit- I Credit 6
INTRODUCTION (Hours 60)

1. Definition and nature and scope of Public International Law
2. Distinction between Public International Law and Private International Law
3. Subjects of International law
4. Sources of International Law
5. Relationship between international law and municipal law (Monism, Dualism, British, American and Indian Practice)

Unit- II
Law of Treaty and Law of Sea

1. Law of Sea:

a. Meaning of Treaty and kinds of Treaty
b. Important of consent in the treaty formation
c. Process of formation of Treaty
d. Interpretation of the Treaty
e. Reservation against a Treaty
f. Termination of the Treaty
g. Pacta sunt servenda. Rebus Sic Stantibus and Peremptory norms of International Law

2. Law of Sea:

a. Development of Law of Sea
b. Territorial Sea,
c. Contiguous Zone,
d. Continental Shelf,
e. Exclusive Economic Zone,
f. The High Seas
g. International Tribunal for the Law of the Sea
h. International Seabed Mining- Parallel System of Mining

Unit- III
State Jurisdiction, State Recognition and State Responsibility

1. State Recognition:

a. Meaning, kinds of the State Recognition
b. Recognition of the Government
c. Theories of Recognition,
d. Legal Effect of Recognition

e. Withdrawal of Recognition States Succession

2. State Jurisdiction; meaning kinds of jurisdiction and exceptions to it.

3. State Responsibility, Meaning kinds of state responsibility and general defences

Unit- IV
Air and Space Law

1. Air Space: Various Theories, Aerial Navigation (Five freedom of Air), Outer Space Treaty, 1967 and recent trends
2. International Humanitarian Law: Meaning, Development and brief introduction to the Four Geneva Conventions and its Optional Protocols
3. International Organizations; Meaning, Characteristics
4. United Nations: Origin and Development, Purpose and Principles Main Organs and their compositions and functions.

Unit- V
Individuals under international law

1. Nationality meaning, legal consequence and termination of nationality
2. Stateless Person and Refugee; Meaning and their rights and duties under international law
3. Extradition: Definition, purpose and principles of extradition
4. Asylum: Meaning, types of asylum, and relation between asylum and extradition
5. Diplomatic Agents and Consuls: definitional and classification of heads of mission, the basis of immunities and privileges, privileges and immunities, waiver of immunity, termination of the diplomatic mission.

Recommended Readings

1. "International Law" Gurdip Singh/Macmillan India Ltd.
2. **"**International Law" J.G. Starke
3. "Cases and materials in International Law" Harris
4. "Principles of International Law" Brownlie/ Universal Publication
5. "Principles of International Law" S.K Kapoor / CLA
6. "International Law" Charles G. Fenwick/Oxford University Press
7. "WTO and International Trade" M. B Rao and Manjula Guru
8. "Understanding International Trade Law" Simone Scnitzer/Universal Publishing House
9. "The Law and Policy of the World Trade Organization" Peter Van den Bossche/Werner Zdouc Paperback
10. "International Trade Law" Indira Carr/Cavendish Publishing House

ECONOMICS-V

(LAW AND ECONOMICS)

INTRODUCTION TO THE COURSE

This course utilizes the standard tools of economic analysis for the study of law and legal institutions, with a special focus on (i) the economics of property;(ii) the economics of contracts; (iii) the economics of tort law, and (iv) economics of law making. This course explains the economic aspects of law making. It describes the normative aspect of economics. It appraises legal rules to determine the extent to which they meet the social goal of efficiency, an application of welfare economics.

COURSE OBJECTIVE

This course has the following objectives

1. To examine the importance of Economics to law
2. To examine legal impediments to the field of Economics
3. To understand law acts as an instrument for economic policymaking
4. To understand the economic basis of the Law of Property, Law of Contract, Law of Torts, and Criminology.

COURSE OUTCOMES

The students shall be able to:

1. Understand the relationship between law and economics
2. Know the basic concept of law and economics
3. Analyses the economics in relation to property law, the law of Tort and other laws
4. Apply critical thinking in crime and punishment in regard to economics

COURSE OUTLINE

Unit- I — Credit 6
Basic Concepts of Economics & Law — (Hours 60)

a) Basic concepts of law – the common law & civil law tradition
b) Basic concepts of economics – Review of Price Theory
c) Concepts of Economic Efficiency – Pareto Optimum, Theory of Second Best
d) The theory of markets

e) Market failure -Externalities, Monopoly, Public goods & information
f) The Game Theory

Recommended Readings

Cooter and Ulen: chapter 2; A Review of Microeconomic theory

Cooter and Ulen: chapter 3; An Introduction to Law and Legal Economics

Kenneth Gillingham, James Sweeney: "Market Failure and the Structure of Externalities" ; 2010

Vani K. Borooah: "Market Failure:An Economic Analysis of its Causes and Consequences" ; 2003

Game Theory : the library of Economics & Liberty,www.econlib.org/library/Enc/GameTheory.html

Unit- II
Economic Analysis of Property Law

a) The Coase theorem
b) Bargaining Theory
c) The economic concept of property rights and their allocation: to lubricate or allocate
d) How are property rights established & verified
e) The Economic aspects of what can be privately owned
f) Intellectual property as public goods (Patents, copyrights, trademarks)
g) Remedies of violation of property rights

Recommended Readings

Cooter and Ulen: chapter 4 & 5: An Economic theory of Property

Gary North "The Coase theorem: A STUDY IN ECONOMIC EPISTEMOLOGY". 1992

Posner, Richard A. (2005) "Intellectual Property: The Law and Economics Approach".

Web Notes Cooter & Ulen

Matt Rognlie, "Understanding the Coase theorem" 2011, *mattrognlie.com/2011/05/04/understanding-the-coase-theorem/*

Christopher K. Eppich, *Patenting Dilemma: Drugs for Profit Versus Drugs for Health*, 43 Santa Clara L. Rev. 289 (2002).

Unit- III
Economics of Law of Contract

a) Bargain Theory – Introduction to Contract
b) Economic theory of Contract
c) Perfect Contracts and market Failures
d) Remedies as Incentives
e) Specific Performance
f) Models of Remedies

Recommended Readings

Cooter and Ulen: chapter 6 & 7: An Economic Theory of Contracts
Steven Shavell, "Economic Analysis of Contract law" ; the national bureau of Economic Research, 2003.

Unit- IV
Economics of Law of Torts

- Economics of torts: Calabresi's minimum social cost rule
- Drivers & pedestrians: *Caveat Emptor* or negligence or strict liability?
  1. Caveats: activity levels; extent of precaution, administrative costs, court errors. 2. The Learned Hand rule
- Product liability: privity to negligence to strict liability to absolute liability
- Consumer Product Injuries
- Extension of Economic Model in Law of torts

Recommended Readings

Cooter and Ulen: chapter 8 & 9: An Economic Theory of Tort Law
Winand Emons, "An Introduction to the Legal & Economic Theories of torts" 1993.
Richard A Posner, "Instrumental and Non-Instrumental Theories of Tort Law" 2013.

Unit- V
Economic Theory Crime and Punishment

a) Computing the value of a legal claim
b) Settlement Bargaining
c) Economics of Trials
d) Economic Aspects of Appeals
e) The theory of criminal law
f) The concept of Rational Crime
g) Optimal Amount of Crime Deterrence and of Efficient Punishment

h) Social Cost of Crime
i) The Deterrence effect of Imprisonment and capital punishment
j) The Economics of addictive drugs and crime

Recommended Readings

Cooter and Ulen: chapter 10: An Economic Theory of Legal Process

Richard A Posner, "An Economic Approach to Legal Procedure & Judicial Administration" ;*The Journal of Legal Studies* : Vol 2, 1973

Cooter, Robert (1991) "Economic Theories of Legal Liability." *Journal of EconomicPerspectives* 5(3).

Cooter and Ulen: chapter 11 & 12: An economics of Crime & Punishment

Gary S. Becker, "Crime and Punishment: An Economic Approach"; *National Bureau of Economic Research*, Vol 1, 1974.

M.A.Cohen, "Environmental Crime & Punishment: Legal / Economic Theory"

Farmer, Amy and Dek Terrell (2001) "Crime versus Justice: Is There a Trade-off?" *The Journal of Law and Economics,* Vol. XLIV

CURRICULUM AND SYLLABI

(7th Semester)

B.A.LL.B.
(Integrated Law degree course)

SCHOOL OF LAW

RAFFLES UNIVERSITY

Japanese Zone, National Highway 48 Neemrana, Rajasthan 301020

www.rafflesuniversity.edu.in

CODE OF CIVIL PROCEDURE, 1908

INTRODUCTION TO THE COURSE

Civil Procedure Code is subject of daily use by the courts and lawyers. Students cannot afford to have scant knowledge of civil procedure when he goes out to practice as a lawyer. True that it is through experience one gets expert knowledge of civil procedure. However, it is necessary to have good grounding in the subject before one enters the profession. While the substantive law determines the rights of persons affected by the action, judicial decisions will supply the omissions in the law.

The Code of Civil Procedure in India has a chequered history and lays down the details of the procedure for the redressal of civil rights. Many questions may prop up when one goes to vindicate one's civil rights. The court where the suit is to be filed, the essential forms and procedure for the institution of suit, the document in support and against, evidence taking and trial, dimensions of an interim order, the peculiar nature of the suit.

COURSE OBJECTIVES OF THE

1. To understand the history of civil procedure code, its extent and application, definition, jurisdiction of civil courts and nature of civil suit.
2. To analyse the crucial importance of the Civil Procedure Code in civil proceedings
3. To outline the foundations on which civil litigations are based
4. To analyse the primary requirements of a civil proceeding
5. To illustrate the necessary sequence which must be followed in a civil litigation
6. To examine the procedure of trial of civil nature and differentiate between different kinds of order and judgment.

COURSE OUTCOME

1. Demonstrate the knowledge and understanding of the substantive law, procedural law and Constitutional Law.
2. Develop the ability to perform legal analysis and reasoning, legal research, problem solving, written and oral communication in the legal context and apply it in legal practise and real life situation.
3. Demonstrate the professional skills of pleading, argument, drafting and conveyancing, collaboration, counselling and negotiation required for legal practice.
4. Develop the ability of analysing the law in relating to contemporary developments at national level.

COURSE OUTLINE:

UNIT-I **(Credit 6)**

Introduction **(Hours 60)**

A. History of the Code,
B. Distinction between Procedural Law and Substantive Law,
C. Extent and Its Application,
D. Definitions: - Definitions: decree, judgment, order, mesne profits, pleader, legal
E. representative, judgment-debtor, decree-holder, foreign judgment,
F. Subordination and Hierarchy of Courts.

UNIT-II

Jurisdiction

A. Kinds of Jurisdiction
B. Bar on Suits- Suit of Civil Nature (Section 9)
C. Doctrine of Res Subjudice, Res Judicate (Section 10 and Section 11) and Section 12 R/w Order II, Rule 1 and Rule 2- (Suit to include the whole claim)
D. Foreign Judgements (Section 13, 14 and 44A)
E. Place of Suit (Section 15 to 21-A)
F. Transfer of Cases (Section 22 to 25)

UNIT-III

Institution of Suit and Parties to the Suit

A. Parties to the Suit (Order I): Necessary Parties, Proper Parties, Joinder, Misjoinder and Non- Joinder of Parties, Representative Suit (Order I, Rule 8) Interpleader Suit (Section 88, Order XXXV)
B. Frame of Suit (Order-II) along with Institution of suit (Order-IV, R/w Section 26)
C. Pleadings (Order VI): Fundamental Rules of Pleading- Plaint and Written Statement- Return and Rejection of Plaint- Defenses (Set Off and Counter Claim)- Order VIII

UNIT-IV

Appearance of Parties

A. Issue and Service of Summons
B. Consequences of non-appearance of parties, non- appearance of the plaintiff or
C. Defendant- Order IX
D. Setting aside *ex parte* decree- Order IX, Rule 13
E. Disposal of suit at first Hearing- Order XV
F. Examination of Parties by the Court- Order X

UNIT-V

Trial, Judgment and Decree

A. Affidavits- Order XIX
B. Settlement of Disputes outside Court- Section 89, Order X, Rule 1A,1b and 1C
C. Summoning and Attendance of Witnesses- Order XVI, Rule 1, 1-A and 6
D. Attendance of Witnesses confined or detained in prisons
E. Adjournments- Order XVII
F. Hearing of suit and examination of witnesses- Order XVIII, R/w Section 138 IEA
G. Judgement and Decree, Section 33, Order XX

Case: -

- ***Gundaji Satwaji Shinde v. Ram Chandra Bhikaji Joshi, AIR 1979 SC 653 1***
- ***Indian Bank v. Maharashtra State Cooperative Marketing***
- ***Federation Ltd, AIR 1998 SC 1952 13***
- ***Iftikhar Ahmed v. Syed Meharban Ali, AIR 1974 SC 749 16***
- ***State of U.P. v. Nawab Hussain, AIR 1977 SC 1680 20***
- ***C.A. Balakrishnan v. Commissioner Corporation of Madras, AIR 2003 Mad. 170***
- ***Anil Rai v. State of Bihar, 2001, SC***
- ***SJVNL v. M/S CCC HIM JV and Another 2021, SC***
- ***S. Satnam Singh v. Surender Kaur, 2008, SC***
- ***Chunilal V. Mehta v. Century Spinning and Manufacturing Co. Ltd., AIR 1962 SC1314***
- ***Koppi Setty v. Ratnam v. Pamarti Venka 2009 RLR 27 (NSC)***
- ***Gill & Co. v. Bimla Kumari, 1986 RLR 370 39***

Recommended Readings

1. *Mulla, Code of Civil Procedure, Universal, Delhi*
2. *R.N. Choudhary Law of Limitation .*
3. *Gupte & Dighe Civil Manual.*
4. *Mahendra C.Jain THE BOMBAY COURT FEES ACT, 1959.*
5. *Majumdar. P. K. and Kataria. R. P.,Commentary on the Code of civil Procedure 1908 (1998), Universal, Delhi.*
6. *P.S.Narayana's Law of Limitation.*
7. *A.N Saha The Code of civil Procedure (1999),*
8. *Sarkar's Law of Civil Procedure,*
9. *Dr. Subzwari's THE CODE OF CIVIL PROCEDURE,1908.*
10. *C. K. Thacker, The Code of civil Procedure Mulla, Code of civil Procedure.*
11. *C.K.Takwani, Code of Civil Prodecure,Eastern Book Company*

PRINCIPLES OF TAXATION LAW

INTRODUCTION OF THE COURSE

The course is designed to help students to understand the technicality of the Taxation system. The Indian tax system is well structured and has a three-tier federal structure. The tax structure consists of the central government, state governments, and local municipal bodies. When it comes to taxes, there are two types of taxes in India - Direct and Indirect tax.

COURSE OBJECTIVES

This course has the following objectives

1. The focus is providing an overview of the Indian taxation system
2. Examine in detail provisions of the principles of taxation law
3. To Develop skills in recognizing tax issues in factual situations
4. Enhance your ability to solve tax problems through the development of skills in interpreting legislation and cases and in finding the applicable law
5. Assist you in developing systematic approaches to organizing and retaining knowledge

COURSE OUTCOMES

The students shall be able to:

1. Apply the principles of taxation laws to complex legal problems
2. Understand the technical aspects of taxation laws
3. To file and contest cases writ pertaining to taxation laws before the competent authorities
4. Supervise and guide the persons whose matters are related to taxation laws.

COURSE OUTLINE

Unit-I Credit 6

Introduction & General Perspective (Hours 60)

A. Meaning of Tax

a. History of tax law in India
b. Fundamental principles relating to tax laws
c. Governmental financial policy, tax structure, and their role in the national
d. economy.
e. Concept of tax:
f. Nature and characteristics of taxes
g. Distinction between:
h. Tax and fee
i. Tax and cess
j. Direct and indirect taxes

k. Tax evasion and tax avoidance
l. Scope of taxing powers of Parliament, state Legislature, and local bodies.
m. Canons of Taxation by Adam Smith and Additional/Modern Canons
n. Important Definitions
   - Previous Year
   - Assessment Year
   - Income
   - Assess
   - Person
   - Company
   - Average Rate of Income Tax
   - Business
   - Capital Asset
   - Total Income

B. Charge (Section 4)
C. Residential Status of Assesses
D. Scope of Total Income
E. Basic Concept of Total Deduction at Source (TDS)
F. Agricultural Income and Its Tax Treatment

UNIT-II

Income from Salaries & Income from House Property

A. Meaning and Characteristics of Salary
B. Incomes Forming Part of Salary (a. Basic Salary b. Fees, Commission and Bonus c. Taxable Value of Allowances d. Taxable Value of Perquisites e. Retirement Benefit)
C. Deductions from Gross Salary (Sections 16 and 80)
D. Basis of Charge (Section 22)
E. Applicability of Section 22 (Buildings or lands appurtenant thereto, Ownership of house property, Property used for own business or profession, Rental income of a dealer in house property, House property in a foreign country)
F. Deduction from Income from House Property

UNIT-III

Income from Profit and Gains of Business or Profession

A. Concept of Profit and Gains
B. Scope of Section 28 (Basis of Charge)
C. Business, Profession, and Vocation
D. Different Deductions under This Head a. Schemes of Business Deductions b. Specific Deductions under this Act c. Deductions under sections 30 & 31

UNIT-IV

Tax Avoidance, Tax Evasion, Tax Planning & Income Tax Authorities

A. Basic Concept of Tax Avoidance, Tax Evasion, and Tax Planning
B. Reason for Tax Avoidance, Tax Evasion
C. The distinction between Tax Avoidance and Tax Evasion
D. Recommendation of Wanchoo Committee to Fight Tax Evasion

E. Effect of Tax Avoidance and Tax Evasion
F. Hierarchy
G. Appointment
H. Powers: Search and Seizure- Section 132 a. Fulfillment of statutory Conditions b. Test of 'Reason to believe

UNIT-V

A. Appointment, power and Duties of Income Tax Authorities

B. Remedies available under income tax law

- Appeals and Revision: Appealable orders, procedure in appeal, appellate tribunal
- Reference to High Court: Statement of case to the High Court, Statement of case to the Supreme Court in certain cases
- Power of Supreme Court and High Court to require statements in amended matters

Prescribed Books:

1. Principles of Taxation Law 2019 By Thomson Reuters
2. Principles of Taxation & Tax Law-I - S.R Myneni 2017
3. Amar Law Publication's Principle of Taxation Law for LLB Paperback – 1 January 2017
4. Taxmann's Guide to Taxation Laws (Amendment) Act 2019 (2020 Edition) Paperback – 1 January 2019
5. V. K. Gupta's Income Tax Ready Reckoner AY 2020-21 and 2021-22 As Amended by Taxation Laws - Finance Act of 2020. - English Paperback. Paperback – 1 January 2020
6. Principles of Taxation Laws with Goods and Service Tax Act, 2017 (GST) by Prof. Ullas Kumar Saha | 1 January 2019
7. Principles of Taxation for Business and Investment Planning, 2014 Edition by Sally Jones and Shelley Rhoades-Catanach | 16 April 2013
8. Lectures on Law of Taxation (Income Tax and GST) by P.K. Singh | 1 January 2018
9. Principles of Taxation by V. Gaurishankar | 1 January 2007
10. Principles of International Taxation by Angharad Miller and Lynne Oats | 21 January 2015
11. A C Sampath Iyengar, The Law of Income Tax, Bharat Law House
12. Chaturvedi and Pithisaria's Income Tax Law
13. Girish Ahuja & Ravi Gupta, Direct Tax- Law and Practice
14. Girish Ahuja & Ravi Gupta, Direct Taxes Ready Reckoner (Bharat Publication)
15. Kanga, Palkhiwala and Vyas, The Law and Practice of Income Tax (Lexis Nexis Butterworths)
16. Vinod K Singhania and Kapil Singhania, Taxman's Direct Tax- Law and Practice.

Case Laws:

1. SC upholds linking of Aadhaar number with PAN: [Justice K.S. Puttaswamy (RETD.) v. Union of India [2018] 97 taxmann.com 585 (SC)]
2. Discounts offered by Flipkart.com to buyers aren't intangible assets: ITAT: [Flipkart

India Private Limited v. ACIT [2018] 92 taxmann.com 387 (Bangalore - Trib.)]

3. A gift received by an individual from HUF isn't exempt: ITAT: [Gyanchand M. Bardia v. ITO [2018] 93 taxmann.com 144 (Ahmedabad - Trib.)]
4. Sec. 68 additions not tenable on grounds that relatives gave gift without any occasion: High Court: [Pendurthi Chandrasekhar v. DCIT [2018] 91 taxmann.com 229 (Hyderabad)]
5. MasterCard shall have a PE in India and its fees for processing card payments are taxable as business income: AAR: [MasterCard Asia Pacific Pte. Ltd., In re. [2018] 94 taxmann.com 195 (AAR - New Delhi)]
6. The market value of other business assets not relevant to determine FMV value of unlisted shares of a co.: [Minda S M Technocast (P.) Ltd. v. ACIT [2018] 92 taxmann.com 29 (Delhi - Trib.)]
7. Domain registration fee received by 'GoDaddy' is taxable as royalty: ITAT: [Godaddy.com LLC v. ACIT [2018] 92 taxmann.com 241 (Delhi - Trib.)]
8. HC upheld additions on basis of 'window-dressed' financials prepared for bank loans: [Binod Kumar Agarwala v. CIT [2018] 94 taxmann.com 422 (Calcutta)]
9. 'Sachin Tendulkar' entitled to vacancy allowance as he failed to find tenant for vacant flat: [Sachin R. Tendulkar v. DCIT [2018] 96 taxmann.com 253 (Mumbai - Trib.)]
10. Sum received on relinquishment of 'right to sue' is non-taxable capital receipt: ITAT: [Bhojison Infrastructure (P.) Ltd. v. ITO [2018] 99 taxmann.com 26 (Ahmedabad - Trib.)]
11. AO should apprise counsel on all facts to avoid delays in disposal of cases: HC: [PCIT v. Grasim Industries Ltd [2018] 94 taxmann.com 81 (Bombay)]
12. Mushroom farming is an agricultural operation even if vertical space is used instead of horizontal space on soil: [DCIT v. Inventaa Industries (P.) Ltd. [2018] 95 taxmann.com 162 (Hyderabad - Trib.)]
13. Delhi HC directs I-T Dept. to allow filing of ITR without Aadhaar No.: [Shreyasen, & Anr. v. Union of India & ORS [2018] 95 taxmann.com 256 (Delhi)]
14. No capital gain tax on 'Power of Attorney' holder just because real owner didn't file ITR: ITAT: [Samir Trikambhai Patel v. ITO [2018] 96 taxmann.com 291 (Ahmedabad - Trib.)]
15. Brand promotion by 'Shilpa Shetty' not an international transaction in absence of prerequisite agreement: [Shilpa Shetty v. ACIT [2018] 96 taxmann.com 443 (Mumbai - Trib.)]
16. Compensation received by 'Jackie Shroff' for withdrawing criminal case was capital receipt and not taxable: [ACIT v. Jackie Shroff - [2018] 97 taxmann.com 277 (Mumbai - Trib.)]
17. Reopening of cases of Rahul Gandhi and Sonia Gandhi is valid as they failed to disclose shares allotted in excess of FMV: HC: [Sonia Gandhi v. ACIT [2018] 97 taxmann.com 150 (Delhi)]
18. ITAT grants stay of demand for non-deduction of tax by 'Uber' from payment made to drivers: [Uber India Systems (P.) Ltd. v. JCIT [2018] 98 taxmann.com 199 (Mumbai - Trib.)]
19. Excess share premium not taxable in hands of closely held co. if its shareholders are relatives: ITAT: [Vaani Estates (P.) Ltd. v. ITO [2018] 98 taxmann.com 92 (Chennai - Trib.)]
20. No concealment penalty if assessee has bonafide belief that notional income isn't taxable: ITAT: [DCIT v. Shah Rukh Khan [2018] 93 taxmann.com 320 (Mumbai - Trib.)]
21. Australia has taxing rights under Australia-India DTAA even if there is no provision

in its domestic law: Australian Court: [Satyam Computer Services Ltd. (Now Tech Mahindra Limited) v. Commissioner of Taxation [2018] 98 taxmann.com 358 (FC-Australia)]

22. Madras HC quashes proceedings initiated under Black Money Act against Chidambaram family: [Srinidhi Karti Chidambaram v. PCIT [2018] 99 taxmann.com 181 (Madras)]
23. Sum received by Sushmita Sen as compensation for being sexually harassed not taxable: [Sushmita Sen v. ACIT [2018] 99 taxmann.com 252 (Mumbai - Trib.)]
24. Payment of advance salary to defeat the purpose of demonetisation won't come under the purview of Benami transaction: [G. Bahadur v. ACIT [2018] 100 taxmann.com 179 (PBPTA – AT)]
25. Priyanka Chopra shall pay tax on car gifted to her by 'Toyota' for brand promotion: Mumbai ITAT: [Priyanka Chopra v. DCIT [2018] 89 taxmann.com 286 (Mumbai - Trib.)]

HUMAN RIGHTS LAW AND PRACTICE

Prelude to the Course:

The objective of this subject is to lay the foundation of Human Rights law and acquaint the students with basic documents of human rights. The course caters to provide with all the basic connotations needed for the development of human rights jurisprudence in India.

COURSE OBJECTIVES:

The course has the following objectives:

1. Provide an overview of the historical development of human rights.
2. Explore the various documents on human rights.
3. Enumerate the Indian perspectives on human rights.
4. Evaluate the protection of vulnerable groups.
5. Discuss the modern trends in human rights.

COURSE OUTCOMES:

the students shall be able to:

1. Understand the meaning and historical development of human rights.
2. Classify relevant documents on human rights.
3. Interpret legal provisions on human rights under Indian laws.
4. Examine the effective implementation of human rights of vulnerable groups.
5. Appraisal of contemporary issues on human rights

Unit – I Credit 6

Introduction to Human Rights Law (Hours 60)

A. Origin and Development of Human Rights

B. Meaning of Human Rights

C. Evolution of the Concept of Human Rights: First Generation, Second Generation and Third Generation

Unit – II

Relevant Documents on Human Rights

A. Universal Declaration of Human Rights (1948)

B. International Covenant on Civil and Political Rights, 1966

C. International Covenant Economic, Social and Cultural Rights, 1966

Unit – III

Human Rights in India

A. Indian Constitution and Human Rights

B. Judicial activism & Protection of Human Rights in India

C. The Protection of Human Rights Act, 1992

Unit – IV
Human Rights and Vulnerable Groups

A. Rights of Women and Children

B. Rights of Disabled, Tribal, Aged and Minorities

Unit –V

Contemporary Issues and Human Rights

- Human Rights and the Third Gender
- Human Rights of Homosexuals, Bisexuals and Lesbians
- War against Terrorism and Human Rights

Suggested Readings:

Sl. No.	Name of the Textbooks	Year of Publication
	TEXT BOOKS	
1.	Kapoor, S. K., *Human Rights*, Central Law Publications	2010
2.	Agarwal, H. O., *Public International Law& Human Rights*, Central Law Agency	2010
	REFERENCE BOOKS	
3.	Baxi, U., *Human Rights*, Allahabad Law Agency	2010

INTERPRETATION OF STATUTES AND PRINCIPLES OF LEGISLATION

Statutes are framed by the legislature with the help of legal experts in very clear and express terms and it is perceived that there would be no room for their interpretation. It is, however, found that the Courts are busy unfolding the meaning of the terms and provisions of the statutes. Therefore, the duty of the judges is to interpret the statutes, so that their provisions would become meaningful and devoid of lacunas. Generally, the statutes are designed to meet and solve the problems of society. Different statutes are passed by the legislature dealing with different aspects of society. Therefore, this paper aims to make the students understand how these statutes are interpreted by the Courts. This paper aims to provide the students with exposure to different rules of interpretation. The paper also offers an understanding of the principles of legislation in law-making.

COURSE OBJECTIVES

This course has the following objectives

1. To interpret legal words as used in enacted laws
2. To know about the rules of Interpretation of statute
3. To make the capacity of students for understanding the application of Interpretation in the code of law
4. The aim of this course is to enhance the capability of students for the application of the provisions of the Interpretation.

COURSE OUTCOMES

The students shall be able to;

1. Understand the real thing of interpretation
2. Apply the principles of interpretation in the courts
3. Understanding the capacity of the students will increase for the real application of the law
4. Practically understand the construction of various statute

COURSE OUTLINE

Unit – I **Credit 6**

Introduction **(Hours 60)**

A. Meaning of Interpretation
B. Need for Interpretation
C. Understanding Statutes: Its Commencement, Operation, Repeal and Revivaletc.

Unit – II
Rules of Statutory Interpretation

A. **Primary Rules:** Literal (Grammatical) Rule of Construction-Golden Rule of Construction-Mischief Rule (Heydon's Rule) of Construction-Harmonious Rule of Construction.

B. **Secondary Rule:** Construction *Expositio*-Construction in *Bonam Partem- Noscitur a Sociis-Expressio Unius* Rule-*Ejusdem Generis* Rule-*Redendo Singula Singulis*

Unit – III
Aides to Construction

A. **Internal (Intrinsic) Aides**: Title, Preamble, Heading, Marginal Notes, Schedule, Interpretation Clauses, Illustration, Explanation and Proviso.

B. **External (Extrinsic) Aides**: Historical Setting-History Parliamentary Legislation-International Convention-Reference to Legislation-Objects and Reason of the Act-Dictionaries-Text Books.

Unit – IV
Construction of Different Statutes

A. Penal Statute

B. Taxing Statute

C. Constitution

- Harmonious Construction
- Pith and Substance
- Eclipse
- Severability
- Colourable legislation

Unit – V
Principles of Legislation and Presumption in Statutory Interpretation

A. **Law Making:** Legislature, Executive and Judiciary-Process of Law Making-Relevancy of Each Steps-Draft-Bill-Act-Assent

B. **Principle of Utility**: Presumption as to Validity and Territorial Operation-Presumption as to Operation of Statutes (Prospective & Retrospective)-Presumption Regarding Court's Jurisdiction

Suggested Readings

1. Amita Dhanda: N S Bindra's Interpretation of Statutes, LexisNexis India, Gurgaon.
2. Avtar Singh & Harpreet Kaur: Introduction to Interpretation of Statutes, LexisNexisIndia, Gurgaon.
3. Justice G P Singh (Revised by Justice A. K. Patnaik): Principles of Statutory Interpretation (Also including the General Clauses Act, 1897), LexisNexis India, Gurgaon.

4. P. St. J. Langan: Maxwell on the Interpretation of Statutes, LexisNexis India, Gurgaon.
5. N. S. Bindra: Interpretation of Statutes LexisNexis India, Gurgaon.
6. P. M. Bakshi: Statutory Interpretation of Statutes, Orient Publishing Company, Orient Publishing Company.
7. P. S. Narayan: Statutory Interpretation, Asia Law House, Asia Law House, Hyderabad.
8. M. P. Tandon: Interpretation of Statutes & Legislation, Allahabad Law Agency, Allahabad.
9. Bawa & Roy: Interpretation of Statues, Allahabad Law Agency, Allahabad.
10. A. B. Kafaltiya: Interpretation of Statues, Universal Law Publishing Co Pvt. Ltd., New Delhi

HONOURS PAPER

(CONSTITUTIONAL LAW GROUP)

INDIAN FEDERALISM

COURSE OBJECTIVE

This course has the following objectives

1. To teach the students about the fundamental principles of federalism
2. To inculcate the learning system of federalism
3. To develop comparative skills about the federalism
4. To provide knowledge about the types of federalism

COURSE OUTCOMES

The students shall be able to:

1. Understand the concept and definition of federalism
2. Know the provision regarding federalism in different countries
3. Analise the confederation and cooperative federalism
4. Critically apply and compare the federal and unitary systems of government

COURSE OUTLINE

UNIT – I **Credit 4**

Federalism **(Hours 40)**

A. Definition and characteristics of federalism
B. Backgrounds of federal principles under the Indian Constitution
C. Advantage & Disadvantage
D. Advantages and disadvantages of the Federal Constitution
E. Advantages and disadvantages of the Unitary Constitution

UNIT – II

Modification of the strict federal principle under the Indian Constitution

A. Governor's role
B. Centre's powers over the State Emergency
C. Jammu and Kashmir Special status

UNIT – III

Comparative Study on Federalism in

A. India
B. U.K. and
C. USA

UNIT – IV
Centre-state Relations

A. Legislative Relation
B. Administrative Relation
C. Financial Relation

UNIT – V
Types of Federalism

A. Confederation
B. Co-operative Federalism

Recommended Readings:

M.P.Jain Indian Constitutional Law, Wadhwa

D.D. Basu, Comparative Federalism
Hamid Hussain, Indian Federalism Emerging Trends

LOCAL SELF-GOVERNMENT

Prelude to the Course:

The course aims to provide insight into the law governing local self-government in India. It given an insight into the development of self-governing institutions and their impact on the governance of Indian Federalism.

COURSE OBJECTIVES:

This course has the following objectives:

1. To know a basic understanding of local government and authorities
2. To Give an insight into the development of self-governing institutions in India.
3. To Provide the constitutional scheme of self-governance in India.
4. To Enumerates the functions of various self-governing institutions in India.

COURSE OUTCOMES:

The students will be able to:

1. Understand the development of Local Self Government in India.
2. Critically analyse the working of self-governing institutions in India.
3. Explore the recent trends in Local Self Government in India.
4. Recognize the provisions under the constitution regarding local government.

UNIT – I
Introduction

Credit 4
(Hours 40)

A. Meaning and Genesis of Democratic Decentralization
B. History, Growth and Development of Panchayati Raj in India- Lord Rippon's Resolution, Royal Commission, Balwant Rai Mehta Committee Report, Ashok Mehta Committee Report
C. 73rd& 74th Amendment
D. Gram Swaraj: Gandhian Concept
E. Community Development Programme
F. Administrative Framework

UNIT – II
Constitutional Scheme

A. Federalism in India and Local Self Government
B. Directive Principles of State Policy - Art. 40

C. Schedules XI and XII of the Constitution
D. Second Administrative Reforms Commission
E. Sarkaria Commission, Punchi Commission and Local Governments

UNIT –III
Gram Sabha

A. Gram Sabha: Meaning, importance, functions, meetings, Social Audit, Nyaya Panchayat
B. Gram Panchayat: Introduction, Composition, functions, Sarpanch, Powers and functions of Sarpanch
C. Taluk/Block Panchayat: Introduction, Composition, Functions, Chairman: Powers and Functions
D. Zilla Panchayat-Introduction, Composition, Functions
E. Financial Administration: Devolution of Financial Powers, Composition of State Finance Commission
F. State Control over PRIs

UNIT – IV
Urban Government

A. Municipal Corporation: Organization and functions; Municipal Council; Mayor: Functions and Powers; committee-wards committees, district planning committee, Metropolitan planning Committee; Municipal Commissioner- appointment, tenure, powers and functions
B. Cantonment Boards
C. Special Purpose Urban Development Agencies
D. Municipal Finance
E. State Control and Supervision

UNIT – V
Modern Dimensions

A. Planning for Rural Development: Planning machinery at the National and State Levels
B. Role of Panchayat Raj Institutions in Planning
C. Panchayati Raj and Rural Development
D. Panchayats and NGO's
E. Panchayati Raj in Tribal Sub-plan Areas
F. Right to Information and Panchayati Raj
G. Women Empowerment and Panchayati Raj Institutions
H. Reservation and Local Governments
I. Finance Commission & Issues in Local Finance

Sl. No.	Name of the Textbooks	Year of Publication
1.	Myeni, S. R. *Local Self Government,* Allahabad Law Agency	2019
2.	Sharma, M.P. *Local Self Government in India*, M. M. Publishers	2019
3.	Smith, J. *Local Self Government & Centralization*, J Chapman	2015

CRIMINAL LAW GROUP

(CRIMINOLOGY)

INTRODUCTION TO THE COURSE

The classical theorists believe in the concept of free will when explaining crime. If the rewards for being a criminal are greater than the retribution it would bring then criminal behaviour seems more likely. This theory would predict that extreme punishments such as flogging or death would deter people from all crimes.

Cesare Beccaria in the 18th century successfully argued that the punishment should fit the crime. Excessive punishments could be counterproductive as a criminal would reason that if they were to be hung for stealing a sheep they might as well commit more serious offences such as murder and robbery. Jeremy Bentham, the British philosopher of the early eighteenth century, justified punishment in terms of its being able to prevent further crime rather than encouraging it. Why would Bentham, if he were alive today, argue that the Bulger killers should not go to an adult prison?

Classical theory was prominent in the late 18th and 19th Centuries but positivist theories then became popular instead. Since the 1970s there has been a resurgence of interest in the classical theory of crime, with many people calling for harsher punishments.

Positivist theories have been criticised for failing to discover the causes of crime and to develop effective strategies for controlling crime. Positivist theories discount the role of free will; instead, it takes into account factors such as genetic transmission, personality, learning and moral development. The sociological perspective is also taken into account. Emphasis is placed on anomie (a lack of moral standards in society) and strain resulting from poverty imposed by a rigid class structure. Strategies to reduce crime would involve treatment at an individual level or intervention at a social level.

THE FREUDIAN APPROACH:

The central concept of psychoanalysis, and the one that Freud first put forth, is the unconscious. The concept had been around before Freud, but he was the one that made the most out of it, arguing that traumatic experiences in early childhood left their mark on the individual despite the fact that the individual was not aware of these experiences. The idea of unconscious determination of behavior flew headfirst against the idea of free will, and was quickly jumped on by positivistic criminology.

The next most important idea is conflict, and Freud postulated the existence of a three-part personality (an idea going back to Plato) consisting of id, ego, and superego which operated in constant conflict with one another (primarily between the id and superego) producing the basic problem of guilt which required the use of one or more defense mechanisms. The idea of personality conflict as a cause of crime became quite popular among both scientists and the general public.

This course provides an overview of how and why societies punish wrongdoers, and how punishments vary with historical contexts. First, we examine social theories of punishment,

reading and interpreting original philosophical texts about why and how governments and societies punish wrongdoers generally. Second, we examine criminological theories of punishment, evaluating justifications for the punishment of individual wrongdoers. Students analyze a variety of sources, including historical, philosophical and criminological accounts of punishment. We will use theories of punishment to interpret recent legal decisions and debate current punishment policies.

COURSE OBJECTIVE

This course has the following objectives:

1. To explain the basic social and individual justifications for punishment
2. To discuss the relationship between theories of punishment and historical context
3. To evaluate the relevance of theories of punishment to current penal policy
4. To provide detailed knowledge about crime in relate to various groups

COURSE OUTCOMES

The students shall be able to:

1. Understand the relationship between theories of punishment and historical context.
2. Analyze and evaluate the relevance of theories of punishment to current penal policy.
3. Become familiar with basic criminal laws and criminal justice processes in the country.
4. Evaluate the reasons behind the crime and the significance of Penology in the present society and theories of the punishments and its application in the criminal justice system.

COURSE OUTLINE

Unit –I — Credit 6
General principles on criminal law — (Hours 40)

A. Nature, Definition and elements of crime
B. General Principles of Criminal Liability

Unit – II
Criminological Theories

A. Pre classical, Classical, Neo-classical Thoughts Currents
B. Positive Theories

C. Psychological Theories
D. Sociological Theories
E. Radical Theories
F. Sociological theory of crime

Unit – III
A. Crime and Justice

B. Restorative Justice
C. Theories of Punishment
D. Victimology
E. Plea Bargaining
F. Sentencing Policy in India
G. Prison Reforms
H. Alternatives to Punishment

Unit – IV
Crime against vulnerable groups

A. Domestic Violence
B. Juvenile Justice

Unit –V
Socio-Economic and Organized Crime

- White Collar Crimes Main characteristics
- Socio-economic Crimes: Origin and Development
- Socio-Economic Laws in India:
- Narcotic Drugs and Psychotropic Substances Act, 1985
- Prevention of Corruption Act, 1988
- Anti-terrorism laws

Suggested Readings*

BOOKS

1. Andrew Ashworth, Principles of Criminal Law (2009).

2. Baker Denis J., Glanville Williams, Text Book of Criminal Law (2012).

3. Jerome Hall, General Principles of Criminal Law (1960).

4. K.N.C. Pillai, General Principles of Criminal Law (2005).

5. R.C. Nigam, I Law of Crimes in India (1965).

6. Smith & Hogan's Criminal Law (2011)

7. V.B. Raju, Commentary on Indian Penal Code, 1860 (1982).

8. N.V. Paranjape, Criminology and Penology (2010).

(PENOLOGY & VICTIMOLOGY)

Prelude to the Course:
The course aims to provide an overview of the various forms of punishment and the sanctioning mechanisms across cultures. The course also projects on the development of Victimological jurisprudence in various jurisdictions as well.

COURSE OBJECTIVES:
This course has the following objectives:

1. Give an overview of the concept and rationale behind punishment.
2. Conceptualize capital punishment and its nuances across countries.
3. Enumerate sentencing and discuss the need for sentencing guidelines.
4. Enunciate the Victimological jurisprudence and its need in India.
5. Discuss the treatment to the victims of crime.

COURSE OUTCOMES:

The students will be able to:

1. Understand the basics and rationale of punishment.
2. Discourse the law and efficacy of capital punishment in the Indian context.
3. Interpret the sentencing policies of India, the U.K. and the U.S.A.
4. Examine the typologies and theories of victimization.
5. Evaluate the procedure for the proper treatment of victims.

Unit – I — Credit 4
Introduction to Penology — (Hours 40)

A. Meaning, Definition and Objectives of Penology
B. Punishment – Meaning, Objectives and Rationale
C. Theories and Kinds of Punishment under the Indian Penal Code, 1860
D. Corporeal & Other forms of Punishment
E. Law relating to Probation, Parole and Furlough

Unit – II
Capital Punishment

A. Conceptualising Capital Punishment
B. Effect of Death Penalty: Deterrent and Retributive
C. Death Penalty across Cultures – U.S., U.K. and India

D. Arguments For & Against Capital Punishment
E. Safeguards against Miscarriage of Justice
F. Aggravating & Mitigating Circumstances
G. Postulates of the Rarest of Rare Doctrine

Unit – III
Sentencing Policy

- Meaning of Sentences and Sentencing
- Factors to be considered while awarding any sentence
- Comparative Analysis of the Sentencing Policies of U.S. and India

Unit – IV
Victimology

A. Conceptualising Victimology – Meaning and Theories of Victimology
B. Meaning and Types of Victims and Impact of Victimization
C. Victim Offender Relationship
D. Concept of Restorative Justice
E. International Perspectives of Victim's Rights: United Nations Declaration of Basic Principles of Justice for Victims of Crime and Abuse of Power, 1985

Unit – V
Treatment to Victims

A. Specific Victimization: Children, Women, Prisoners, SC/ST**,** Restitution, Compensation and Assistance to Victims in U.S.A, U.K. and India
B. Victim's Right to Compensation under the Indian Criminal Justice System
C. Victim Welfare Schemes and Programmes

Suggested Readings:

Sl. No.	Name of the Textbooks	Year of Publication
	TEXT BOOKS	
1.	Sutherland, E. H., *Criminology*, Eastern Book Company	2009
2.	Siddique, A., *Criminology and Penology*, Allahabad Law Agency	2009
	REFERENCE BOOKS	
3.	Maguire & Morgan, *Crime, Criminology & Criminal Justice Administration*, Oxford University Press	2009
4.	Sverdlik, S. *Punishment and Reform*	2011

INTELLECTUAL PROPERTY RIGHTS GROUP

COPYRIGHTS AND TRADITIONAL CULTURAL EXPRESSION

COURSE OBJECTIVES

This course has the following objectives;

1. To develop proper understanding of the student with the basic concept of Copyrights, related rights and traditional Cultural Expressions.
2. To make aware with the international and national treaties and laws dealing with them.
3. To develop critical understanding of the subject matters.
4. To make them understand when infringement takes place and what is remedies and defenses available in case of infringement.

COURSE OUTCOMES

The students shall be able to:

1. Understand the concept of copyrights and folklore.
2. Analyse the authorship and ownership under copyrights
3. Develops procedural knowledge to Legal System and solving the problem relating to copyrights
4. Skill to understand the concept of Traditional Cultural Expressions (TCEs) or Expressions of Folklore.

COURSE OUTLINE

Unit –I — Credit 4
Copyright: Introduction — (Hours 40)

A. Historical evolution of the law
B. Meaning of copyright
C. Subject Matter of Copyright
D. International Conventions and Treaties dealing with Copy rights and related rights
E. Historical development of copyright law in India

Unit –II
Scope, Authorship and Ownership etc. of Copyright

A. Literary, dramatic and musical works
B. Sound records and cinematograph films

C. Copyright in digital Environment

D. Authorship and ownership

E. Exceptions and limitations

F. Assignment of copyright

G. Transfer and Duration of copyright

Unit – III
Neighbouring rights, Copyright Management

A. Subject Matters of the rights

B. Duration

C. Exceptions and limitations

D. Copyright Management Society

Unit –IV
Infringement, remedies and defenses

A. Criteria of infringement

B. Importation and infringement

C. Remedies- injunctive relief in India.

D. Defenses in case of infringement

Unit –V
Traditional Cultural Expressions (TCEs) or Expressions of Folklore

A. Meaning and its characteristics
B. Challenges in its protection through classical intellectual property laws
C. Historical development for protection of TCEs
D. Options for protection of TCEs
E. Reasons for Sui generis protection of TCEs
F. WIPO/ UNESCO model law on sui generis protection of TCEs

LAW OF TRADEMARKS AND GEOGRAPHICAL INDICATIONS

COURSE OBJECTIVES:

This course has the following objectives;

1. Develop a proper understanding of the student with the basic concept of Trade Marks and Geographical Indications
2. Make aware of the international and national treaties and laws dealing with them.
3. Develop a critical understanding of the subject matter.
4. Make students understand when infringement takes place and what are remedies and defenses available in case of infringement.

COURSE OUTLINE

Unit –I Credit 4

Meaning, kinds and evolution of Trademarks Law (Hours 40)

A. Historical evolution of Trademarks law
B. International treaties and convention dealing with Trademarks law
C. Basis and need for protection of the Trademarks
D. Meaning and essential characteristics of a of Trademarks
E. Well known Trademarks, Collective Marks, Certifications Mark, Property marks and Associated Marks
F. Distinctions between Trademarks and Doman name

Unit – II

Conditions for Registration and procedure for registration of Trademarks

A. Criteria for registration
B. Absolute grounds for refusal for registration of a trade marks
C. Relative grounds for refusal of registration of a trademarks
D. Procedure for registration
E. Duration and renewal
F. International Registration of trademarks under Madrid protocol

Unit –III

Effect of Registration of a Trademarks and Infringement and Remedies

A. Effects of Registration of a Trademarks
B. Infringement of trademark
C. Passing off remedy

Unit –IV

Geographical Indications; Meaning and Historical Evolution of law

A. Historical evolution of GIs protection law at international level
B. Need for protection
C. Meaning and Characteristic
D. GIs and Appellate of Origin

Unit –V

Conditions, procedure, and effect of registration of GIs

A. Main features of The Geographical Indication of Goods Act,1999
B. Conditions for registrations of GIs
C. Procedure for registration of GIs
D. Effect of registration of a GIs
E. Infringements of GIs and remedy of passing off

Text Books and Reference Material

1. KC Kailasam and Ramu Vedaraman, Law of Trademarks including International Registration under Madrid Protocol and Geographical Indications, Lexis Nexis,2013.
2. Latha R Nair & Rajendra Kumar, Geographical Indications: A Search for Identity,Lexis Nexis, 2005
3. Office of the Controller General of Patents, Designs & Trade (CGPDTM) : Revised Draft Manual of Trademarks Practice and Procedure
4. https://www.icsi.edu/media/webmodules/publications/9.4%20Intellectual%20Property%20Rights.pdf

(CORPORATE LAW GROUP)

CORPORATE GOVERNANCE

COURSE OBJECTIVES

This course has the following objectives:

1. Discuss the Corporate governance is the set of processes, customs and policies.
2. It provides institutions affecting the way a corporation is directed or controlled.
3. To provide the emergence of corporate social responsibility affecting all the stakeholders seeks to make corporations socially responsible.
4. To providing basic idea about corporate governance and its implications on society and legal system.

COURSE OUTCOME

The students shall be able to:

1. Understanding of Corporate Governance from a managerial as well as legal point of view.
2. Learn the importance of good governance which is an important tool to achieve shareholder democracy.
3. Enumerate the importance of the responsibilities of a corporation towards society.
4. Critically apply the knowledge of corporate law in the court proceedings.

Unit – I Credit 4

Introduction to Corporate Governance (Hours 40)

A. Meaning, need, Origin, History and objectives of corporate governance
B. Importance of corporate governance
C. Principles of Corporate Governance
D. Globalization and Corporate Governance
E. Reports of the various Committees on Corporate Governance-
   - Corporate governance in India: Reforming BOD-Birla Committee- Naresh Chandra Committee- Narayana Murthy Committee- Audit Committee-Corporate Governance Code.
   - Comparing the recommendations of various committees
   - Criticisms on the recommendation of committees
F. Does corporate governance really matter?
G. Protection of minority shareholder
H. Theory of Corporate Governance with Stakeholder theory
I. Shareholder Democracy as per New Companies Act,2013
J. Corporate Governance in family business
K. Corporate governance in state-owned business- the MOU System

Unit –II
Corporate Governance Mechanism

A. The procedural aspects of Corporate Governance- Clause 49 of Listing Agreement
B. Reason behind shareholder being the real owner and the voting rights
C. Various facets of agency problem
D. Study on the Sarbanes- Oxley Act
E. Corporate governance and the Indian banking system
F. **Corporate Ethics:** Concept and Importance, benefits of corporate ethics, corporate philosophy and culture, managing ethics and legal compliance –case analysis.
G. **The Legal and regulatory Setting:** Company Law, SEBI Regulations, FEMA – Banking and Capital Market Regulations, Takeover Code and Corporate Governance Issues. Tools for ensuring Corporate Governance: Cost Audit Methodology and Corporate Governance, Statutory Audit for Governance, An introduction to e-governance and XBRL.

Unit –III
Board of Directors

A. Director as agents of a company- legal provisions-comparison with the new Act, 2013- increased responsibilities
B. Kinds of directors
C. Concept of independence in corporations and independent directors
D. Non-executive directors
E. Relevance of risk management by directors and the extent of its effectiveness
F. Role of directors- comparison with other countries
G. Corporate criminal liability (Analysis of various Scams)
H. Analysis of Whistle Blower Policy of various companies in contemporary society- the success stories and the failures
I. The need for transparency in the affairs of the company and its limitations.
J. Corporate Governance Practices/Codes in India
K. Clause 49 of the Listing Agreement

Unit –IV
Auditors and other Disclosures

A. Importance of an Audit Committee
B. Accountability and responsibility of the authorities
C. Legal Framework Under Companies Act, 2013
D. Ethics and Values for an Auditor
E. Role of an auditor in strengthening the business of a company
F. The Companies (Auditor's Report) Order, 2015, Ministry of Corporate Affairs
G. Analysis of Satyam Scam: An Eye-opener
H. Need for transparency in the affairs of a company

Unit –V
CORPORATE SOCIAL RESPONSIBILITY

A. Need and New Developments.
B. Strategies to create Business and Social Values
C. Innovative ideas under New Companies Act, 2013.
D. CSR to CNR (Corporate Nature Responsibility)
E. Recent relief Activities by corporations in the aftermath of Hud Hud cyclone, Nepal Earthquake,etc
F. Analysis of CSR reports of random popular corporations.
G. CSR is criticized as a distraction from the objectives of a corporation
H. Achievement of Good governance by way of providing training to the employees-limitations
I. The possibility of the effective implementation of the new improved and innovative tools for corporate democracy in Indian society.
J. Corporate crimes-company and society relations corporate social challenges-corporate accountability –business and ecology-cases analysis.
K. Whistle-blowingng policy

Note: 1. Corporate Governance and post Enron scam- Worldtel, Enron, Arthur Enderson etc.
2.Corporate Governance and scam from the Indian perspective- Harsed Mehta, Satyam, Fiasco etc.

Text Books and Reference Books:

1. Richard Smerdon, A Practical Guide to Corporate Governance, Sweet & Maxwell
2. N. Bala Subramaniam, Corporate Governance, and Stewardship- Emerging Role and Responsibilities of Corporate Boards and Directors, 2010, Tata Mc Graw Hill Education Pvt Ltd
3. Sami Parthasarathy, Corporate Governance, Principles, Mechanisms, and Practice
4. Mark Cardale, A Practical Guide to Corporate Governance, 5th edn 2014, Sweet & Maxwell, Thomson Reuters UK Ltd
5. Dr. N.V.Paranjape, Company Law, 5th edn 2012, Central Law Agency, Allahabad
6. Dimple Grover, Amulya Khurana, Ravi Shankar, the Regulatory Norms of Corporate Governance in India.
7. Sadhalaxmi Vivek Rao, Legal Framework and corporate Governance: An Analysis of Indian Governance System
8. Ministry of Corporate Affairs, Voluntary Guidelines on Corporate Governance, 2009
9. Sanjay Anand, Essentials of Corporate Governance
10. Kevin Keasey, Steve Thompson, Michael Wright, Corporate Governance, Accountability, Enterprise and International Comparisions
11. The Institute of Directors, Hanbook of International Corporate Governance
12. Christine Mallin, International Corporate Governance- A case Study approach
13. Frederick Lipman & Keith Lipman, Corporate Governance Best Practices, Strategies for Public, Private and NGOs.
14. Frank B. And Robert A., Law and corporate governance, Elgar financial law series

15. Edited by Alberto Chong, Florencio Silanes, Investor protection and corporate governance, Stanford University Press.
16. Jayati Sarkar, Subrata Sarkar, Corporate governance in India, Sage Publications.

Essential Reading / Recommended Reading

1. Renu Jatanas, Crowther, David, Corporate Socusl Responsibility, Deep and Deep Publication, Delhi, 2007
2. Chatterji, Mdhumita, Corporate Social Responsibility, Oxford Publications, Delhi, 2011
3. Sehgal, B.P.Singh, Emerging Trends in Corporate Governance: Legal Issues and Chanllenges in India, Satyam Law International, New Delhi, 2015

LAW OF CORPORATE FINANCE

INTRODUCTION

Corporate Finance is concerned with the financing and investment decisions made by the management of companies in pursuit of corporate goals. This subject is concerned to the study of how the companies actually make financing and investment decisions, and it's is often the case that theory and practice disagree. In Corporate Finance, the fundamental goal is usually taken to be to increase the wealth of shareholders. Corporate finance gives an understanding of the reasons why shareholder wealth maximization is the primary financial objective of a company, rather than other objectives a company may consider.

COURSE OBJECTIVES

This course has the following objectives

1. To study the acquisition and allocation of corporate funds or resources with maximizing shareholders' wealth.
2. To provide the financial management of a corporation, funds are generated from various sources and allocated or invested for desired assets.
3. To discuss the primary function of corporate finance is resource acquisition, which refers to the generation of funds from both internal and external sources at the lowest possible cost to the corporation.
4. This course provides function of corporate finance is resource allocation and investment of funds with the intent of increasing shareholders' wealth over a period of time.

COURSE OUTCOMES

The students shall be able to:

1. Understand the basic concept and scope of corporate finance.
2. Know the provisions related to corporate finance under constitutional law.
3. Analyse the key concept of Share Capital and non-opting equity shares.
4. Apply critically the provision of company law and constitutional law in the proceeding before the court of law.

Unit – I **Credit 4**

Introduction **(Hours 40)**

A. Meaning, Importance, and Scope of Corporate Finance.
B. Capital Needs.
    - Working Capital, Securities, Borrowings, Debentures
C. Objectives of Corporate Finance
    - Profit Maximization and Wealth Maximization
D. Constitutional Perspective - The Entries 37, 38, 43, 44, 45, 46, 47, 52, 82, 85, and 86 of List 1 - Union List; Entry 24 of List 11 - State List.

Unit – II
Equity and Debt Finance

A. Prospectus - Information Disclosure
B. Share Capital -Issue, Allotment, Shares without Monetary Consideration, Non-Opting Equity Shares, and EPOS
C. Debentures -Nature, Issue and Classification of Debenture and Debenture Bond
D. Deposits and Acceptance
E. Creation of Charges, Fixed and Floating Charges, and Mortgages
F. Classification of Company Securities
G. Inter-corporate Loans
H. Role of Court to Protect Interests of Creditors and Shareholders, Class Action Suits, Derivative Actions

Unit – III
Conservation of Corporate Finance and Corporate Fund Raising

A. Regulation by Disclosure
B. Control on Payment of Dividends
C. Managerial Remuneration
D. Protection of Creditors, Investors and its Need
E. Preference in Payment
F. Right of Individual Share Holder, Corporate Membership and Qualified Members
G. Depositories - IDR (Indian Depository Receipts), ADR (American Depository Receipts), GDR (Global Depository Receipts)

Unit – IV
Administrative Regulation on Corporate Finance

A. Inspection of Accounts
B. Central Government Control
C. Control by Registrar of Companies
D. RBI Control
E. Statutory Control:
    - The SEBI Act, 1992
    - The Security Contract (Regulation) Act, 1956
    - The Depositories Act, 1996
    - The Securitisation and Reconstruction of Financial Assets and Enforcement of Security Interest Act, 2002
    - The Prevention of Money Laundering Act, 2002
    - The Foreign Trade (Development & Regulation) Act, 1992
F. Control & Regulation of Foreign Companies in India: Specific reference to foreign collaborations, joint ventures & foreign direct investment

Unit – V
Corporate Fund Raising from Outside India

A. Automatic Route of Investment
B. Foreign Investment Facilitation Portal
C. Angel Investment
D. Venture Capital
E. Private Equity
F. Hedge Funds
G. Compliances
    - RBI/FEMA – FEMA 20 and FEMA 24 (Amended)
    - SEBI – SEBI (Alternative Investment Fund) Regulation, 2012

Suggested readings

1. Alastair Hundson:The Law on Financial Derivatives (1998), Sweet & Maxwell.
2. Ell's Ferran, Company Law and Corporate Finance (1999), Oxford.
3. Jonathan Charkham: Fair Shares: The Future of Shareholder Power and Responsibility (1999), Oxford.
4. Ramaiya A.: Guide to the Companies Act (1998), Vol. I, II and III.
5. H.A.J. Ford and A.P. Austen: Ford's Principle of Corporations Law (1999) Butterworths.
6. J.H. Farrar and B.M. Hanniyan: Farrar's Company Law (1998) Butterworths.
7. Austen, R.P.: The Law of Public Company Finance (1986) LBC.
8. R.M. Goode: Legal Problems of Credit and Security (1988) Sweet and Maxwell.
9. Altman and Subrahmanyan: Recent Advances in Corporate Finance (1985) LBC.
10. Gilbert Harold: Corporation Finance (2^{nd} rev. ed. 1956).
11. Henry E.Hoagland: Corporation Finance (3rd ed. 1947) Maryin M. Kristein: Corporate Finance (2nd ed. 1975) R.C. Osbom: Corporation Finance (1959).
12. S.C. Kuchhal: Corporation Finance: Principles and Problems (6th ed. 1966).
13. V.G. Kulkarni: Corporate Finance (1961).
14. V.D. Kulshreshta: Government Regulation of Financial Management of Private Corporate Sector in India (1986).
15. Journals – Journal of Indian Law Institute, Journal of Business Law, Chartered Secretary, Company Law Journal, Law and Contemporary Problems.
16. Statutory Materials – Companies Act and Law relating SEBI, Depositories, Industrial Financing and Information Technology.

Note: Student is expected to collect latest information from journals and e-sources.

CURRICULUM AND SYLLABI

(1st Semester)

B.B.A.LL.B. (Hons.)
(Integrated Law degree course)

SCHOOL OF LAW

RAFFLES
UNIVERSITY

Japanese Zone, National Highway 48 Neemrana, Rajasthan 301020

www.rafflesuniversity.edu.in

LEGAL METHODS
(BBL 101)

PRELUDE TO THE COURSE:
Law is considered as the cement of society and an essential medium of change. Keeping in view the ever-changing dimension of law, the course has been designed so that the students of the first semester have an overview of the existing legal systems and define law in its appropriate terms. The course provides the students to have an overview of the various sources of law and the tools of legal research.

OBJECTIVE OF THE COURSE

The objectives of the Course are to:
1. Identify the various definitions of law and discuss the sources of law.
2. Classify the various components of the Indian Legal System.
3. Analyse the importance and types of legal research.
4. Apply skills in legal writing.

OUTCOMES OF THE COURSE

After completion of the Course the students will be able to:
1. Discuss the foundations of law.
2. Understand the application of the components of the Indian Legal System.
3. Draft research reports using proper research tools & plaints & written statements as a part of clinical Legal Education component.

TEACHING PEDAGOGY:

The teaching in this course is done by way of lectures, seminars and tutorial sessions. The lecture series is devoted to detailed study of the sources of law and the discussion of basic concepts of the legal system in India. Participation in class discussion is the primary mode of teaching/learning. One of the primary goal this course is to encourage students to question liberal ideals of objectively and neutrality, and to encourage critical thinking generally the aim is not to indoctrinate but to stimulate lively debate about concept of Law & Legal Methods. The student will also be involved in Practical Training for Drafting & Pleading.

COURSE OUTLINE

UNIT - 1
INTRODUCTION TO LAW & STATE

- Meaning and Definition of Law
- Purpose and Functions of Law
- Classification of Laws – Public and Private Law**,** Substantive and Procedural Law**,** Municipal and International Law
- Law and State: Meaning & Definition of State, Elements of State, Relationship between Law and State

UNIT- 2
SOURCES OF LAW

- Meaning and Concept of Sources of Law
- **Custom**: Meaning, Kinds, Reasons for recognition of customs, Theories governing Customs, **Precedent**: Meaning and Concept, Theories of Precedents, Advantages and Disadvantages of Precedent, Doctrine of Precedent: Ratio Decidendi and Obiter Dictum. Preliminary discussion.
- **Legislation**: Meaning and Concept, Kinds, merits and demerits, Difference between Legislation and Precedent, Legislation and Customs

UNIT- 3
BASIC CONCEPTS OF THE INDIAN LEGAL SYSTEM

- **Common Law**: Meaning, Difference between Common and Civil Law, Basic Principles of Common Law
- **Constitution**: Meaning and Concept, Types of Constitution: Written, Unwritten, Federal and Unitary, Features of Indian Constitution, & Hierarchy of Indian Judicial System.

UNIT- 4
LAW, JUSTICE, ETHICS AND SOCIAL MORALITY

- The Relation of Justice of Law & Ethics
- Ethics and Social Morality
- Social Morality & Legal Order
- Law, Morality & Social Change

For the clarity of Teachers & Students it may be stated that the present module is an attempt to appraise the interrelationship between concepts & disciplines, which are obviously closely connected. The concept of Justice will be surveyed in its dual relationship to law and ethics. In the discussions the concept of law, as a characteristic type of social norm, will be distinguished from that of a legal system. A distinction will be made between ethics as a system of values governing individual conduct and social morality as a system of norms which governs the social conduct of community.

UNIT- 5
LEGAL MATERIALS (Practical Training in Library)

- Case Law and Journals
- Statute & its Parts
- Citations – Importance and Usage [Students should be taught to use online databases like Manupatra, SCC online, JSTOR, West Law etc.]
  Modules 5 will be taught in Library through practical demonstration by the teacher In-charge

Text Books:

1. Legal theory W. Friedman
2. Mahajan, V. D. Jurisprudence, Allahabad Law Agency

Reference Books:

1. Salmond – Jurisprudence, Lexis Nexis Publications
2. Paton – A Textbook on Jurisprudence, Universal Publications
3. W. Friedmann Legal Theory
4. Carl F. Stychin and Linda Mulcahy , Legal Methods & Systems.
5. Mahajan V.D. Jurisprudence, Allahabad Law Agency
6. Professor Tushar Kanti Saha, Legal Methods. Legal Systems & Research.

LAW OF TORTS, CONSUMER PROTECTION AND MV ACT (BBL 102)

Prelude to the Course

Independent of criminal or contract law, Tort law provides individuals and groups with redress for injury to every dimension of life from physical injury, to property damage, to personal insult. Over past decades no area of law within the civil justice system has experienced greater ferment than the law of Tort and this has resulted in vital changes the thinking of the tortuous liability.

The objective of the course is to formalize the students with the nature and extent of liability of the private enterprises, multinationals and the government authorities for the wrongs committed against the individual and their property, and to develop sound knowledge, skills and disposition amongst students of B.A. LL.B. and B.B.A. L.L.B. on some of the contemporary issues of Specific Torts, cyber Tort, and Economic Tort, Product Liability etc.

Objective of the Course

The objective of this course is to:

1. Understand the Nature of Tort
2. Examine the conditions of creating tortious liability and general defences
3. Discuss the specific torts and their available remedies

Outcomes of the Course:

After completion of this course, the students will be able to:

1. Identify the various conceptual aspects of Law of Torts.
2. Discuss various justifications/defences under tortuous liability and specific kinds of torts.
3. Enumerate the remedies available for specific torts.

UNIT – 1
INTRODUCTION TO LAW OF TORTS

- Definition of Torts and development of Tort actions in England and India
- Tort distinguished from Contract and Crime
- Constituents of Torts
- *Ubi Jus Ibi Remedium*
- *Injuria sine Damnum*
- *Damnum sine Injuria*

Leading case Laws

- Ashby v. Damno(1703) 2 Lord Raym, 938
- Gloucester Grammer School Case (1410) Y.B Hill 11 Hen, 4 of 47, p. 21, 36
- Ushaben v. Bhagyalakxmi Chitra Mandir, AIR 1978, Guj. 13
- Bhim Singh v. J & K, AIR 1986, SC494
- Jethu Singh v. State of Rajsthan, AIR, 2014, Raj. 157

UNIT-2
GENERAL DEFENCES IN TORT

- *Volenti non fit Injuria*
- Act of God
- Inevitable Accident
- Necessity
- Private Defence
- Plaintiff the Wrong Doer
- Mistake

Leading case Laws

- Hall v. Brooklands Auto Racing Club, (1932) All E.R. Rep. 208
- Padmavati v. Dugganaika (1975) 1 Kam. 93. 1975, A.C.
- Smith v. Baker, (1891) A. C. 325.
- Thomas v. Quatermaine, (1887) 18 Q.B.D.658, at P.695, per Brown, L.J.
- Dann v. Hamilton, (1939) 1 K.B 509.
- Nichols v. Marsland, (1876) 2 Ex. D. 1.
- Stanley v. Powell, (1891) 11 Q.B. 86
- Bird v. Holbrook, (1823) 4 Bing. 628; 130 E.R. 91.

UNIT – 3
LIABILITIES IN TORTS

- Strict Liability
- Absolute Liability
  (i) Absolute liability under the motor vehicles Act, 1988 (Sec. 140 to 143, 161 to 163)
- Vicarious Liability:
  - Master Servant Relationship
  - Principal-Agentnt Relationship
  - Relationship between the Partners

Leading case Laws

- Rylands v. Fletcher, (1868) L.R. 3 H.L. 330.
- M.C. Mehta v. Union of India, AIR 1987, SC 1086.
- Union Carbide Corporation v. Union of India, AIR 1992 S.C. 248.
- State Bank of India v.Shyama Devi, A.I.R. 1978 S.C.1263.
- Limpus v. London General Omnibus Co. (1862) 1 H. & C.526

UNIT- 4
SPECIFIC TORTS

- Defamation – Meaning and Types
- Negligence – Concept and the Defences available
- Nuisance – Meaning and Types
- Trespass

- Nervous Shock
- Remoteness of Damage
- Remedies under the Law of Torts

Leading case Laws

- Ram Jethmalani v. Subramaniam Swamy, A.I.R.2006 Del.300.
- Cassidy v. Daily Mirror Newspapers Ltd. (1929) 2 K.B.331.
- Donoghue v. Stevenson, (1932) A.C. 562.
- Campbell v. Paddington Corporation, (1911) 1 K.B. 869.

UNIT – 5
CONSUMER PROTECTION ACT-1986

- Basic Concepts
  - (i) Nature, scope & silent features
  - (ii) Doctrine of caveat Emptor
- Consumer Dispute Redressal Agencies
  Constitution, Jurisdiction & Procedure

Textbooks:

1. Lal, R & D, *Law of Torts*, Lexis Nexis Publications
2. R.K. Bangia, Law of Torts including Compensation under the Motor Vehicles Act and Consumer Protection Laws, Allahabad Law Agency, 2013

Reference Books:

1. W.V.H. Rogers, Winfield and Jolowicz on Tort, Sweet & Maxwell, 2010 (18th Edn)
2. Ramaswamy Iyer's , The Law of Torts, Lexis Nexis, 2007 (10th Edn)

GENERAL ENGLISH-I
(BBL 103)

Prelude to the Course:
The course provides an overview to the fundamentals of English Language which involves grammar and its usage, need and importance of legal language relevance of literature and language for law and some selected literary works to enable the students to have an analytical mind and also develop character study.

Learning Objectives:
The course aims to:
- Highlight the importance and usage of legal language.
- Emphasize the usage of grammar in legal drafting.
- Inculcate the skills necessary for drafting legal documents.
- Make the students have an analytical approach to literature through prose & character study
- Make the students have an analytical approach to literature through interpretation of poetry.

Learning Outcomes:
After completion of the course, the students will be able to:
- Describe importance of Legal Language.
- Identify the correct usage of grammar in legal drafting.
- Draft documents for legal correspondence.
- Analyse characters of literary texts.
- Apply skills of interpreting poetry.

PART – A Law & Language

UNIT-1
INTRODUCTION TO LEGAL LANGUAGE

(a) Importance of Language & Literature in Law
(b) Need and Importance of Legal Language
(c) Legal Language in India – attention and awareness of practical legal import of sentences
(d) Education: Indian & American by Anurag Mathur

UNIT- 2
GRAMMAR

(a) Nouns, Pronouns & Adjectives
(b) Reported Speech
(c) Verbs, Adverbs, tenses & Agreement of the Verb with the Subject
(d) Articles

UNIT- 3
LEGAL WRITING

(a) Legal Words – Suit, FIR, Plaint, Written Statement, Plaintiff, Defendant, Homicide, Genocide, Suicide, Vandalism, Prosecution, Defence, summons, Ultra vires, Intra vires, Alimony, Maintenance, Monogamy, Polygamy, Bigamy, Polyandry, Precedent, Contract, Agreement, Will

(b) Drafting a Complaint as a Consumer of Spurious Goods

- Drafting a Complaint as a Consumer of Deficiency in Services
- Drafting a FIR
- Drafting a RTI Application
- Writing an Article – Cyber Tort, Terrorism, Women Empowerment, Refugees in India, Consumer Protection and other relevant and emerging issues
- Letter Writing – Formal & Informal

PART – B Law & Literature

UNIT- 4
PROSE

(a) An Astrologer's Day – R. K. Narayan
(b) The Child – Munshi Premchand
(c) Kabuliwala – Rabindranath Tagore
(d) The Bar – M. C. Chagla
(e) The Chief Justice – M. C. Chagla

UNIT- 5
POETRY

(a) The Gift of the Magi – O Henry
(b) Bangle Sellers – Sarojini Naidu
(c) The Princess & the Gypsies – Francis Crawford
(d) Where the Mind is Without Fear – Rabindranath Tagore
(e) Success is counted Sweetest – Emily Dickinson

Suggested Reading:

Sl. No.	Name of the Textbooks	Year of Publication
	TEXT BOOKS	
1.	Martinet, T. *A Practical English Grammar*, OUP	2016
2.	Orient Longman, *The Joy of Reading*	2015
3.	Chagla, M. C., *Roses in December*, Bhartiya Vidya Bhawan	2015
	REFERENCE BOOKS	
4.	Wren & Martin, High School English Grammar & Comprehension	2014

PRINCIPLES OF MANAGEMENT
(BBL 104)

NTRODUCTION TO THE COURSE

The field of management has undergone a sea change and has today assumed a form of a profession with a well-defined body of knowledge. This knowledge is continuously evolving and new issues and findings are constantly emerging. This field is attracting many people who want to undergo a formal training in this area.

This subject is designed to provide a basic understanding to the students with reference to working of business organizations through the process of management. It will give a brief understanding of the managerial functions of planning (including decision-making) and organizing. It will also throw light on the managerial functions of staffing, directing and controlling.

OBJECTIVE OF THE COURSE

• To make student know about the evolution of Management Thoughts.
• To understand the functions of Management.
• To learn application of different Management Practices

OUTCOMES OF THE COURSE:

- Discuss the evolution of Management Thought
- Enumerate the functions of Management
- Appraise Management Practices in specified domain

UNIT- 1
Introduction to Management

• Nature of Management- Meaning, Definition, it's nature purpose, importance & Functions.
• Evolution of Management Thoughts- Contribution of F.W. Taylor, Henri Fayol, Elton Mayo, Chester Barnard & Peter Drucker to the management thought. Various approaches to management (i.e. Schools of management thought) Indian Management Thought

UNIT- 2
Planning and Decision Making

- Planning - Meaning - Need & Importance, types levels - advantages & limitations.
- Forecasting - Need & Techniques
- Decision making - Types - Process of rational decision making & techniques of decision making.

UNIT- 3
Organizing and Directing

- Organizing - Elements of organizing & processes: Types of organizations, Delegation of authority - Need, difficulties in delegation – Decentralization.
- Directing- Introduction, Principles and Elements of Direction; Supervision, Traditional vs. Development Supervision.

UNIT- 4
Controlling and Coordination

- Controlling- Concept, Importance, Process & Types of Controlling, Contemporary Issues in Control, Entrepreneurs and Control. Operations Management- Importance, Service and Manufacturing Firms, Project Management Tools & Techniques.
- Coordination- Coordination- Definition, Characteristics, Objectives, Techniques.

UNIT- 5
Contemporary Management Issues

- Management in the International Area.
- Change and Organizational Development.
- Ethics, Corporate Governance and Social Responsibilities.

Recommended Readings

1. Rao V. S. P., "Management Text & Cases", Excel Books, 2nd Edition, 2012.
2. Robbins, DeCenzo, Bhattacharyya and Agarwal. "Fundamentals of Management-Essential Concepts and Applications", 6th Edition, 2009.
3. Griffin Ricky W., Management- Principles and Application", 10th Edition, 2012, Cengage Learning.

Other Recommended Readings

1. Tripathy P.C. and Reddy. P.N., "Principles of Management", 2nd Edition, Tata McGraw Hill Publishing Company Limited, New Delhi, 2001
2. Dr. L.M.Parasad, "Principles & Practice of Management", Sultan Chand & Sons - New Delhi.

FINANCIAL ACCOUNTING
(BBL 105)

INTRODUCTION TO THE COURSE

A business or an organization needs a tool to communicate its results and position to stakeholders, a tool that is commonly understood by all. For that purpose, accounting serves as the 'language of business". Stakeholders, in return, use this information make sound decisions. Bearing these in mind, this course aims to convey sufficient knowledge for an adequate interpretation, analysis and use the information provided by financial accounting.

Following an investigation of the accounting information system and accounting cycle, the course will deepen knowledge on all the components of the balance sheet, using a double entry bookkeeping perspective. By the end of the course, students are expected be able to analyze a company's financial statements and come to a reasoned conclusion about the financial situation of the company.

OBJECTIVE OF THE COURSE

• To familiarize and develop an understanding of basic aspects of Financial Accounting
• To make students understand the all the components of Financial statement.
• To make students analyze and interpret Financial Statements.

TEACHING METHODOLOGY

As per the norms of the university in this course there will be 6 classes per week. Teaching methodology willinclude Lectures-cum-discussion, Assignments, Projects and Presentations.

THE EVALUATION SCHEME

• Continuous Assessment- 40%
• Mid-Term- 20%
• End Term- 40%

COURSE OUTLINE

UNIT- 1
THEORETICAL FRAMEWORK

- Meaning and Scope of Accounting
- Accounting Concepts
- Accounting Principles and Conventions
- Accounting Policies

- Accounting Standards – Concepts, Objectives, Benefits
- Accounting as a Measurement Discipline – Valuation Principles, Accounting Estimates

UNIT- 2
ACCOUNTING PROCESS

- Documents & Books of Accounts: Invoice, Vouchers, Debit & Credit Notes, Day books, Journals, Ledgers and Trial Balance
- Capital and Revenue: Expenditures and Receipts; Contingent Assets and Contingent Liabilities
- Rectification of Errors

UNIT- 3
BANK RECONCILIATION STATEMENT

- Meaning of Bank reconciliation statement
- Causes of difference between Bank Book Balance and Balance as per Bank Pass Book /Bank Statement
- Need of Bank Reconciliation Statement
- Procedure for Preparation of Bank Reconciliation Statement

UNIT- 4
DEPRECIATION ACCOUNTING

- Methods of Depreciation
- Computation of Depreciation
- Accounting Treatment of Depreciation
- Change in Depreciation Methods

UNIT- 5
PREPARATION OF FINAL ACCOUNTS FOR SOLE PROPRIETORS

- Preparation of Profit& Loss Account
- Preparation of Balance Sheet

UNIT- 6
INTRODUCTION TO COMPANY ACCOUNTS

- Issue of Shares and Debentures
- Forfeiture of Shares
- Re-Issue of Forfeited Shares
- Redemption of Preference Shares

Recommended Readings

1.Shukla&Grewal – Advanced Accounts, Chand & Company
2.R. Narayanaswamy – Financial Accounting, Prentice-Hall of India
3.H. Chakraborty – Advanced Accountancy, Nababharat
4. R.L. Gupta – Advanced Accountancy, Sultan, and Chand
5.W. Pickles – Accountancy, ELBS

ECONOMICS-I
(GENERAL PRINCIPLES OF ECONOMICS)
(BAL 106)

PRELUDE TO THE COURSE

Economics is the study of how individuals and societies make rational choices when confronted with scarce resources and an uncertain environment. As a science, economics provides a rigorous framework in which to organize observed economic phenomena so that we may come to some understanding of the world about us. Microeconomics is concerned with how individuals and firms make decisions within the context of an isolated market.
The course starts with the basic training of mathematics which is vital to understand the different concepts of Economics. It covers the basic concepts and tools needed to undertake the analysis of problems that arise due to the law of scarcity. In addition, the functioning of competitive and non-competitive product markets is studied, as is the performance of the markets for resources.

OBJECTIVE OF THE COURSE

- To make students understand about the basic concepts of Microeconomics and Macroeconomics
- To understand the functioning of different market structure
- To understand the impact of government intervention in the market
- To make the students understand the different phases of the business cycle and the concept of inflation

OUTCOMES OF THE COURSE:
- Conceptualize the various components of Micro and Macro Economics
- Enumerate the functioning of markets
- Discuss the impact of lassiez faire state in the Indian Economy
- Able to understand the business cycle and the concept of inflation

UNIT- 1

INTRODUCTION TO MICROECONOMICS AND DEMAND ANALYSIS

- **Introduction to Microeconomics:** Definition, Meaning, Nature and Scope of Microeconomics; Economic System
- **Demand Analysis:** Law of Demand, Demand Schedule and Demand Curve; Movement in Demand and Shifts in Demand curve
- **Elasticity of Demand:** Price and Income Elasticity of Demand; Types of Elasticity of Demand and their applications

UNIT- 2

SUPPLY ANALYSIS AND MARKET EQUILIBRIUM

- **Supply Analysis:** Law of Supply, Supply Schedule and Supply Curve; Movement in Supply; Shifts in Supply Curves
- **Elasticity of Supply:** Price elasticity of Supply and applications
- **Market Equilibrium:** Market equilibrium with Demand and Supply; Shift in Demand and Supply curves

UNIT- 3

CONSUMER AND PRODUCER BEHAVIOR & COST ANALYSIS

- **Consumer Behavior:** Cardinal and Ordinal Measurement of Utility; Law of Diminishing Marginal Utility; Law of Consumer Surplus; Indifference Curve Analysis
- **Producer Behavior**: Production Function; Law of Variable proportions; Law of Returns to Scale
- **Cost Analysis:** Cost Function; Types of Costs and cost curves; Economies and Diseconomies of Scale

UNIT- 4

MARKET STRUCTURES

- Introduction to Market Structure and Degree of Competition
- **Perfect Competition**: Characteristics, revenue curves, equilibrium of firm
- **Monopoly**: Characteristics, revenue curves, equilibrium of firm; Price Discrimination in Monopoly
- **Monopolistic Competition and Oligopoly**

UNIT- 5

INTRODUCTION TO MACROECONOMICS

- **Introduction to Macro Economics:** Definition of Macroeconomics; Difference between Micro & Macro Economics; Various Concepts of National Income; Methods of measurement of NI

- **Output & Employment:** Concept of Aggregate Demand & Aggregate Supply; Keynesian theory of income & employment; Consumption function – APC, MPC, factors affecting MPC
- **Business cycles & Inflation:** Concept & phases of Business cycles; Inflation – Meaning, Types and Causes

Recommended Readings

1. Mankiw N. Gregory, Principles of Economics, Third Edition, Thomson, South-Western, 2004
2. Dornbusch R, Fischer S and Startz R, Macroeconomics, Eight Edition, Tata McGraw Hill, New Delhi, 2002
3. Dwivedi DN, Managerial Economics, Seventh Edition, Vikas Publishing House, New Delhi, 2008
4. Froyen RT, Macroeconomics: Theories & Policies, Sixth Edition, Pearson Education Asia, Delhi, 2001
5. Gould JP and Lazear EP, Ferguson and Gould's Microeconomic Theory, Sixth Edition, Richard Irwin, Homewood, 1980
6. K.K.Dewett, Modern Economic Theory, S.Chand & Company LTD, New Delhi. (pp242-311)
7. Mehta BC and Madnani GMK, Mathematics for Economists, Ninth Edition, Sultan Chand & Sons, New Delhi, 2008.
8. Melvin I Boyes, Microeconomics, Eighth Edition, Hughton Mifflin
9. Samuelson PA and Nordhaus WD, Economics, Seventeenth Edition, Tata McGraw Hill, New Delhi, 1998

CURRICULUM AND SYLLABI

(3rd Semester)

B.B.A.LL.B. (Hons.)
(Integrated Law degree course)

SCHOOL OF LAW

RAFFLES
UNIVERSITY

Japanese Zone, National Highway 48 Neemrana, Rajasthan 301020

www.rafflesuniversity.edu.in

CONSTITUTIONAL LAW – I
BBL 301

INTRODUCTION TO THE COURSE

Constitutional law is the body of law that defines the relationship of different entities within a state, namely, the executive, the legislature, and the judiciary. The constitution is the basis from which the Indian legal system has evolved. The students of law should have a sound knowledge of the constitution. As the Constitution is the foundation of the Indian democratic system, constitutional law deals with some of the fundamental relationships within our society. This includes relationships among the states, the states and the union government, the three branches (executive, legislative, judicial) of the union government, and the rights of the individual in relation to both union and state government.

COURSE OBJECTIVES

The objective of this course is to:

1. Constitutional shall be studied plainly based on the provisions in terms of interpretations of the Court.
2. Detailed planning provided with alternative methods
3. Provide and interpreted by the judiciary
4. Analyse the provisions of the constitution critically

COURSE OUTCOMES

The students will be able to;

1. Identify the various dimensions of the constitutional law
2. Understand the process of Executive, legislative and judicial mechanisms under the constitution
3. Enumerate the constitutional remedies available.
4. Apply the real sprit of distribution of power

TEACHING METHODOLOGY

A Dialectic system of learning would provide a better appreciation of the constitutional governance in India through classroom debate and moot court exercises after the basic issues are identified by lecture and discussion. Research of issue-based conflict of interest through court cases may be an added advantage.

As per the norms of the University for this Course, there will be 6 classes per week. Clinical and tutorial forms of learning should be followed. The teaching methodology will include Lectures-cum-discussion, Assignments, Projects and Presentations.

EVALUATION SCHEME

• Continuous Assessment-20%

• Mid-Term- 20%

• End Term- 60%

COURSE OUTLINE

Unit-I — Credit 6
Introduction — (Hours 60)

- Definition of Constitution and Classification; Constitutionalism and Constitutional Morality
- Making of the Indian Constitution
- Aims and Objectives
- Basic features of the Indian Constitution
- Nature of the Indian Constitution: Federal, Unitary, Quasi-federal; Cooperative and Competitive Federalism

Leading Case Laws:

1. *Rai Sahib Ram Jawaya Kapur* v. *State of Punjab* AIR 1955 SC 549
2. *State of West Bengal* v. *Union of India* AIR 1963 SC 1241
3. *Kesavananda Bharati* v. *State of Kerala* (1973) 4 SCC 225
4. *S. R. Bommai* v. *Union of India* (1994) 3 SCC 1
5. *State of Haryana* v. *State of Punjab* (2002) 2 SCC 507
6. *Rameshwar Prasad and Ors.* v. *Union of India and Anr.* (2006) 2 SCC 1
7. *Kuldip Nayar* v. *Union of India* (2006) 7 SCC 1
8. *I.R. Coelho* v. *State of Tamil Nadu* (2007) 2 SCC 1
9. *Arvind Kejriwal* v. *Union of India* 2014
10. *Union of India & Anr*. v. *M/s Mohit Minerals Pvt. Ltd. Through Director* 2022

Unit-II
Constitutional Organs

- **Legislature:**

- Parliament and State Legislatures
- Composition of Parliament and State legislatures
- Qualification and Disqualification of Members
- Legislative Procedure, power and Privileges

- **Executive:** Power of President and Governor
- **Union and State Judiciary**: Composition, Appointment and Removal of Judges
- Jurisdiction of Supreme Court and High Court
- Independent Judiciary National Judicial Appointment Commission

Leading Case Laws

1. *S.P. Anand* v. *H.D. Deve Gowda*, (1996) 6 SCC 734
2. *B. R. Kapur* v. *State of Tamil Nadu* (2001) 7 SCC 231
3. *Lily Thomas* v. *Union of India* (2013) 7 SCC 653.
4. *Lok Prahari (through General Secretary SN Shukla)* v. *Election Commission of India* (2018) 18 SCC 114
5. *Special Reference No. 1 (Re Gujarat Assembly Election Matter)* (2002) 8 SCC 237 127
6. *Anil Kumar Jha* v. *Union of India* (2005) 3 SCC 150
7. *Jaya Bachchan* v. *Union of India* (2006) 5 SCC 266
8. *Consumer Education and Research Society* v. *Union of India & Ors*. (2009) 9 SCC 648
9. *In re Keshav Singh* AIR 1965 SC 745
10. *Raja Ram Pal* v. *Hon'ble Speaker, Lok Sabha* (2007) 3 SCC 184
11. *Ram Jawaya Kapoor* v. *State of Punjab*, AIR 1955 SC 549.
12. *Jayantilal Amritlal Shodhan* v. *F.N. Rana and Ors*, AIR 1964 SC
13. *Smt. Jaikumari* v. *State of Maharashtra*, AIR 2009 Bom.
14. *Poonam Verma* v. *Delhi Development Authority*, AIR 2008 SC
15. *Indian Medical Association* v. *Union of India*, AIR 2011 SC
16. *D. C. Wadhwa* v. *the State of Bihar* (1987) 1 SCC 378 159
17. *R.C. Copper* v. *Union of India*, AIR 1970 SC 564.
18. *A. K. Roy* v. *Union of India* (1982) 1 SCC 271
19. *Krishna Kumar Singh* v. *the State of Bihar* (2017) 3 SCC 1
20. *Union of India* v. *Sankalchand Himatlal Sheth* (1997) 4 SCC 193
21. *S. P. Gupta* v. *President of India* (1981) Supp SCC 87
22. *S.C. Advocates on Record Association* v. *UOI* (1993) 4 SCC 441
23. *In re Special Reference No. 1 of 1998* (1998) 7 SCC 739
24. *S.C. Adv. on Record Association* v. *Union of India* (2016) 5 SCC 1 213
25. *Shanti Bhushan* v. *Supreme Court of India through its Registrar* (2018) 8 SCC 396
26. *Mohd. Arif* v. *The Reg. Supreme Court of India* (2014) 9 SCC 737
27. *Madras Bar Association* v. *Union of India* (2014) 10 SCC 1
28. *Rupa Ashok Hurra* v. *Ashok Hurra* (2002) 4 SCC 388

Unit-III
Distribution of Legislative Powers:

- Distribution with respect to territory: Doctrine of Territorial Nexus
- Distribution with respect to the subject matter.
- Interpretation of legislative lists:

✓ Territorial Nexus
✓ Harmonious Construction
✓ Pith and Substance

- ✓ Colorable Legislation
- ✓ Residuary Power of Legislation
- ✓ Doctrine of Repugnancy

Leading Case Laws

1. *In Re C P & Berar Sales of Motor Spirit & Lubricants Taxation Act,1938* AIR 1939 FC 1
2. *Gujarat University* v. *Krishna Ranganath Mudholkar* AIR 1963 SC 703
3. *Prafulla Kumar* v. *Bank of Commerce, Khulna* AIR 1947 PC 60
4. *State of Rajasthan* v. *G. Chawla* AIR1959 SC 544
5. *State of Karnataka* v. *Drive-in Enterprises* (2001) 4 SCC 60
6. *K.C. Gajapati Narayan Deo* v. *State of Orissa* AIR 1953 SC375
7. *Union of India* v. *H. S. Dhillon* (1971) 2 SCC 779
8. *Zaverbhai* v. *State of Bombay* AIR 1954 SC 752
9. *Hoechst Pharmaceuticals Ltd.* v. *State of Bihar* (1983) 4 SCC 45
10. *Vijay Kr Sharma* v. *State of Karnataka* (1990) 2 SCC 562
11. *State of Kerala* v. *Mar Appraem Kuri Company Ltd.* (2012) 7 SCC 106

Unit-IV
Emergency Provisions

Emergency Provisions:

- Origin and concept of Emergency
- Types of Emergency in the Indian Constitution
- National Emergency
- State Emergency
- Financial Emergency
- Effects of Proclamation of Emergency
- Emergency and Fundamental Rights

List of Cases

1. *Indira Nehru Gandhi* v. *Shri Raj Narain & Anr,* AIR 1975 SC 2299
2. *Kesavananda Bharati* v. *State of Kerala,* AIR 1973 SC 1461
3. *State of Rajasthan & Ors* v. *Union of India,* AIR 1977 SC 1361
4. S. R. Bommai V. Union of India, AIR 1994 SC 1918
5. *A.D.M Jabalpur* v. *Shiv Kant Shukla,* AIR 1976 SC1207
6. *Minerva Mills Ltd* v. *Union of India,* (1980) 3 SCC 625.
7. *Ghulam Sarwar* v. *Union of India,* AIR 1967 SC 1335.
8. *Bijayanand Patnaik And Ors.* v. *President Of India And Ors.* AIR 1974 Ori 52
9. *Makhan Singh* v. *State of Punjab,* AIR 1964 SC 381
10. *Maharastra State* v. *Prabhakar,* AIR 1966 SC 424
11. *Ghulam Sarwar* v. *Union of India,* AIR 1967 SC 1335

12. *Rameshwar Prasad* v. *Union of India*, (2006) 2 SCC 1

Unit-V
Judicial Review and Constitutional Amendment

- Judicial Review: Nature and Scope
- Amendment to the Constitution: Methods of Constitutional Amendment
- Limitation Upon Constituent Power-Doctrine of Basic Structure
- Judicial Activism and Judicial Restraint

List of Cases

1. *Marbury* v. *Madison* (1803)
2. *A.K.Gopalan* v. *State of Madras* AIR 1950 SC 27
3. *Shankari Prasad* v. *Union of India,* AIR 1951 SC 458.
4. *Sajjan Singh* v. *State of Rajasthan*, AIR 1965 SC 845.
5. *I.C. Golak Nath and Ors.* v. *State of Punjab and Anr*., AIR 1967 SC 1643.
6. *Kesavananda Bharati* v. *State of Kerala,* AIR 1973 SC 1461
7. *Indira Nehru Gandhi* v. *Raj Narain*, 1975 Supp SCC 1.
8. *Minerva Mills* v. *Union of India*, AIR 1980 SC 1789.
9. *Sanjeev Coke Mfg. Co.* v. *Bharat Coking Coal Ltd*., (1983) 1 SCC 147.
10. *I.R. Coelho (Dead) By Lrs* v. *State of Tamil Nadu & Ors*. AIR 2007 SC 8617
11. *L. Chaiadra Kumar* v. *Union of India*, (1997) 3SCC261
12. *S.P. Sampath Kumar* v. *Union of India*, (1987) 1 SCC 124
13. *Kerela Bar Hotels Association* v. *State of Kerela* AIR 2016 SC 163

Suggested Readings

1. Durga Das Basu: Introduction to the Constitution of India, LexisNexis India.
2. Durga Das Basu: Shorter Constitution of India, Prentice-Hall of India, New Delhi.
3. Shibanikinkar Chaube: Constituent Assembly of India, Manohar Publishers & Distributors, New Delhi.
4. J. N. Pandey: Constitutional Law of India, Central Law Agency, Allahabad.
5. M.C. Jain Kagzi: The Constitutional of India, India Law House, New Delhi.
6. Arthur Berriedale Keith: A Constitutional History of India 1600-1935, Methuen & Co. Ltd., London.
7. M. P. Jain: Indian Constitutional Law, LexisNexis India.
8. Prof. M. P. Singh V.N. Shukla's Constitution of India Eastern Book Company, Lucknow.
9. M. V. Pylee Constitutional Amendments in India, S. Chand & Company, New Delhi.
10. M. V.V. Ramana Inter-State River Water Disputes in India, Orient Longman, New Delhi.
11. H. M. Seervi: Constitutional Law of India, N.M. Tripathi, Bombay.
12. Jagdish Swarup: Constitution of India, Modern Publications, New Delhi.

LAW OF CONTRACT – II (LOC-II)
BBL 302

INTRODUCTION OF THE COURSE

In the society wherein all major ventures are getting corporatized, a law student should acquaint himself with the knowledge of special contracts apart from equipping himself with general principles of contract. This law is contained in several legislations apart from the Indian Contract Act. This course equips the students to better appreciate the legal services required in a corporate office so that he can enhance his relevance as a lawyer in society. Law relating to Sales of Goods deals with the sale transactions of moveable property, formation of sale contracts, rights and duties of vendor and vendee, terms of contract etc. Law of Partnership deals with the formation of partnership firms, duties and liabilities of incoming and outgoing partners etc.

Course Objective

This course has the following objectives:

1. To study a law related to acquaint himself with the knowledge of special contracts.
2. To provide several legislations apart from the Indian Contract Act.
3. To Discuss the legal provisions required in a corporate office so that he can enhance his relevance as a lawyer in society.
4. Law relating to Sales of Goods deals with the sale transactions of moveable property, formation of sale contracts, rights and duties of vendor and vendee, terms of contract etc. Law of Partnership deals with the formation of partnership firms, duties and liabilities of incoming and outgoing partners etc.

Course Outcomes

The students shall be able to:

1. Understand the list and define the specific contracts.
2. know the explanation of why specific contracts are important to our legal and economic system.
3. Analyse how sale transactions of moveable property take place.
4. They will find out how partnership firms are formed, the duties and liabilities of the partners in a partnership firm.

COURSE OUTLINE:

UNIT-I **Credit 6**

INDEMNITY, GUARANTEE, BAILMENT AND PLEDGE (Hours 60)

- **Contract of Indemnity**

1. Documents/Agreements of Indemnity - Definition, Nature and
2. Scope and Rights of indemnity holder
3. Commencement of the indemnifier's liability

- **Contract of Guarantee**

1. Definition, Nature and Scope Difference between the contract of indemnity and Guarantee
2. Rights of surety
3. Discharge of Surety
4. Extent of Surety's liability
5. Co-surety.

- **Contract of Bailment**

1. Definition – Kinds – Duties of Bailer and Bailee –
2. Rights of Finder of goods as Bailee Liability towards true owner
3. Rights to dispose of the goods.

- **Contract of pledge**

1. Definition
2. Comparison with Bailment
3. Rights and duties of Pawnor and Pawnee

Case Studies:

1. New India Assurance Company Ltd. v.Kusumanchi Kamleshwar Rao and another1997 (9) SCC 179
2. United India Insurance Company v. M/s. Aman Singh Munshilal A.I.R. 1994 P. &h. 206
3. Secretary of State v. The Bank Of India Ltd., A.I.R. 1938 P.C. 191.
4. Sham Sunder v. Chandu La, AIR 1935, Lahore 974
5. Gajanan Moreshwar v. Moreshwar Madan, A.I.R. 1942 Bom, 302, at 304.

6. Oriental Fire and General Insurance Co. Ltd. v. Murlidhar Gopikissen Pvt. Ltd. AIR 1985 Cal 301: 1985 Arbi LR 387
7. Nagpur N.S. Bank v. Union of India, A.I.R. 1981 A.p. 153, at 158.
8. EMCO Pressmaster Pvt. Ltd. v. Union of India AIR 2000 Del 37
9. National Building Condtruction Corporation ltd. v. State Bank of Patiala AIR 1993 Del 89
10. Association of Corporation and Apex Societies of Handlooms v. State of Bihar AIR 2000 Del 106
11. DLF Cement Ltd. v. Inspector of Police AIR 1999 AP 359
12. Jagdish Chandra Trikha v. Punjab National Bank AIR 1998 Del. 266
13. National Bank of Lahore v.Sohan Lal AIR 1962 Punjab 534
14. Ram Gulam v.Govt. of U.P. AIR 1950 All 106
15. L.M. Co-operative Bank v. Prabhudas Hathibhai AIR 1966 Bom. 134
16. Standard Chartered Bank v.Custodian AIR 2000 sc 1488
17. K.S. Nagalmbika v. Corporation Bank , Virajpet AIR 2000 Kant. 201
18. Central Bank of India vKesharao Narayanrao Patil, (200%) (1) BC 58 (Ori)
19. Philips v. Brooks Ltd. (1919) 2 K.B. 243
20. Belgaum Pioner Urban Co-op. Credit Bank v. Satyapromoda AIR 1962 Mys. 48
21. M. R. Dhawan v. Madan Mohan AIR 1966 Delhi 313, 315
22. Dhani Ram & Sons v. Frontier Bank Ltd. AIR 1962 Punjab 321
23. KM Hidayathulla v. Bank of India AIR 2001 Mad. 251
24. Bank of Maharashtra v. Racman Auto (p.) Ltd. AIR 1991 Delhi 278
25. Central Bank of India v. Grains and Gunny Agencies AIR 1989 MP28

UNIT-II

AGENCY

- **Agency**

1. Definition
2. Creation of Agency
3. Kinds of Agents
4. Distinction between Agent and Servant

5. Rights and Duties of Agent
6. Relation of Principal with third parties
7. Delegation of Duties and Rights of Agent
8. Extent of Agents authority
9. Personal liability of Agent
10. Termination of Agency.

Case Studies:

1. Keighley, Maxsted & Co. v. Durant (1901) AC 240
2. Kelner v. Baxter (1866) LR 2 CP 174
3. Badri Prasad v. State of Madhya Pradesh AIR 1966 SC 58
4. Saroj Kapur v. Nitin Casting Ltd. AIR 1987 Delhi 349
5. Keppel v. Wheeler (1927) 136 LT 203
6. National Bank of Lahore v. Sohanlal AIR 1962 Punjab 534

Text Book

1. Avtar Singh. "Contract and Specific Relief", Eastern Book Company, 10th Edition, Lucknow, 2010.

Reference Book

2. B S Ramaswamy, " Contracts and their Management, Lexis Nexis Butterworth, 3rd Edition, New Delhi 2008

3. H.K Saharay, "Dutt on Contract", Eastern Law House, 10th Edition, Kolkata, 2006

4. G C Bharuka, "Mulla on The India Contract Act", 12th Edition, Lexis Nexis Butterworths Wadhwa, Nagpur 2009

5. Venkoba Rao's Law of Agency, 3rd Edition, Butterworths, New Delhi, 2001

UNIT–III

INDIAN PARTNERSHIP ACT

- **Indian Partnership Act**

1. Definition – Nature, Mode of determining the existence of
2. Partnership – Relation of Partner to one another – Rights and duties of partner –

3. Relation of partners with third parties – Types of partners – Admission of partners – Retirement
4. Expulsion – Dissolution of Firm – Registration of Firms.

.

Case Studies

1. Mahabir Cold Storage v. CIT, AIR 1991 SC 1357
2. C.I.T. v. Shah Mohandas Sadhuram, AIR 1966 SC15
3. Sharad Vasant Kotak v. Ramniklal Mohanlal Chawda (1998) 2 SCC 171
4. Ganga Metal Refining Company v. Commissioner of Income-tax, West Bengal, AIR 1967 Cal. 434
5. Mahadeodas v. Gherulal Parekh, AIR 1958 Cal. 703
6. K. Jaggaias v. Kokumanu AIR 1984 A.P. 149
7. Munishi Abdul Latif v. Gopeswar AIR 1933 Cal 204 : 56 Cal L.J 172
8. R.N. Kothare v. Hormasjee, AIR 1927 Bom 187
9. Dulichand Laxminarayan v. Commissoner of Income-Tax, (1956) 29 T.L.R. 535
10. Mahendra Kumar v. Sate of Madras, AIR 1968 Mad. 241
11. Sanganer Dal and Flour Mill v. F.C.I, AIR 1992 S.C 481
12. Dena Bank v. Bhikhabai Prabhudas Parekh and Co. and others, 2000 (5) SCC 694

Text Book

1. Pollock and Mulla, " The Indian Partnership Act", 7th Edition, Lexis Nexis Butterworths, New Delhi 2007

Reference Book

2. S.D. Singh, J.P. Gupta, "Law of Partnership in India", 15th Edition, Orient Law House, New Delhi.
3. H.K. Saharay, "Indian Partnership and Sale of Goods Act", R.Combray and Co. P.Ltd, Kolkata, 2004
4. V.S.Vadivel, "Partnership Firms", 3rd Revised Edition, Snow white, Mumbai, 2008
5. Dr. Madhusudhan Saharay, "Indian Partnership Act", Universal Law Publishing Co. New Delhi, 2010

6. Satyajeet Desai, " The Law of Partnership in India", 7th Edition, Wadhawa, Nagpur, 2009

UNIT –IV

Sales of Goods Act

- **Sale of Goods Act**
  1. The Contract of sale
  2. Conditions and Warranties
  3. Passing of Property
  4. Transfer of title
  5. Performance of the Contract
  6. Rights of Unpaid Seller
  7. Against goods – Remedies for Breach of Contract

Case Studies:

1. Andhra Sugar Ltd. v. State of A.P AIR 1968 SC 599
2. Coffee Board, Karnataka v. Commissioner of Commercial Taxes, AIR 1988 SC 1487
3. M/s Mukesh Kumar Aggrawal and Co. v. State of M.P, AIR 1988 S.C 563
4. Associated Power Co. Ltd v. Ram Taran Roy, AIR 1970 Cal. 75
5. H. Anraj v. Govt of Tamil Nadu AIR 1986 SC 63
6. Vijay Minerals Pvt. Ltd v. Bikash Chandra Deb AIR 1996 Cal. 67
7. Aluminium Industries Ltd. v. Minerals and Metals Trading Corpn, AIR 1998 Mad. 239
8. Union of India v. Tarachand AIR 1976 M.P. 101
9. State of Gujarat v. Variety Body Builders AIR 1976 SC 2108
10. Jagdish Radhakisan v. Ramesh S. Wagh AIR 2001 Bom 152
11. In re Andrew Yule and Co. AIR 1932 Cal. 879

Text Book

1. P. Ramanath Aiyar, Law of Sale of Goods", 8th Edition, Universal Law Publishing Co. Delhi, 2007

Reference Book

2. R.Chakraborty, "Law of Sale of Goods And Partnership", 1st Edition, Orient Publishing Company, Allahabad, 2007

3. Dr. Madhusudan Saharay, “Sale of Goods and Hire Purchase”, Universal Law Publishing Co., New Delhi, 2010
4. Justice. P. Narayna,“Law of Caveats”, First Edition, Asian Law House, Hyderabad, 2006
5. S.D. Singh, J.P. Gupta, “Law of Partnership in India”, 15th Edition, Orient Law House, New Delhi.
6. H.K. Saharay, “Indian Partnership and Sale of Goods Act”, R.Combray and Co. P.Ltd, Kolkata, 2004

UNIT –V

Hire Purchase Act 1972

- **Hire Purchase Act 1972**

1. Rights and Obligation of the Hirer and Owner
2. Form and Contents of Hire Purchase Agreements
3. Warranties and Conditions
4. Standard Form of Contracts: Nature, Advantages, Unilateral Character
5. Principles of Protection against the Possibility of Exploitation
6. Judicial Approach to such Contracts
7. Exemption Clauses
8. Clash between two standard forms of contracts.

Text Book

Hire Purchase Act, 1972

LAW OF CRIMES-I (IPC)
BBL 303

INTRODUCTION TO THE COURSE

The primary objective of criminal law is to maintain law and order in society and protect people's life and liberty. It is for this reason that people place their ultimate reliance on this branch of law for protection against all injuries that human conduct can inflict on individuals and institutions. Due to these reasons, the penal law cannot afford to be weak, ambiguous or ineffective. Nor can it be harsh and arbitrary in its impact. The application of criminal law has to be uniform regardless of any discrimination on grounds of class, caste, religion, sex or creed etc. of either the criminal or the victim.

COURSE OBJECTIVE

1. To familiarize the students with the key concepts regarding crime and criminal law.
2. To expose the students to the range of mental states that constitute *mens rea* essential for committing a crime.
3. To teach specific offences under the Indian Penal Code.
4. To keep students abreast of the latest developments and changes in the field of criminal law.

COURSE OUTCOME

The students will be able to;

1. Understand the conceptual analysis of the law of crimes
2. Analyse the spirit of legal provisions of crimes
3. Apply the practical aspects of law of crime
4. Assess the real approach of the law of crime

Unit-I — Credit 6
Introduction to Criminal Law — (Hours 60)

(a) The nature and concept of crime
(b) Extent and operation of the Indian Penal Code
(c) Definition of Crime
(d) Constituents Elements of Crime: *Actus Reus* and *Mens rea*

Cases

1. Fowler v. Padget (1798) 7 T.R. 509
2. Harding v. Price (1948) 1KB. 695

3. R v. Allday (1837) 8 C & P, 136 at 139
4. R v. Prince (1875) L.R. 2 C.C.R. 154
5. Queen v. Tolson (1889) 23 Q.B.D. 168
6. Sherras v. De Rutzen (1895) 1 Q.B. 918
7. Cundy v. Le Cocq (1884) 13 QBD.207
8. Hobbs v. Winchester Corporation (1910) 2 K.B. 471
9. State of Maharastra v. M. H. George A.I.R. 1965 S.C. 722
10. Nathu Lal v. State of M.P. A.I.R. 1966 S.C. 43
11. Mubarak Ali Ahmad v. State of Bombay, A.I.R. 1957 S.C. 857
12. R v. Francis Cassidy (1867) 4 B.H.C. (Cr. C.) 17
13. Queen v. Nidha (1891) I.L.R. 14 All 38
14. Abhayanand Mishra v. State of Bihar A.I.R. 1961 S.C. 1698
15. State of Maharashtra v. Mohd. Yakub1980 Cr. L.J. 793

Unit-II
General Exceptions-I

(a) Definitions
(b) Private Defense against Body and Property
(c) Judicial and Executive acts
(d) Necessity
(e) Consent
(f) Infancy
(g) Insanity & Intoxication
(h) Mistake of Fact
(i) Accident

Cases:

1. K. M. Nanavati v. State of Maharastra AIR 1962 S.C. 605
2. Shivaji v. State of Maharastra 1973 Cr. L. J. 1783 (S.C.
3. Barrow v. Issacs (1891) 1 Q.B. 417
4. R. v. Tolson (1889) 23 Q.B.D. 168
5. R. v. Prince (1875) L.R. 2 C.C.R. 154
6. Sheras v. De Rutzen (1895) 1 Q.B. 918
7. Cundy v. Le Cocq (1884) 13 Q.B.D. 207
8. Bhawoojivaji v. Mulli Dayal (1888) 12 Bon 377
9. State of W.B. v. Shew Mangal Singh and others 1884 Cr. L.J. 1683 (S.C.)
10. Jageshwar v. Emperor A.I.R. 1924, 24 Cr. L.J. 789
11. Shakir Khan v. Crown A.I.R. 1931 Lah. 54
12. Bhupendra Singh A. Chaudasama v. State of Gujrat 1998 Cr. L. J. 57 (S.C.)
13. Reniger v. Fogossa (1779) 21 How
14. Cope v. Sharpe (1912) 1 K.B. 496

15. Maleverger v. Spinke (1537) Dyer at 36
16. R. v. Dudley and Stephen (1884) 14 Q.B.D. 273
17. Queen v. Lukhiri Agradanini (1874) 22 W.R. (Cr.) 237
18. Marsh v. Loader (1863) 14 C.B.N.S. 535
19. Hiralal v. State of Bihar 1977 Cr. L. J. 1921 (S.C.)
20. Mussammat Aimona (1864) 1 W.R. (Cr.) 43
21. R v. Arnold (1724) 16 St. Tr. 695
22. Lord Ferrer's case (1760) 19 St. Tr. 885
23. Hadfield's case (1800) 27 St. Tr. 128
24. Bowler's Case (1821) Collinson Lumey 673
25. M'Naghten's Case
26. A. G. for Northern Ireland v. Gallagher (1963) A.C. 349
27. Durham v. United State 214 F 2d 862
28. Sodeman v. R. (1936) 2 All E.R. 1138
29. D.P.P. v. Beard 1920 (A.C.) 479
30. Regina v. Doherty 16 Cox C.C. 306 at 308
31. Rajesh Kumar v. Dharamvir 1997 Cr. L.J. 2242 (S.C.
32. Buta Singh v. State of Punjab 1991 Cri L.J. 1464 (S.C.)
33. Jai Dev v. State of Punjab AIR 1963 SC 612
34. Onkarnath Singh v. State of U.P. AIR 1974 SC 1550
35. Ram Ratan v. State of Bihar AIR 1965 SC 926
36. Kesho Ram v. Delhi Administration AIR 1974 SC 1158
37. Baljit Singh v. State of U.P. AIR 1976 SC 2273
38. Domnic Varkey v. State of Kerala AIR 1971 SC 1208
39. DeoNarain v. State of U.P. AIR 1973 SC 473
40. Amjad Khan v. State AIR 1952 SC. 165

Unit-III
Incoherent Forms of Crime

(a) Joint and Constructive Liability/Common Intention and Common Object
(b) Criminal Conspiracy
(c) Attempt
(d) Abetment

Cases:

1. Barendra Kumar Ghose v. Emperor, 52 I.A. 40 (P.C.)
2. Mahboob Shah v. Emperor, 72 I.A. 148 (P.C.): A.I.R. 1945 P.C. 118
3. Kripal Singh v. State of U.P. A.I.R. 1954 S.C. 706
4. Ram Nath v. State of M.P. A.I.R. 1953 S.C. 420
5. Pandurang v. State of Hyderabad A.I.R. 1955 S.C. 216
6. Rishi Deo Pandey v. State of U.P. A.I.R. 1955 S.C. 331

7. Shree Kantiah v. State of Bombay A.I.R. 1955 S.C. 287
8. J.M. Desai v. State of Bombay A.I.R. 1960 S.C. 889
9. Krishna v. Maharastra A.I.R. 1963 S.C. 1413

Unit-IV
Punishment

(a) Concept of Punishment
(b) Theories of Punishment
(c) Punishment under the Indian Penal Code
(d) Capital Punishment

Cases:

1. Hira Lal Malik v. State of Bihar A.I.R. 1977 S.C. 2236
2. State of Punjab v. Mann Singh 1983 Cr. L. J. 229 (S.C.)
3. Kishori v. State of Delhi 1999 Cr. L. J. 584 (S.C.)
4. Jagmohan Singh v.State of U.P. 1973 Cr. L.J. 370
5. Rajendra Prasad v. State of U.P. 1979 Cr. L.J. 792
6. Bachan Singh v. State of Punjab 1980 Cr. L.J. 636 (S.C.)
7. Machhi Singh v. State of Punjab 1983 Cr. L. J. 1457 (S.C.)
8. Javed Ahmad v. State of Maharastra 1984 Cri. L.J. 1909 (S.C.)
9. Triveni Ben v. State of Gujrat 1989 Cri, L. J. 870 (S.C.)
10. T. V. Vatheeswaran v. State of Tamil Nadu 1983 Cri. L. J. 481 (S.C.)

Unit-V
Specific Offences

(a) Offences against the Religion
(b) Offences Relating to Documents and Property Marks (Forgery)
(c) Defamation
(d) Criminal intimidation, insult, and annoyance

Text Books:

1. Glanville Williams, *Text Book of Criminal Law*, Universal Law Publishing Co., New Delhi, 2012
2. Ratanlal Dhiraj Lal, *The Indian Penal Code*, Lexis Nexis, Butterworths Wadhwa, Nagpur, 2012
3. K.D. Gaur, *Textbook on Indian Penal Code*, Universal Law Publishing Co., New Delhi, 2012
4. C. K. Takwani: *Indian Penal Code,* Eastern Book Company, Lucknow.

References:

1. P. S. A. Pillai: *Criminal Law-Incorporating the Criminal Law (Amendment) Act*, 2013, LexisNexis India, Gurgaon.
2. Glanville Williams, *Text Book of Criminal Law*, Universal Law Publishing Co., New Delhi, 2012
3. Dr. H.S. Gaur, *Penal Law of India*, Law Publishers, Allahabad, 2013
4. John Dawson Mayne, Mayne's *Criminal law of India*, Gale, Making of Modern Law, 2013
5. K. S. N. Murthy & K. V. S. Sarma: *KSN Murthy's Criminal Law* (Indian Penal Code), LexisNexis India, Gurgaon.
6. S. N. Misra: *Indian Penal Code* (As amended by Criminal Law (Amendment) Act, (2013), Central Law Publications, Allahabad
7. Harish Chander: *The Indian Penal Code-A Critical Commentary*, Eastern Law House, Kolkata.
8. Bare Act of Indian Penal Code, 1860

ORGANIZATION BEHAVIOUR
BBL 304

Objective of the Course

This module provides students with an elaborative understanding of organizational behavior, its key principles, concepts & theories. The range of concepts & theories that students will be introduced includes foundation of individual behavior, groups & group dynamics, motivation, leadership, organization design, organization structure, work stress, organization culture, organization change. By the end of the module, students will be fully equipped with the knowledge and skills required to understand & deal human behavior in the organization as individual, group member & organization as a whole.

Teaching Methodology

As per the norms of the university in this course there will be 6 classes per week. Teaching Methodology will include Lectures-cum-discussion, Assignments, Projects and Presentation.

Evaluation

In the evaluation system adopted by the Raffles University an assessment is made of the student's performance throughout the semester on a continuous basis along with an end term examination. The continuous assessment would be done by several observations such as day-to-day performance in classrooms, home assignments, tutorials, seminars, term papers.

- Continuous Assessment- 40%
- Mid-Term- 20%
- End Term- 40%

Organizational Behavior

Unit-1
Foundations of Individual Behavior

***Introduction and Conceptual framework of OB*-** Nature & Scope of Organizational Behavior. The organization and the individual.

Personality: Determinants and Attributes, Big Five Model

Major Personality Attributes: Locus of Control, Machiavellianism, Self Esteem, Self-Monitoring, Type A & B personality, Risk taking ability.

Learning and Learning Theories: Concept, Law of Effect, Classical Conditioning, Operant Conditioning, Social Learning Theory. Reinforcement Theory and OB Modification Process and its Advantages.

Attitudes: Concept, its components and various job-related attitudes, Job satisfaction and its impact on OB.

Values: Concept, types of values, Robbin's Dominant Work Values today, Hofstede's Values Across Cultures, Javidan & House's The G.L.O.B.E. Findings.

Perception: Definition, factors affecting individual perception, Perceptual Selectivity.

Unit-2
Motivation and Leadership

Motivation: Definition and concept, different types of motives.

Theories of motivation: Maslow's Hierarchy of Needs, Herzberg's Two Factor theory, ERG theory, Vroom's Expectancy theory, Equity theory, Reinforcement theory and Behavior Modification.

Leadership: Nature and Significance of leadership, Trait theory of leadership.

Behavioral theories of leadership- Ohio State Studies, Michigan Studies, and Managerial Grid.

Contingency theories **-** Fiedler's model, Hersey and Blanchard's situational theory, leader-member exchange theory, path goal theory, Charismatic leadership.

Unit-3
Foundations of Group Behavior

Group: Definition, Classification of Groups, stages of group development, Group Structure, Group Processes, Strength and weakness of group over individuals.

Team: Concept of team, Group v/s Team, Team Effectiveness, Different types of teams, how to convert an individual into team player.

Conflict and Collaboration: Transitions in Conflict Thought, Functional versus Dysfunctional Conflict, Conflict Process.

Conflict Management: Techniques, Negotiation process, Bargaining strategies, Global implications.

Unit-4
Structural & Cultural Dimensions of OB

Organization Structure: Definition, Elements of Organization Structure, Common Organization Designs: simple Structure, Bureaucratic Structure, Matrix Structure.

New Designs Option: Team Structure, Virtual Structure, Boundaryless Organization Structure; Factors affecting choice of different organization designs.

Organization Culture: Meaning of Organizational Culture, Creating and Sustaining Culture, Countries and Culture, Employee Acculturation Process.

Organizational Climate: Concept and How to build a more positive and employee-centred climate.

Unit-5

Organizational Change and Stress Management

Organizational Change: Change Concept, Forms of Change, Sources of Resistance to Change, Tactics to deal with resistance.

Approaches/ Models to Managing Change: Lewin's Change Model and Nadler's Organizational Model, Action Research: Steps in action Research and Change agents.

Stress Management: Work Stress, types of stress, stages of stress, causes of stress: extra-organizational, organizational, group and individual; Strategies to cope with stress: individual strategies and organizational strategies.

Reading List:

Recommended Book

- Robbins, Judge & Sanghi, (2009): Organizational Behavior 13e, India, Pearson, Prentice Hall

Reference Book

- L. M. Prasad, (2011): Organizational Behavior, India, Sultan Chand & Sons
- Hersey, Blanchard & Johnson, (2009), India, Pearson/ Prentice Hall
- Keith Davis: Organizational Behavior
- Fred Luthans: Organizational Behavior

BUSINESS STRATEGY

BBL 305

Prelude to the Course:
The course aims to acquaint the students with the fundamental concepts of business and strategic management. It emphasizes on the strategies which need to be formulated in order for a business to function.

Learning Objectives:
The course aims to:
1. Impart the students about the fundamental concepts of strategic management.
2. Incorporate the sense of business organisation at various levels.
3. Enumerates the policies and the legal paradigm regarding business.

Learning Outcomes:
After completing the course, the students will be able to:
1. Study the concepts of strategic management and various business policies.
2. Discuss the strategic operations governing business management.
3. Implement the strategies suitable for various organizational structures.

Unit – I
Business Strategy and Policy

Introduction and Concept of Business Strategy, Need for Business Strategy, Essentials of Effective Strategy, Effects of Inadequate Strategies, Functions of Business Strategies, Meaning and Concept of Business Policy, Factors influencing Business Policy, Business Policy vs. Strategy, Policy decisions and their impact on Business Strategies

Unit – II
Strategic Management & Process

Strategic Management – Definition, Meaning and Role, Objectives of Strategic Management, Benefits of Strategic Management, Importance of Strategic Management, Causes for failure of Strategic Management, Concept of Strategic Management Process, Strategic Vision and the role of a Strategist, Criteria for Effective strategy, Role of Strategic Management in Policy Making

Unit – III
Strategic Analysis & Formulation

Concept of Strategic Analysis – definition, Need for Strategic Analysis & Environmental Scanning, Understanding Environment of Business for Strategic Analysis, Strategic Thinkers & Their Contributions, Role of Strategic Analysis in Policy Making, Introduction, Types of Strategies, Steps in Strategy Formulation, Core Competencies and their Importance in Strategy Formulation

Unit – IV
Strategic Planning and Implementation

Introduction to Strategic Planning Process, Types of Strategies, Stability, Expansion or Growth, Mergers and Acquisitions, Activating Strategy, Issues in Strategy Implementation, Integrating the Functional Plan and Policies

Unit – V
Strategic Leadership

Introduction, Leadership Functions, Leadership Traits, Leadership Styles, Strategic Leadership and Competitive Advantage

Suggested Readings:

Sl. No.	Name of the Textbooks	Year of Publication
1.	Rangrajan, K., *Concepts in Strategic Management and Business Policy*, TMH Publications	2015
2.	Kazmi, Strategic Management	2017

ECONOMICS-III

LAW AND ECONOMICS

BBL 306

INTRODUCTION TO THE COURSE

This course utilizes the standard tools of economic analysis for the study of law and legal institutions, with special focus on (i) economics of property;(ii) economics of contracts; (iii) economics of tort law, and (iv) economics of lawmaking. This course explains the economic aspects of law making. It describes the normative aspect of economics. It appraises legal rules to determine the extent to which they meet the social goal of efficiency, an application of welfare economics.

OBJECTIVE OF THE COURSE

- To examine the importance of Economics to law
- To examine legal impediments to the field of Economics
- To understand law acts as an instrument for economic policy making
- To understand the economic basis of Law of Property, Law of Contract, Law of Torts and Criminology.

COURSE OUTLINE

Unit I **Credit 6**

Basic Concepts of Economics & Law **(Hours 60)**

A. Basic concepts of law: the common law & traditional civil law
B. Basic concepts of economics – Review of Price theory; Concepts of Economic Efficiency – Pareto Optimum
C. Market failure -Externalities, Monopoly, Public goods & information
D. The Game Theory

Recommended Readings

1. Cooter and Ulen: chapter 2; A Review of Microeconomic theory

2. Cooter and Ulen: chapter 3; An Introduction to Law and Legal Economics
3. Kenneth Gillingham, James Sweeney: "Market Failure and the Structure of Externalities" ; 2010
4. Vani K. Borooah: "Market Failure: An Economic Analysis of its Causes and Consequences" ; 2003

Game Theory : the library of Economics & Liberty, www.econlib.org/library/Enc/GameTheory.html

Unit I

Economic Analysis of Property Law

A. The Coase theorem; Bargaining Theory
B. The economic concept of property rights and its allocation; establishment & verification of property rights
C. Intellectual property as public goods (Patents, copyrights, trademarks)
D. Remedies & violation of property rights

Recommended Readings

1. Cooter and Ulen: chapter 4 & 5: An Economic theory of Property
2. Gary North "The Coase theorem: A STUDY IN ECONOMIC EPISTEMOLOGY". 1992
3. Posner, Richard A. (2005) "Intellectual Property: The Law and Economics Approach". Web Notes
   Cooter & Ulen
   a. Matt Rognlie , "Understanding the Coase theorem" 2011, *mattrognlie.com/2011/05/04/understanding-the-**coase-theorem**/*
   b. Christopher K. Eppich, *Patenting Dilemma: Drugs for Profit Versus Drugs for Health*, 43 Santa Clara L. Rev. 289 (2002).

Unit III

Economics of Law of Contract

A. Introduction to Contract: Bargain Theory; Economic theory of Contract
B. Perfect Contracts and market Failures - Remedies as Incentives; Specific Performance; Models of Remedies

Recommended Readings

Cooter and Ulen: Chapter 6 & 7: An Economic theory of Contracts

Steven Shavell, "Economic Analysis of Contract law" ; the national bureau of Economic Research, 2003.

Unit IV

Economics of Law of Torts

A. Economics of Torts: Calabresi's minimum social cost rule

B. Drivers & pedestrians: *Caveat Emptor* or negligence or strict liability?

   1. Caveats: activity levels; extent of precaution, administrative costs, court errors.
   2. The Learned Hand rule

C. Product liability: privity to negligence to strict liability to absolute liability

D. Consumer Product Injuries

E. Extension of Economic Model in Law of Torts

Recommended Readings

Cooter and Ulen: chapter 8 & 9 : An Economic theory of Tort Law

Winand Emons, "An Introduction to the Legal & Economic Theories of torts" 1993.

Richard A Posner, "Instrumental and Non-Instrumental Theories of Tort Law" 2013.

Unit V

Economic theory of Legal Process, Crime and Punishment

A. Computing the value of a legal claim

B. Settlement Bargaining

C. Economics of Trials and Economic Aspects of Appeals

D. The Theory of Criminal Law

E. The concept of Rational Crime

F. Optimal Amount of Crime Deterrence and of Efficient Punishment

G. Social Cost of Crime

H. The Deterrence effect of Imprisonment and capital punishment

I. The Economics of addictive drugs and crime

Recommended Readings

   a. Cooter and Ulen: chapter 10 : An Economic theory of Legal Process

b. Richard A Posner, “An Economic Approach to Legal Procedure & Judicial Administration” ; *The Journal of Legal Studies* : Vol 2, 1973
c. Cooter, Robert (1991) “Economic Theories of Legal Liability”, *Journal of Economic Perspectives* 5(3).
d. Cooter and Ulen: chapter 11 & 12 : An economics of Crime & Punishment
e. Gary S. Becker , “Crime and Punishment: An Economic Approach”; *National Bureau of Economic Research*, Vol 1, 1974.
f. M.A.Cohen, “Environmental Crime & Punishment : Legal / Economic Theory”
g. Farmer, Amy and Dek Terrell (2001) “Crime versus Justice: Is There a
h. Trade-off?” *The Journal of Law and Economics,* Vol. XLIV

B.B.A.LL.B VI SEMESTER

CURRICULUM AND SYLLABI

(6th Semester)

B.B.A.LL.B. (Hons.)
(Integrated Law degree course)

SCHOOL OF LAW

RAFFLES
UNIVERSITY

Japanese Zone, National Highway 48 Neemrana, Rajasthan 301020

www.rafflesuniversity.edu.in

B.B.A.LL.B VI SEMESTER

FAMILY LAW – II [MUSLIM LAW] (FML-II)

Objective: The course will assist students in understanding and reflecting on the nature and core principles of Muslim Law, as well as the difficulties that Muslim religious laws face due to national and international developments in the socio-political context. The course will also educate students on the legislative measures implemented by the government from the time of the British to the present administration, as well as the role of the judiciary in bringing reforms to improve the status of women, particularly in the laws governing divorce and maintenance.

UNIT - 1

INTRODUCTION TO MUSLIM LAW

A. Who is a Muslim?
B. **Muslim Law as Applied and Interpreted in India:** Operation of Muslim Law
C. Legislative Enactments-The Muslim Personal Law (*Shariat*) Application Act, 1937
D. **Primary Sources**: The Holy Quran-Hadith and *Sunnah*
E. **Secondary Sources:** Ijma (Consensus of Opinions) and *Qiyas* (*Analogy*)
F. Ijtehad and Taqlid
G. Equity, Justice and Good Conscience

UNIT - 2

MARRIAGE & DIVORCE

A. **Marriage:** Definition, Nature, Formalities-Legal Effects-Kinds of Marriages-Permanent and Temporary, Option of Puberty, Restitution of Conjugal Rights.
B. **Divorce:** Classification of Divorce, Talaq-i-Tafweez (delegated divorce) Divorce by Judicial Process, Effects of Divorce, Apostasy and Conversion as Grounds of Divorce-Iddat-Rationale and Utility-The Dissolution of Muslim Marriage Act, 1939-Triple Divorce-Position in other countries.

UNIT– 3

DOWER & MAINTENANCE

A. **Dower:** Definition, Nature & Kinds of Dower: Specified and Unspecified, Prompt and Deferred Dower-Subject matter of Dower-Widow's Right of Retention in lieu of Dower, Payment of Dower and Maintenance-Sections 125-127 of the Criminal Procedure Code, 1973.
B. **Maintenance:** Definition-Maintenance of Wife-of Descendants-of Ascendants of other Relations-Maintenance under Agreement-Maintenance under the Criminal Procedure Code-Maintenance under the Muslim Women (Protection of Rights on Divorce) 1986.

UNIT – 4

GUARDIANSHIP & LAW OF WILLS

A. **Guardianship:** Definition-Concept of Guardianship in Islam-Appointment of Guardian-Kinds of Guardianship-Guardianship of Person (Right of Custody)-Guardianship of Property-Guardianship in Marriage-Disqualification-Termination-

Power of Alienation-Movable and Immovable Property, Legitimacy, Section 112 of the Indian Evidence.

B. **Wills:** Definition-Concept: Creation- Capacity-Subject-matter of Will- Limitations to Will-Abatement of Legacies-Death-Bed Gifts-For whom Bequest can be made-Revocation of Wills-Bequests which are not Absolute-Interpretation of Wills.

C. **Gifts:** Definition-Essentials-Exceptions to the General Rule-Capacity, In whose favour, Subject-Matter, Gift of Musha-Exceptions, Conditional-Contingent-Future Gifts, Revocation of Gift-Life Interest-Life Estates.

UNIT – 5

WAQF, SUCCESSION & INHERITANCE

A. **Waqf:** Definition and Meaning, Origin, Kinds and Family Law of Waqfs, Essentials, Legal Incidents, Creation, Subject-Matter, Objects, Beneficiaries, Waqfs for Benefit of Humanity, Administration-Statutory and Non-Statutory; Mutawalli, Law before 1913 and after 1913-The Waqf Amendment Act, 2013.

B. **Succession and Inheritance:** Position Before Islam-Reforms brought by Islam-General Rules of Inheritance-Doctrine of Representation-Total and Partial Exclusion-Hanafi Law of Inheritance-Shia Law of Inheritance-Differences between the two laws of inheritance.

Suggested Readings

1. Abdur Raheem: Muhammedan Jurisprudence, Allahabad Law Agency, Faridabad.
2. Ameer Ali: Mahommedan Law, Vol. I, Kitab Bhavan, New Delhi.
3. B.R. Verma: Commentaries on Mohammedan Law in India, Pakistan and Bangladesh, Law Publishers (India) Pvt. Ltd., Allahabad.
4. Badruddin Tyabji: Muslim Law-The Personal Law of Muslims, N.M. Tripathi Pvt. Ltd., Bombay.
5. Dr. Paras Diwan & Peeyushi Diwan: Family Law, Allahabad Law Agency, Faridabad.
6. Dr. G.V. Subba Rao & Dr. Vijender Kumar: G. C. V. Subba Rao's Family Law in India, S Gogia & Company, Hyderabad.
7. Poonam P. Sexena: Family Law Lectures-Family Law II, LexisNexis India, Gurgaon.
8. Prof Kusum: Family Law Lectures-Family Law I, LexisNexis India, Gurgaon.
9. Sir Dinshaw Fardunji Mulla: Principles of Mahomedan Law- Incorporating the Wakf (Amendment) Act, 2013, LexisNexis India, Gurgaon.
10. Tahir Mahmood: Fyzee's outlines of Muhammedan Law, Oxford University Press, New Delhi.

Cases:

- Mt. *Ghulam Kubra Bibi* v. *Mohd. Shafi Mohd. Din*, AIR 1940 Pesh. 2 181
- *Chand Patel* v. *Bismillah Begum*, 1 (2008) DMC 588 (SC) 183
- *Saiyid Rashid Ahmad* v. *Mt. AnisaKhatun*, AIR 1932 PC 25 191
- *ShamimAra*v. *State of U.P*., 2002 Cr LJ 4726 (SC) 195
- *Masroor Ahmed* v. *Delhi* (NCT) 2008 (103) DRJ 137 (Del.) 200
- *GhulamSakina*v. *FalakSher Allah Baksh*, AIR 1950 Lah. 45 213

- *A. YousufRawther*v. *Sowramma*, AIR 1971 Ker. 261 217
- *Itwari*v. *Asghari*, AIR 1960 All. 684 227
- *DanialLatifi*v. *Union of India* (2001) 7 SCC 740 234
- *Noor Saba Khatoon*v. *Mohd. Quasim*, AIR 1997 SC 3280 249
- *Mohd. Ahmed Khan vs. Shah Bano Begum & Ors. AIR 1985 SC 945*

B.B.A.LL.B VI SEMESTER

LAW OF EVIDENCE (LOE)

INTRODUCTION TO THE COURSE

Evidences are the basis for any legal system. This paper aims to acquaint students about the different types of recognized forms of evidences and its sources which are indispensible for any legal professional.

OBJECTIVES OF THE COURSE

The law of evidence is an indispensable part of both substantive and procedural laws. It imparts credibility to the adjudicatory process by indicating the degree of veracity to be attributed to 'facts' before the forum. This paper enables the student to appreciate the concepts and principles underlying the law of evidence and identify the recognized forms of evidence and its sources. The subject seeks to impart to the student the skills of examination and appreciation of oral and documentary evidence in order to find out the truth. The art of examination and cross-examination, and the shifting nature of burden of proof are crucial topics. The concepts brought in by amendments to the law of evidence are significant parts of study in this course.

TEACHING METHODOLOGY

As per the norms of the University for this Course there will be 6 classes per week. Clinical and tutorial form of learning should be followed. Teaching methodology will include Lectures-cum-discussion, Assignments, Projects and Presentations.

THE EVALUATION SCHEME

• Continuous Assessment- 40%

• Mid-Term- 20%

• End Term- 40%

COURSE OUTLINE

UNIT-1

GENERAL ISSUES RELATING TO LAW OF EVIDENCE

- History of statutory Evidence Law in India – Pre and post Indian Evidence Act, 1872 realities – Role of Judiciary, particularly the appellate judiciary in up- dating the Evidence Law rules by judicial creativity.
- The main features of the Indian Evidence Act 1861.
- Relationship between law of Evidence and substantive laws (Criminal and Civil laws) and procedural laws (Code of Criminal Procedure and Civil Procedure Code
- Problem of applicability of Evidence Act
- Why rules of evidence have different significance under the Adversarial System and Inquisitorial System of Justice?

- Understanding the general concepts: 'Facts', 'Facts in issue', 'Relevant Fact', 'Evidence-Oral and Documentary', 'Direct and Circumstantial', 'Proved', 'Disproved' and 'Not Proved'.

UNIT-2

RELEVANCY AND ADMISSIBILITY OF FACTS

- **Logically relevant facts**:
  - The Doctrine of Res gestae (Section 6,7,8)
  - Special class of relevant facts relating to Conspiracy – section 10
  - The problems of relevancy of "Otherwise" irrelevant facts (Section 11)
  - Relevant facts for proof of custom (Section 13
  - Facts concerning bodies & mental state (Section 14, 15)
- **Stated relevant facts**
  - Admissions and confessions
  - General principles concerning admission (Section 17, 23)
  - Differences between "admission" and "confession"
  - The problems of non-admissibility of confessions caused by "any inducement, threat or promise' (Section 24)
  - Inadmissibility of confession made before a police officer (Section 25)
  - Admissibility of custodial confessions (Section 26)
  - Admissibility of "information" received from an accused person in custody; with special reference to the problem of discovery based on a "joint statement" (Section 27)
  - Confession by co-accused (Section 30)
  - The problems with the judicial action based on a "retracted confession"
- **Dying Declarations**
  - The justification for relevance on dying declarations (Section 32)
  - The judicial standards for appreciation of the evidentiary value of dying declarations.
- Opinion of Third Person when relevant (Expert Opinion) - sections 45-51

Cases:

- State of Maharashtra v. Prafulla B. Desai (Dr.) (2003) 4 SCC 601
- R. M. Malkani v. State of Maharashtra, AIR 1973 SC 157
- Mirza Akbar v. Emperor, AIR 1940 PC 176
- BadriRai v. State of Bihar, AIR 1958 SC 953
- Mohd. Khalid v. State of W.B. (2002) 7 SCC 334
- Jayantibhai Bhenkerbhai v. State of Gujarat (2002) 8 SCC 165
- Bishwanath Prasad v. Dwarka Prasad, AIR 1974 SC 117
- Central Bureau of Investigation v. V.C. Shukla, AIR 1998 SC 1406
- Veera Ibrahim v. State of Maharashtra, AIR 1976 SC 1167
- PakalaNarayana Swami v. Emperor PC 1939

- AghnooNagesia v. State of Bihar, AIR 1966 SC 119 64
- PulukuriKottaya v. Emperor, AIR 1947 PC 67
- Bodhraj v. State of J. & K. (2002) 8 SCC 45
- KhushalRao v. State of Bombay, AIR 1958 SC 22
- Sudhakar v. State of Maharashtra (2000) 6 SCC 671
- Patel HiralalJoitaram v. State of Gujrat (2002) 1 SCC 22
- Laxman v. State of Maharashtra (2002) 6 SCC 710
- Ram Narain v. State of U.P., AIR 1973 SC 2200, (1973) 2 SCC 86
- Santosh Kumar Singh v. State Th. Cbi , 2010 SC
- State Tr.P.S.LodhiColony,New v. Sanjeev Nanda, 2012 Del. HC
- VikasYadav v. State of U.P &Anr, 2009 Del. HC
- Manu Sharma vs. State (NCT of Delhi) (2010) 6 SCC 1
- Rabindra Kr. Pal @ Dara Singh v. Republic of India, 2011 SC

UNIT-3

ON PROOF

- Facts which need not be proved – sections 56-58
- Facts which the parties are prohibited from proving
- Doctrine of Estoppel – sections 115-117
- Privileged communications – sections 122-129
- Oral and documentary evidence – sections 59-78
- Exclusion of oral by documentary evidence – sections 91-92

Cases:

- R. S. Maddanappa v. Chandramma (1965) 3 SCR 283
- Madhuri Patel v. Addl. Commissioner, Tribal Development, AIR 1995 SC 94
- SanatanGauda v. Berhampur University, AIR 1990 SC 1075
- M.C. Vergheese v. T.J. Ponnan, AIR 1970 SC 1876 136
- State of U.P. v. Raj Narain, AIR 1975 SC 865

UNIT-4

ACCOMPLICE EVIDENCE & WITNESSES & THEIR COMPETENCY

- Section 133 read with section 114 illustrations (b)
- Child Witness – section 118
- Dumb Witness – section 119
- Hostile Witness – section 154

Cases:

- BhuboniSahu v. The King, AIR 1949, PC 257
- Haroon Haji Abdulla v. State of Maharashtra, AIR 1975 SC 856
- Ravinder Singh v. State of Haryana, AIR 1975 SC 856

UNIT-5

EXAMINATION OF WITNESSES

- General principles of examination cross examination and re-examination (Section 135-166)
    - Leading questions (Section 141-143)
    - Lawful questions in cross-examination (Section 146)
    - Compulsion to answer questions put to witness
    - Impeaching of the standing or credit of witness (Section 155)

Cases:

- State of Bihar v. Laloo Prasad (2002) 9 SCC 626 176

UNIT-6

BURDEN OF PROOF

- The general conception of onus probandi (Section 101)
- General and special exceptions to onus probandi
- The justification of presumption and of the doctrine of judicial notice
- Justification as to presumptions as to certain offences (Section 111A)
- Presumption as to dowry death (Section 113-B)
- The scope of the doctrine of judicial notice (Section 114)

PRESUMPTIONS

- Sections 4, 41, 105, 111-A, 112, 113, 113-A, 113-B, 114 and 114-A

Cases:

- Goutam Kundu v. State of West Bengal, AIR 1993 SC 2295 178

IMPORTANT NOTE:

The topics and cases given above are not exhaustive. The students armust study the amended up-to-date legislationnd consult the latest editions of books.

Prescribed Books:

- Rattan Lal, Dhiraj Law: Law of Evidence
- Sarkar and Manohar, Sarkar on Evidence
- Vepa P. Sarathi, Law of Evidence
- M. Monir, Law of Evidence
- Avtar Singh, Principles of the Law of Evidence, Central Law Publication
- Albert S.Osborn, The Problem of Proof
- P. Nageshwara Rao, Law of Evidence

Prescribed Legislation:

The Indian Evidence Act, 1872
Indian Penal Code, 1860
Code of Criminal Procedure, 1973

B.B.A.LL.B VI SEMESTER

CORPORATE LAW- II (CRPL-II)

INTRODUCTION OF THE COURSE:

Corporate law is the base of the growing & dynamic economies of the world. In the current scenario it is an essential feature of the legal system. Corporate law has grown as a globally existent phenomenon essential to achieve a well-planned economic growth.

OBJECTIVES OF THE COURSE:

To acquire knowledge and develop understanding of the regulatory framework of companies with reference to various provisions of Companies Act 2013 and its schedules, rules, notifications, circulars, clarifications there under including case laws and secretarial standards

TEACHING METHODOLOGY:

Mainly, the doctrinal analysis method along-with the case and project based study shall be the main method of learning to be followed. Dialectic method of mooting and argumentation plays a very convincing procedure of learning. The information sharing and flow of information among the teacher and taught has to work as bonding of the entire course. Case comment and book review can also be a method of research writing in this paper.

COURSE OUTLINE:

UNIT 1

CORPORATE GOVERNANCE AND SOCIAL RESPONSIBILITY

- Significance of the concept of corporate governance
- Systems of the corporate governance
- Impact of the contemporary legal traditions and the rule of law on the corporate governance in India
- Legal reforms relating to the corporate governance in India
- Reports of the various committees constituted in respect to corporate governance in India
- Emerging trends addressing the recommendations of the committees constituted in respect to the Companies Act 2013 and the Listing Agreement with special reference to Clause 49.
- Corporate social and environmental responsibility

UNIT 2

CORPORATE FINANCE AND REGULATORY FRAMEWORK

- Historical growth of the security laws in India
- Securities Contracts (Regulation) Act, 1956- Significance, aims and objective, policy overview
- SEBI Act, 1992- constitution, powers and functioning and contribution

- Depositories Act, 1996- background, significance, aims and objective, policy framework
- The Securitization and Reconstruction of Financial Assets and Enforcement of Security Interest Act, 2002 (SAFAESI ACT)- background, importance, scope and policy framework

UNIT 3

REGULATORY FRAMEWORK FOR FOREIGN TRADE AND MULTI-NATIONAL CORPORATIONS

- Development of Foreign Trade Policy in India
- Foreign Trade (Development & Regulation) Act, 1992- background, significance, salient features, Export-Import Policy, Salient features of New Foreign Trade Policy
- UNCTAD Draft Model on Trans-national Corporations
- Control and Regulation of foreign companies in India
- Foreign collaborations and Joint Ventures

UNIT 4

FOREIGN EXCHANGE MANAGEMENT AND MONEY LAUNDERING

- Foreign Exchange Management Act, 1999- background, significance, reasons for shifting from FERA to FEMA, aims and objective, authorities, policy
- Prevention of Money Laundering Act, 2002- Background, objectives, significance, salient features, bodies , policy

UNIT 5

INSOLVENCY & BANKRUPTCY CODE, 2016

- Insolvency and Bankruptcy Code , 2016- Background, Significance, Aims and Objective
- Corporate Insolvency Resolution and Liquidation Process
- Offences and Penalties under the Code
- Insolvency and Bankruptcy Board of India- its constitution, powers and functions

BOOK REFERNCES:

- S R Myneni, Corporate Law-II,1st Ed., Asia Law House Hyderabad, 2012
- Akaant Kr. Mittal, Insolvency and Bankruptcy Code: Law and Practice,2nd Ed., EBC, 2022
- B P Singh Sehgal, Emerging trends in corporate governance: Legal issues & challenges, 1st Ed., Satyam Law International, 2022
- Avtar Singh, Company Law, 17th Ed., EBC, 2018
- A Ramaiya's Guide to Company Law, Lexis-Nexis India
- V A Awdhani, Investment and Securities Markets in India, 10th Ed., Himalaya Publishing House, 2017
- T R Ramamurthy, Guide to FEMA (Foreign Exchange Management Act, 1999), 5th Ed., Bharat Law House, 2014

- R K Narula & Udayan Mukerji, The Law of Prevention of Money Laundering, Oak Brdige Publishing, 2020
- Somesh Arora, Prevention of Money Laundering Act, 2002: A Commentary, Oak Bridge Publishing Pvt. Ltd, 2021
- Mukesh K Vyas, SARFAESI Act, 2002, 1st Ed., Rawat Publications, 2019

B.B.A.LL.B VI SEMESTER

PRIVATE INTERNATIONAL LAW (PRIL)

INTRODUCTION TO THE COURSE

Private international law, also known as conflict of laws in more common law-oriented jurisdictions, is the body of law that seeks to resolve certain questions that result from the presence of a foreign element in legal relationships. Examples of such relationships include contractual disputes between parties located in different jurisdictions, the marital status of partners of different nationalities, the legal status of real estate located in a foreign jurisdiction, and, in the intellectual property context, disputes between a copyright owner residing in one country and Internet users residing in other countries who are accused of making available, on servers located in multiple jurisdictions, copyrighted material for download by any person anywhere in the world, without the necessary permissions.

OBJECTIVE OF THE COURSE

Apart from private international law and substantive harmonization of national laws, there exist also other means of dealing with problems resulting from cross-border legal relationships which may be considered to fall in between those categories in terms of their effect on existing national laws. To make students understand about conflict of laws.

TEACHING METHODOLOGY

As per the norms of the university , there will be 6 classes per week in this course. Teaching methodology will include Lectures-cum-discussion, Assignments, Projects and Presentations.

THE EVALUATION SCHEME

- Continuous Assessment- 40%
- Mid-Term- 20%
- End Term- 40%

B.B.A.LL.B VI SEMESTER

COURSE OUTLINE

UNIT-1

Introduction

- Origin and development of Private International Law
- Nature and basis of Private International Law
  - Choice of jurisdiction
  - Choice of law
  - Recognition and enforcement of foreign judgment
- Distinction between Private International Law and Public International Law
- Theories of Conflict of Laws

UNIT-2

Domicile - Nationality - Residence – Property

- Fundamental Principles of Domicile - Nationality
- Domicile by origin and domicile by Choice
- Domicile of Independent Persons : England and India
- Domicile of Dependant Persons : England and India
- Domicile upon Marriage: England and India
- Property
  - Assignment of movable property
  - Testamentary Succession (Wills)
  - Trusts

UNIT-3

Matrimonial

- Marriage- Assignment of property on marriage
- Matrimonial causes and Disputes
  - Divorce
  - Nullity of Marriage
  - Judicial Separation
  - Restitution of Conjugal Rights
- Legitimacy – Legitimation and Adoption

UNIT-4

Doctrine of Renvoi

- Theories of Renvoi
- - Partial Renvoi
- - Foreign Court Theory
- Mutual Disclaimer Theory

UNIT-5

Foreign Law

- Recognition and Enforcement of

  - Foreign Judgments

  - Arbitral Award
- The limits of Application of Foreign Law

Recommended Readings

- R.H. Graveson, Conflict of Laws
- S.L. Khanna, Conflict of Laws
- Paras Diwan, Private International Law
- G.C.Chesire, Private International Law
- Atul M. Stelvad, Conflict of Laws

B.B.A.LL.B VI SEMESTER

TRANSFER PROPERTY LAW (TPA)

OBJECTIVE OF THE COURSE

1. Making aware with the basic principles of Transfer of Property.
2. Justifying the need of law relating to immovable property.
3. Making over with different kind of specific transfer of property.
4. Give over view of easmentary law in India.

COURSE OUTCOME

1. Able to understand and explain basic principles of transfer of property with real life examples.
2. Able to understand basics of transfer of property.
3. Demonstrate the various kinds transfer of properties with practical examples.
4. Able to draft various deeds relating to transfer of property.
5. Able to understand the easementary rights in India

As per the norms of the university in this course there will be 6 classes per week. Teaching methodology will include Lectures-cum-discussion, Assignments, Projects and Presentations.

THE EVALUATION SCHEME

- Continuous Assessment- 20%
- Mid-Term- 20%
- End Term- 60%

COURSE OUTLINE

UNIT- 1

1 Object and Scope of the Transfer of Property Act, 1882

2 Interpretation Clause (Section-3)

3 Definition of Transfer of Property

4 Subject Matter of Transfer, Transferable and non-transferable property,

Leading Case

1. Shanti Devi v. State Bombay AIR 1958 SC 53
2. LALA Kundan Lal v. Mst Mushrafi Begum AIR 193C PC 207
3. Lloyds Bank Ltd. v. P.E. Guzdev & Co AIR 1930 Cal. 22
4. Jujal Kishore v. Raw Cotton Co Ltd AIR 1955 SC 376
5. Muniappa Pillai v. Periasami (1975) MLJ 280 of Krishna Rao v. M.L. Narasikha Rao AIR 2003AP496
6. Samsuddin v. Abdul Hussain (1906) 31 BOM 165.
7. Amrit Narayan v. Gaya Singh (1918) 45 cal 590
8. Badrubatg v. Punna AIR 1979 SC 1314
9. Jaffer Meher Ali. V. Budge Jute Mills (1900) 33 Cal 702

10. M/S Mc Downalds & co. Ltd v. Dist. Registrar Vishakha Pattanam AIR 200 AP 374
11. Amriratham kudumbahv. Sarnnam Kundimbar AIR 1991 SC 1256.
12. Shankar Yadav v State of Jharkhand, AIR2012 Jhar 21
13. Shehammal v Hasan Khan,Rawther (2011) 9 SCC 223

UNIT-2

1 Condition subsequent

2 Transfer for the Benefit of Unborn Person and Rule Against Perpetuity,

3 Vested and Contingent Interests,

4 Conditional Transfer

5 Doctrine of Election

Leading Case

1. Doctrine of Election. Rosher v. Rohser (1984) 26 Ch. D. 801.
2. Mohammad Raza v. Abbas Bandi Bibi AIR 1932 PC 158
3. Mata Prasad v. Nageshar Sarai AIR 1925 PC 272
4. Laxmamma v. state of Karnatka AIR 1983 Karn 237
5. Raghuram Rao v. Eric P Mathias AIR 2000 SC 797
6. Ram Newaz v. Nankoo (1926) 92 I.C. 401
7. Ram Saran v. Ram Mohit AIR 1967 SC 744
8. Nafar Chand v. Kailash AIR 1925 PC 344
9. Stanley v. Leigh 1732 APPE R 917
10. Rajesh Kanta Rao v. Smt. Sahanti Devi AIR 1957 SC 255
11. Rukhamarbai v. Shivram AIR 1981 SC 1881 Cooper v. Cooper (1874) 7 H.L.53
12. Valliammai v.Najappa AIR 1967 SC 1153
13. Mohmmad Afzal v.Gulam Kasim (1903) 30 Cal 843
14. Dhanias v State of Chhattisgarh AIR 2015 Noc 837

UNIT- 3

1 Transfer of Property by Ostensible Owner,

2 Transfer by unauthorized

3 Fraudulent Transfer,

4 Doctrine of Lis- pendens,

5 Doctrine of Part-Performance

Leading Case

1. Emerald Valley v. Estate Ltd Bandaguli AIR, 2001 Kev 29, Bellami v. Sabine (1857) 1 De G & j 566
2. Faiyaz Hussain Khan v. Prag Narain (1907) 29 all 289
3. Rajendra Singh v. Santa Singh AIR 1937 SC 2537

4. N.C. Bhavia Gandevi v. Peoples Corporative Bank Ltd AIR 2002 G & J 209
5. Supereme general Film Exchange Ltd. V. Sari Nath Dev AIR 1975 SC 1816
6. Suresh Singh v. State of Bihar AIR 1994 pat 35
7. Mohammad v, Thyagraja Lal AIR 1958 mad 580
8. Chajmol Bhandari v. Deputy Commercial Tax Officer, Kurnol AIR 1976 SC 656
9. Abdul Goundan v. Arji Papa Rao AIR 1963 SC 1150
10. Kapini Goundan v. Sarasannapani 1916 Mao W.N. 288
11. Javvadi Narasim Lamurti v. Maharaja Pittapur AIR 1941 Mad 690
12. Maddisan v. Alderson (1883) 8 A.C. 467
13. Mohammad Musa v Aghave Kumar Gangnl: (1914) 42 Col. 801 Arif v. Jadnnath AIR 1931 Pc 79
14. Mian Pix Bux v. Sardar Mohammad Tafir AIR 1934 Pc 235
15. S. Veerabhadra Naiker v. Sambanda Naiker AIR 2003 Mod 19
16. D.S Marrathamma v. A Srinivasam AIR 2003 SC 3542
17. Roop Singh v. Ram Singh AIR 2000 SC 1485
18. Prabodh Kumar Das v. Dantamara Tea Co. Ltd. AIR 1940 PC

UNIT- 4

1 Definition of Sale, Rights and Liabilities of Buyer and Seller, Marshalling by Subsequent Purchaser

2 Definition of Mortgage and kinds of Mortgage

3 Rights of redemption and Equity of redemption

4 Rights of Foreclosure

5 Doctrine of subrogation and Rule against tacking

Leading Case

1 Pandit Chun Chun Jha v. Ibadat Ali (1995)1 SCR 174

2 Sibendra Pada v. Secretary of State (1907) 34 Cal. 207

3 Bishwanath Prasad v. Chandra Narayan (1921) 48 Cal. 509

4 Ram Dass v Sitabai AIR 2009 SC 2735

5 Suraj Lamp & Industries Pvt. Ltd. V State of Haryana AIR 2012 SC 206

6 Latif Estate Line India Ltd v Hadeeja Ahmad, AIR 2011 MD 66 (FB).

7 Tara Chand v Sagarbai AIR 2007 SC 2059

8 Stanley v. Wilde (1899) 2 Ch 474

9 Murarilal v. Deo Karan AIR 1965 SC 225

10 Gulab Chand v. Saraswati Devi AIR 1977 SC 242

11 Bigg's Case (1898) 2 Ch 307 5. Noakes Case (1902) AC 24

12 Bradley's Case (1903) AC 253

13 Krelinger v. New Patangfonia Meat etc. Co. (1914) AC 25

14 Aldrich v. Cooper (1803) Ves 382

15 Seth Gangadhar v Shankar Lal,AIR 2000 SC 770 10. Hasthimal & Sons v P. Tejraj Sharma AIR 2007 SC 3246

UNIT- 5

1 Meaning of Charge and Lease(Section 105 to 106)

2 Different Modes of Determination of Lease (Section 111)

3 Exchange and Gift defined

4 Transfers of Actionable claims (130)

5 Easements and its kinds, License and lease distinguished

Leading Case

1 Ramak Ram v Pishavi Singh, AIR 1990 SC 1892

2 Associated Hotel of India v R.N. Kapoor AIR 1959 SC 1262

3 Shafiquddin v Pyarelal AIR 1978 SC 29818 12

4 Shanti Prasad Devi v Shankar Mehto AIR 2005 SC 2905

5 Nilesh Nand Kumar v Sikandar Aziz Patel AIR 2002 SC 3073

BOOKS RECOMMENDED:

1 D.F. Mulla,Transfer of Property Act,7th Ed.

2 Shukla S.N. - Transfer of Property

3 Sinha R.K. The Transfer of Property Act CLA, 11th Ed.

B.B.A.LL.B VI SEMESTER

ECONOMICS-VI (LECO-VI)
(INTERNATIONAL ECONOMICS)

COURSE OUTLINE

UNIT-1

Theories of International Trade

Theories of absolute advantage, comparative advantage; Heckscher - Ohlin Theory; Factor price equalization theory , Role of International trade in Economic development – Direct and Indirect benefits or Gains ,Measurement and distribution of gains , The contribution of trade to growth and development

UNIT-2

Terms of Trade and Commercial Policy

Meaning & Importance of Terms of Trade, Types of terms of trade – Factors Influencing Terms of trade, Free trade Vs Protection – Arguments for and against protection, Tariffs – Types, Quotes – Types, Tariff versus Quota; Other non-tariff barriers; Customs Union – Trade Creation & Trade Diversion.

UNIT-3
Balance of Trade and Balance of Payments & Foreign Trade in India

Balance of trade and balance of payments – Balance of payment always balances – Equilibrium and Disequilibrium in the balance of payments – Measures to correct disequilibrium. Volume, Composition and Direction of India's Foreign Trade, Trade Policy before and after reforms

UNIT-4
Foreign Exchange Market and Exchange Control

Functions and Transactions – Meaning of exchange rate – Determination of exchange rate – Purchasing power parity theory – Fixed exchange rate – Flexible or Floating exchange rate – Causes for fluctuations in exchange rate – Exchange Control – Meaning – Objectives – Direct and Indirect methods – Merits & Demerits

UNIT-5
International Financial Institutions and Trade Agreements

IBRD or World Bank – Functions – Objectives and its working, India & World Bank, IMF – Functions , Objectives and its working, India & IMF - GATT-WTO, Their impact on India – European Union – Constitution, Objectives, Functions , United Nations , SAARC, ASEAN

Essential Readings:

1. Salvatore, D.L., 1997, International Economics, Prentice Hall, Upper Saddle River, N.J.
2. Vaish, M.C. & S. Singh, 1995, International Economics.
3. Rana & Verma, International Economics, Vishal Publishing Co.

References:

1. Cherunilam Francis, International Economics (5th edition), Tata McGraw Hill Education Private Ltd, New Delhi.

2. Mithani, D.M., Money, Banking, International Trade & Public Finance, Himalaya Publisher.

3. Sundaram, K.P.M., Money, Banking, & International Trade, Sultan Chand.

4. Kindleberger, C.P., 1973, International Economics, R.D. Iruim, Homewood.

5. Sodersten, B.O. 1991, International Economics, McMillan Press Ltd. London.

6. Lindert, International Economics, All India Traveller Book Seller.

7. Chacholiades, M., International Trade- Theory & Policy, McGraw Hill, Kogabusha, Japan.

B.B.A.LL.B VIII SEMESTER

CURRICULUM AND SYLLABI

(8th Semester)

B.B.A.LL.B. (Hons.)
(Integrated Law degree course)

SCHOOL OF LAW

RAFFLES
UNIVERSITY

Japanese Zone, National Highway 48 Neemrana, Rajasthan 301020

www.rafflesuniversity.edu.in

B.B.A.LL.B VIII SEMESTER

ENVIRONMENTAL LAW (ENVL)

INTRODUCTION TO THE COURSE

The concept of environment lay embedded in ancient ethos. Throughout the centuries there were invisible processes working for the maintenance and improvement of environment. Towards the close of the last millennium one finds widening dimensions of environmental protection strategies.

There gained ground the environmental consciousness. How do these developments stand reflected in formulation of policies and in following constitutional values in India? This is the thrust of the paper.

OBJECTIVE OF THE COURSE

In present industrial scenario Environment is the growing concern of developing as well as developed economies of the world. Environmental issues have always held central position in India with these issues being central to the holistic Hindu philosophy. Though medieval India saw some disinterest towards the environment but independent India took over the lax British laws and has tried to make them as successful as it can be. With a large country and as diverse as India, the success of a particular law can be a debate. Yet the highest judiciary of the country , there will be 6 classes per week in this coursek judgments which have tried to uphold the stringent measures of the laws that the legislature has passed over the years.

TEACHING METHODOLOGY

As per the norms of the university in this course there will be 6 classes per week. Teaching methodology will include Lectures-cum-discussion, Assignments, Projects and Presentations.

COURSE OUTLINE

Unit-1

Dimensions of Environmental Problems, Pollution & its Kinds, Sustainable development, Constitutional Provisions & Judicial Activism (Principles-Precautionary principle, Polluter pays principle, public trust doctrine)

B.B.A.LL.B VIII SEMESTER

Unit-2

The Water (Prevention & Control of Pollution) Act, 1974; Definition, Central and State Pollution Control Boards: Constitution, power and function; Sample of effluents, Citizen Suit Provision The Air (Prevention & Control of Pollution) Act, 1981; Definition, Central and State Pollution Control Boards: Constitution, power and function; Sample of effluents, Citizen Suit Provision

Unit-3

The Environment (Protection) Act, 1986, The National Environment Tribunal Act, 1955 and The National Environment Appellate Authority Act, 1997

Unit-4

Indian Forest Act, 1927 Kinds of forest-private, Reserved, Protected and Village Forest, The Forest (Conservation) Act, 1980 The Wild Life (Protection) Act, 1972; Authorities to be appointed and constituted under the Act, Hunting of wild animals, Protection of Specified Plants, Trade or Commerce in Wild Animals, animals articles and trophies; Its prohibition.

Acts

1. The Water (Prevention and Control of Pollution) Act, 1974

2. The Air ((Prevention and Control of Pollution) Act, 1981

3. The Environment (Protection) Act, 1986

4. The National Environment Tribunal Act, 1955

5. The National Environment Appellate Authority Act, 1997

Recommended Readings

- Shyam Diwan, Armin Rosencranz, Environmental Law & Policy in India
- P. Leelakrishnan, The Environmental Law in India
- Dr.P.S.Jaswal, Environmental Law

- S.K.Nanda, Environmental Law, 2007
  C.M. Abraham, Environmental Jurisprudence in India (1999), Kluwer
- Madhav Gadgil and Ramachandra Guha, This Fissured Island: An Ecological History of India (1996), Oxford.
- R.B. singh & Suresh Misra, Environmental Law in India (1996), Concept Publishing Co., New Delhi.
- Kailash Thakur, Environmental Protection: Law and Policy in India (1997), Deep & Deep Publications, New Delhi.
- Richard L. Riversz, et. al. (eds.), Environmental Law, the Economy and Sustainable Development (2000), Cambridge.
- Christopher D.Stone, Should Trees Have Standing and other Essays on Law, Morals and the Environment (1996), Oceana
- Stuart Bell and Donald McGillivray, Environmental Law (2000), Blackstone Press.
- Charles A.R. Webster, Environmental Health Law (1981)
- Leelakrishnan, P et. al. (eds.) Law and Environment (1990), Eastern
- Leelakrishnan, P, The Environmental Law in India (1999), Butterworths-India
- Department of Science and Technology, Government of India, Report of the Committee for Recommending Legislative Measures and Administrative Machinery for Ensuring Environmental Protection (1980) (Tiwari Committee Report).
- Thomas J. Schoenbaum, Environmental Policy Law (1992), Foundation Press, Inc. Westbury,New York.
- Darryl D'Monte, Temples or Tombs Industry versus Environment: Three Controversies (1985),Centre for Science and Environment, New Delhi
- Indian Journal of Public Administration, Special Number on Environment and Administration, July-September 1988, Vol. XXXV, No.3, pp.353-801
- Khosho, Environmental Concerns and Strategies (1988), Ashish, Delhi
- Centre for Science and Environment, The State of India's Environment 1982, The State of India's Environment 1984-85 and The State of Indian Environment 1999-2000.
- World Commission on Environment and Development, Our Common Future (1987), Oxford.
- Garrett Hardin, The Ostrich Factor: Our Population Myopia (1998), Oxford

B.B.A.LL.B VIII SEMESTER

INSURANCE, BANKING & NEGOTIABLE INSTRUMENT (IBNL)

INTRODUCTION TO THE COURSE

The modern society functions, contrary to the old barter system, on monetary transactions. In a developing country like India, the banking system takes off and becomes quite common even among the common people. The services banks render to the general public do have a significant contribution to the development of the economy. Pari passu, the security to the assets money as well as other valuable belonging to individuals and family units is to a large extent assured through the service of the banks. The variety of assistance tended by the banks to the common people and business community cannot be overemphasized in this context. The process of the working of the banks and the legal control over them as well as the protection to the consumers of banking services are areas which a student of law is necessarily familiar with

OBJECTIVE OF THE COURSE

Objective of this paper is to well verse students with the emerging sector of banking & insurance laws. In developing countries like India where financial sector is growing speedily, a law student must have knowledge of these laws

TEACHING METHODOLOGY

The teaching methodology adopted for this course is class discussion, class presentations, discussion and debate on different concepts through moot courts, class lectures on certain topics etc. It will include discussions of important cases.

THE EVALUATION SCHEME

- Continuous Assessment- 40%
- Mid-Term- 20%
- End Term- 40%

B.B.A.LL.B VIII SEMESTER

COURSE OUTLINE

UNIT-1
Banking Regulation Act, 1949

A. Concept of Bank and Banker, Functions of Banks, Classification of Banks, Relationship between Bank and Customer, Control by government and it agencies,

B. Management of Banking companies, On account and audit, Reconstruction and reorganization of banking companies, Suspension and winding up of the business of banking companies,

C. Social control over banking, Banking Ombudsman, Recent Trends in Banking: Automatic Teller Machine and Internet Banking, Smart, Credit Cards, Banking Frauds.

UNIT-2
Reserve Bank of India Act, 1934

A. Incorporation, Capital, Management and Business of Banking Company, Central Banking function of Reserve Bank of India, Collection and furnishing of Credit Information, Control of Reserve Bank of India over Non-banking Institutions and Financial Institutions, Credit Control by Reserve Bank of India, General provisions and penalties.

UNIT-3
Negotiable Instrument Act, 1881

A. Definition and characteristic of Negotiable Instruments, Types of Negotiable Instruments,

B. Definition and Essentials of Promissory Note, Bill of Exchange and Cheque, Liabilities and Capacity of Parties of Negotiable Instrument,

C. Holder and Holder in due course, Transfer and Negotiation of Negotiable Instrument.- Crossing of Cheques and payment, Dishonour of Cheques, Presentment and Payment, Dishonour,

D. Noting and Protest of Negotiable Instrument, Endorsement: Definition, Essential of a valid Endorsement and its kinds, Rules of evidence and compensation.

UNIT-4
Insurance-I

A. Introduction, Meaning of Insurance, Historical Aspect, Characteristic of Insurance, Nature of Insurance Contract.

B. Theory of Cooperation, Theory of Probability, Principles of Insurance, Utmost Good Faith, Insurance Interest

C. **Types of Insurance-** Re-Insurance, Double Insurance, Insurance & Wages, Types of Insurance:

a) Life Insurance
b) Marine Insurance
c) Fire Insurance &
d) Miscellaneous Insurance

UNIT-5
Insurance-II

A. Indemnity, Subrogation, Causa Proxima, Mitigation of Loss, Attachment of Risk, Contribution

B. Constitution, Function and Powers of Insurance Regulatory and Development Authority

C. Application of Consumer Protection Act, 1986

Recommended Readings

- M.N.Mishra, Law of Insurance
- C.Rangarajan, Handbook of Insurance and Allied Laws
- Bashyam and Adiga, The Negotiable Instrument Act, 1997
- M.L.Tannen, Jannen's Banking Law & Practice in India, 2000
- Dr. Avtar Singh, Negotiable Instrument Act.
- S.N. Gupta, The Banking Law in Theory & Practice, 1999
- Sharma and Nainta, Banking Law & Negotiable Instruments Actira Carr/Cavendish Publishing House

B.B.A.LL.B VIII SEMESTER

LABOUR & INDUSTRIAL LAW –I (LL-I)

INTRODUCTION TO THE COURSE

Evidences are the basis for any legal system. This paper aims to acquaint students about the different types of recognized forms of evidences and its sources which are indispensible for any legal professional.

OBJECTIVES OF THE COURSE

The law of evidence is an indispensable part of both substantive and procedural laws. It imparts credibility to the adjudicatory process by indicating the degree of veracity to be attributed to 'facts' before the forum. This paper enables the student to appreciate the concepts and principles underlying the law of evidence and identify the recognized forms of evidence and its sources. The subject seeks to impart to the student the skills of examination and appreciation of oral and documentary evidence in order to find out the truth. The art of examination and cross-examination, and the shifting nature of burden of proof are crucial topics. The concepts brought in by amendments to the law of evidence are significant parts of study in this course.

TEACHING METHODOLOGY

As per the norms of the University for this Course there will be 6 classes per week. Clinical and tutorial form of learning should be followed. Teaching methodology will include Lectures-cum-discussion, Assignments, Projects and Presentations.

THE EVALUATION SCHEME

• Continuous Assessment- 40%

• Mid-Term- 20%

• End Term- 40%

COURSE OUTLINE:

UNIT-1

Introduction to Labour Law

A. Historical Perspectives on Labour & Trade Unionism in India
B. Concept of Labour Rights under Part III of Indian Constitution
C. Concept of Labour Welfare under DPSP

B.B.A.LL.B VIII SEMESTER

UNIT-2

Trade Unions & Collective Bargaining-1

A. Definition of Trade Unions & trade Dispute.
B. Registration of Trade Unions
- Legal Status of Registered Trade Union
- Mode of Registration
- Power & Duties of Registrar
- Amalgamation, Cancellation & Dissolution of Trade Union
- Procedure for Change of Name

UNIT–3

Trade Unions & Collective Bargaining-II

A. Disqualification of office-bearers: Rights and Duties of Office Bearers & Members
B. General & Political Funds of Trade Union
C. Recognition of Trade Union
D. Collective Bargaining
E. Unfair Trade Practices

UNIT –4

Standing Order

A. Concept and Nature of Standing Orders
B. Scope and Coverage of The Industrial Employment (Standing Orders) Act, 1946
C. Certification Process
- Procedure for Certification
- Appeals Against Certification
- Conditions for Certification
- Date of Operation of Standing Orders
- Posting of Standing Orders

D. Modification & Temporary Application of Model Standing Orders
E. Penalties & Procedure

UNIT –5

Resolution of Industrial Dispute and Code on Wages Act

A. Concept of Industrial & Individual Dispute
B. Area of Interaction & Participants: Industry, Workman & Employer
C. Settlement of Industrial Dispute
    1. Works Committee
    2. Conciliation Machinery
    3. Court of Enquiry
    4. Voluntary Arbitration
    5. Adjudication: Labour Courts, Tribunal & National Tribunal
D. Brief history of the code
E. Statement of object and reasons

F. Key definition and their salient aspect
G. Employer's obligations offences and penalties
H. Ambiguities compliances and challenges

IMPORTANT NOTE:

The topics and cases given above are not exhaustive. The students are required to study the legislations as amended up-to-date and consult the latest editions of books.

PRESCRIBED BOOKS:

John Bowers and Simon Honey ball, Text Book on Labour Law (1996), Blackstone, London

Srivastava K.D., Commentaries on Payment of Wages Act 1936 (1998), Eastern, Lucknow

Srivastava K.D., Commentaries on Minimum Wages Act 1948 (1995), Eastern, Lucknow

Rao.S.B., Law and Practice on Minimum Wages (1999) , Law Publishing House, Allahabad

Seth. D. D., Commentaries on Industrial Disputes Act 1947 (1998), Law Publishing House, Allahabad

Srivastava K.D., Disciplinary Action against Industrial Employees and Its Remedies (1990), Eastern, Lucknow

Srivastava. K .D. Commentaries on Factories Act 1948 (2000), Eastern, Lucknow

R.C. Saxena, Labour Problems and Social Welfare Chapters 1, 5 and 6. (1974)

V.V. Giri, Labour Problems in Indian Industry Chs. 1 and 15, (1972).

Indian Law Institute, Labour Law and Labour Relations (1987)

(1982) Cochin University Law Review, Vol. 6 pp. 153-210.

- Report of the National Commission on Labour. Ch. 14-17, 22, 23 and 24.
- O.P. Malhotra, The Law of Industrial Disputes (1998), Universal, Delhi.
- S.C. Srivastava, Social Security and Labour Laws Pts. 5 and 6 (1985).Universal, Delhi.
- S.C. Srivastava, Commentary on the Factories Act 1948 (1999) Universal, Delhi.

B.B.A.LL.B VIII SEMESTER

LAND & AGRICULTURAL LAWS (L & A)

Introduction:

India being an agricultural country, Land & Agricultural laws form a special feature of Indian Legal System. This paper has been introduce to well verse students about Land regulations of Rajasthan.

Methods of teaching-learning:

As per the norms of the university in this course there will be 6 classes per week. Teaching methodology will include Lectures-cum-discussion, Assignments, Projects and Presentations.

Evaluation Scheme

Continuous Assessment System- 40%

Mid-Term- 20%

End Term- 40%

COURSE OUTLINE

UNIT-1

Rajasthan Tenancy Act, 1955

Rajasthan Tenancy Act, 1955. Preliminary: Objects and Reasons, definition, Khudkasht (Sections I to 130), Ijredars, Grove Holder (section Sec.94 to 205): Classes of tenants (Section 14 to 17-A) : Conferment of rights on sub-tenants or tenants of KbudKasht (Sec.19), Primary right of tenants— (Section 31 to 37): Surrender, Abandonment and Extinction of tenancies of tenancles (Sections 55 to 64), Improvements and Trees (Sec.65 to 87), Declaratory suits (Sec. 88-92):

UNIT-2

Rajasthan Tenancy Act, 1955

Determination and modification of rent (Sec. 93-129), payment and recovery of Rent (Sec. 130-160): grounds for Ejectment of Tenants, Remedies for wrongful ejectment (Sections 169 to 188). Procedure and Jurisdiction of Courts (Sec 216 to 221). Provision for injunction and appointment of Receiver (Section 212). Appeal. Review, Revision (Sc. 222-232): Reference, Question of Proprietary Rights in Revenue Courts (S. 239): Question of Tenancy Right in Civil Court (S. 242). Conflict of Jurisdiction (Sec. 243).

UNIT-3

The Rajasthan Land Revenue Act, 1956

The Rajasthan Land Revenue Act, 1956: The Board of Revenue, Revenue Courts and Officers (Sec. 4—30) Appeal. Reference, Revision and Review (Sc. 74-87); Land (Sc. 88 to 105) survey (Sc. 100- 112) **Record of Rights.** Maintenance of maps and records, Annual Registers (SS. 113—137); Settlement operations; Rent Ratio. Determination of rent, Term 0f settlement (Sec.142-177); Collection or Revenue (ss. 224 to 257).

UNIT-4

Rajasthan Rent Control Act, 2002

Rajasthan Rent Control Act, 2001: Preliminary: object and reasons, Definition-Amenities, Landlord, Premises, Tenant. Revision of rent, limited period tenancy, eviction of tenants, right of landlord to recover immediate possession in certain cases, restoration of possession of illegally evicted tenant and procedure thereof, Constitution of tribunals, the procedure for revision of rent and eviction, Appeal and Execution Amenities.

UNIT-5

Land Acquisition Law

Preliminary: object and reason, Definition: affected family, agriculture land, cost of acquisition, displaced family, infrastructure project, marginal farmer, market value, a person interested, public purpose, and resettlement area. Determination of social impact and public purpose, special provision to safeguard food security, Notification and Acquisition, Rehabilitation and Resettlement Award and procedure relating to it. Procedure relating to land acquisition, rehabilitation and resettlement authority, apportionment and payment of compensation.

Leading Cases

1. Khemchand v. State and Others, 1999 DNJ Raj. 239.
2. Sarla Ahuja v. United Ins. Co. Ltd., AIR 1999 SC 100.
3. Nathu singh V. Laxman singh, 1995 RRD 124.
4. Panne Singh v. Guman Singh, 1964 RRD 101.

5. Bhonra v. Ganesh 1996 RRD 71.

6. Shivshankar v. Murli Sri Bade Muthuresthan, 1996 RRD 316

SUGGESTED READINGS:

1. Shyam Lal Gupta: The Rajasthan Tenancy Act.

2. Dutt, S.K.: Tenancy Law in Rajasthan

3. Dutt, S.K.: Rajasthan Land Revenue Act.

4. Suresh Chand H. Mathur: Law of Tenancy in Rajasthan

5. Karkara, G.S.: Rajasthan Land Laws (English &Hindi)

6. Babel, B.L.: Rajasthan Land Laws (Hindi)

7. Gehlot: The Rajasthan Tenancy Act. 1955.

B.B.A.LL.B VIII SEMESTER

[CORPORATE LAW GROUP]

CORPORATE & WHITE-COLLAR CRIME (H3)

COURSE OUTLINE

Crime & Criminology - White Collar Crime

UNIT-1

Definitions and Foundational Principles

- Definitions and Principles
  A. Definitions of White-Collar Crime, white-collar criminals.
  B. Individual Responsibility
  Mens Rea/Actus Reus,
  Principles of Corporate Liability
  C. from Individual Conduct to Corporate Responsibility Corporation, corporate structures as a way of limiting liability, Principles of Corporate Responsibility, Conspiracy. Principles of Individual Liability
  D. From Corporate Conduct to Individual Responsibility Individual Liability for Corporate/Collective Actions Willful blindness.

UNIT-2

Offenses

A. Mail and Wire Fraud
B. Elements and liability issues
C. Money Laundering
D. Perjury, Obstruction, False Statements

UNIT-3

Organized Crime

A. Nature, meaning and forms
B. Criminal syndicates
C. Organized crimes: Regional and international linkages
D. Problems of identification, investigation and prosecution
E. Prevention and control strategies.

UNIT-4

Cyber Crime

A. Copyright violation of software.
B. Nature, meaning, definition, forms and etiology
C. Internet frauds
D. Prevention, detection and prosecution of cybercriminals.

UNIT-5
Punishment

1. Concept of Punishment
2. Types of Punishment
3. Theories of Punishment
4. Punishment for White Collar Crime under different statute

Suggested Reading:

- S.P. Singh, Socio- Economic Offences (1st Ed., 2005, Reprint 2015)
- Ahmed Siddiqui, Criminology: Problems and Perspectives (4th Ed., 1997)
- Seth and Capoor, Prevention of Corruption Act with a treatise on Anti- Corruption Laws (3rd Ed., 2000)
- C. Mehanathan, Law on Prevention of Money Laundering in India (2014)
- N.V Paranjape, Criminology, Penology with Victimology, 16th Ed., 2014, Central Law Publications.

B.B.A.LL.B VIII SEMESTER

INDIRECT TAXATION (H4)

INTRODUCTION TO THE COURSE

Tax law is an area of legal study dealing with the statutory, regulatory, constitutional, and common-law rules that constitute the law applicable to taxation, which is the method by which the government levies on economic transactions. In modern economy, taxation laws are important in all walks of life. If you are starting a business, depositing the proceeds of a theft in a bank, embezzling or gambling, there are tax considerations that you should know about. If you are filing a tort action, there are tax ramifications. If you own property, there are tax consequences. If you work and earn a salary, there are tax consequences. If you find a diamond in the street and keep it, there are tax considerations. If you get an "extreme makeover" home, there are tax consequences. If your home is rented by tourists in town to see the Master's Golf tourney, the tax consequences will vary tremendously if the tenants are there for only 10 days versus if they are there for three weeks, even if you live in the house every other day of the year.

OBJECTIVE OF THE COURSE

In the context of a federal structure the distribution of the taxing powers assumes added significance. Obviously, a study of the constitutional framework on taxation becomes important. Along with this, an analysis of the different laws enacted in exercise of these powers with their safeguards and remedies sheds light on the mechanics of the taxation by the Union and the States.

TEACHING METHODOLOGY

As per the norms of the university, there will be 6 classes per week in this course. Teaching methodology will include Lectures-cum-discussion, Moot court, Assignments, Projects and Presentations.

B.B.A.LL.B VIII SEMESTER

COURSE OUTLINE

UNIT-1

The Customs Act, 1962

A. Historical background and Introduction to Customs Law in India
B. Administrative structure of Customs department Sections 3 to 6
C. Basic functions and objectives of the Customs Administration
D. 'Goods' under Customs Act
E. Territorial Waters and Customs Waters of India
F. Types Custom of Duties
G. Valuation of Goods
H. Introduction to Duty Drawback
I. Introduction to Baggage Rules and Import by Post and Courier
J. Search, Seizer, and Arrest; Offences; Penalties; Confiscation and Prosecution

UNIT-2

The Central Goods and Services Tax Act, 2017

A. Definitions
B. Administration
C. Levy and Collection of Tax
D. Time and Value of Supply
E. Input Tax Credit Registration
F. Tax Invoice , Credit and Debit Note
G. Payment of Tax

UNIT3

The Central Goods and Services Tax Act, 2017

A. Assessment
B. Inspection ,Search ,Seizure and Arrest
C. Liability to pay Certain cases
D. Advance ruling
E. Appeals and revision
F. Offences and penalties
G. Transitional Provisions

UNIT-4

The Integrated Goods and Services Tax Act, 2017

A. Definitions
B. Administration
C. Levy and Collection of Tax
D. Determination of the Nature of Supply
E. Place of Supply of Goods or Services or Both
F. Refund of integrated tax to international tourist
G. Zero-rated supply
H. Appointment of tax and settlement of funds

B.B.A.LL.B VIII SEMESTER

UNIT-5

Commodities not falling under GST

- Commodities not falling under GST in India and Provision of tax on the same.
- Computation of tax on such commodities.

Acts

- The Customs Act, 1962
- The Customs Tariff Act, 1975
- The Central Goods and Services Tax Act,2017
- The Integrated Goods and Services Tax Act,2017
- Related Rules and Forms.

Recommended Readings

- V. Ramachandran & T.A. Ramakrishnan (eds.) A.N.Aiyar's Indian Tax Laws (2000) Company Law
- Institute of India Pvt. Ltd. Chennai.
- S.Bhattacharya & H.R. Garg, Handbook of Direct Taxes (1990) Eastern Law House, Calcutta.
- C.A. Gularickar, Law and Practice of Wealth Tax and Valuation (1998), Gularikar, Mumbai.
- Walter R. Mahler, Sales and Excise Taxation in India (1970) Orient Longman, Delhi.
- R.V.Pattel, The Central Sales Tax Act (1966) Thripathi, Bombay.
- S.D. Singh, Principles of Law of Sales Tax (1973), Eastern, Lucknow
- Ahuja, Grish, : Direct Taxes Law and Practice, Bharat's Law House,
- 2010.
- Gabawala, Sunil.B, : Treatise on Service Tax, Bharat's Law House Pvt. Ltd.
- 2010.
- Jyoti Rattan, : WT, ST, CST, VAT, GST, Bharat's Law House Pvt. Ltd.
- 2010
- Kailash Rai, : Taxation Laws, Bharat's Law House Pvt. Ltd. 2010.
- N.A.Palkhivala : Income Tax Law, Modern Law House
- Vinod K. Sighania : Law and Practice of Income Tax, Taxmann Pub. (Pvt.) Ltd.
- V.S. Datey : Indirect Taxes Law and Practice (Taxmann's)
- V.S. Dubey – Taxman
- CA Rajat Mohan – Illustrated Guide to Goods and Services

B.B.A.LL.B VIII SEMESTER

CRIMINAL LAW GROUP

CORPORATE & WHITE-COLLAR CRIME (H3)

COURSE OUTLINE

Crime & Criminology - White Collar Crime

UNIT-1

Definitions and Foundational Principles

- Definitions and Principles
  A. Definitions of White-Collar Crime, white-collar criminals.
  B. Individual Responsibility
  Mens Rea/Actus Reus,
  Principles of Corporate Liability
  E. from Individual Conduct to Corporate Responsibility Corporation, corporate structures as a way of limiting liability, Principles of Corporate Responsibility, Conspiracy. Principles of Individual Liability
  F. From Corporate Conduct to Individual Responsibility Individual Liability for Corporate/Collective Actions Willful blindness.

UNIT-2

Offenses

E. Mail and Wire Fraud
F. Elements and liability issues
G. Money Laundering
H. Perjury, Obstruction, False Statements

UNIT-3

Organized Crime

F. Nature, meaning and forms
G. Criminal syndicates
H. Organized crimes: Regional and international linkages
I. Problems of identification, investigation and prosecution
J. Prevention and control strategies.

UNIT-4

Cyber Crime

E. Copyright violation of software.
F. Nature, meaning, definition, forms and etiology
G. Internet frauds
H. Prevention, detection and prosecution of cybercriminals.

UNIT-5
Punishment

5. Concept of Punishment
6. Types of Punishment
7. Theories of Punishment
8. Punishment for White Collar Crime under different statute

Suggested Reading:

- S.P. Singh, Socio- Economic Offences (1st Ed., 2005, Reprint 2015)
- Ahmed Siddiqui, Criminology: Problems and Perspectives (4th Ed., 1997)
- Seth and Capoor, Prevention of Corruption Act with a treatise on Anti- Corruption Laws (3rd Ed., 2000)
- C. Mehanathan, Law on Prevention of Money Laundering in India (2014)
- N.V Paranjape, Criminology, Penology with Victimology, 16th Ed., 2014, Central Law Publications.

B.B.A.LL.B VIII SEMESTER

POLICE LAW AND ADMINISTRATION (H4)

Objectives:
The area of police science for long has not been touched nor has been discussed. The concept of police and policing differs and the course focuses on the study of the historical development of police law in India, its hierarchical structure, the problems associated with police officers and the present position of police officers in India.

Unit –1
Introduction

A. Conceptualising Police and Policing & Theories of Policing
B. Traditional v. Modern Police: An Analysis
C. Police across Cultures – A Historical Study
   - U.K. – 17th Century to Present
   - U.S.A. – Colonial Period to Present
   - India – Colonial Rule to Present

Unit –2
Police Organisations

A. Hierarchical Division of Labour
B. Functions of the Police
C. Police Patrol Operations
D. Police Training

Unit –3
Police Culture: Issues in Concern

A. Police Role
B. Police Discretion
C. Police Stress and Hazards
D. Police Corruption

Unit-4
Policing and Legal Issues

A. Police and the Law
B. Police and the Criminal Justice System
C. Police and Investigation
D. Police and Terrorism

Unit –5
Contemporary Issues in Police and Policing

A. Community Policing
B. Restorative Policing
C. Police and Minority Relationships
D. Global Policing and Interpol

Suggested Readings:

Textbooks:

1. Paranjapayee, N.V. – Criminology and Penology along with Victimology
2. Siddique, A. – Criminology, Penology and Victimology
3. Giddens – Sociology
4. Magurie and Morgan – The Oxford Handbook of Criminology, Oxford University Press
5. Swamy, N. M. – Criminology and Criminal Justice System
6. Dogra, S. K. – Criminal Justice Administration in India
7. Deb, R. – Police Investigation – A Review
8. Veerendra Mishra – Community Policing: Misnomer or Fact?
9. Rowe, Michael – Introduction to Policing
10. P. J. Alexander – Policing in New Millennium

Articles:

1. Mitra, A. – Traditional v. Modern Police: Are they Congruent?
2. Mitra, A. – Job Stress in Police Organisations
3. Mitra, A. – Police Public Participation in North East India

Note: Although the paper is a Theory paper, but 20 marks are reserved for Police Station Visit and a Preparation of the Project Report after the Visit. This will be a part of their Internal Examination other than the Mid Term and End term Examination and Regular Class Tests as the faculty may take from time to time to review the progress of the student.

B.B.A.LL.B VIII SEMESTER

CONSTITUTIONAL LAW GROUP

ELECTION LAW (H3)

UNIT-1

Meaning and Concept of Election and Election Dispute

A. Challenge to Election: Whom and How to Made
B. Forum for filing Election Petition
C. Parties to Election Petition
D. Contents of Election Petition
E. Grounds of Challenge to Election
F. Trial of Election Petition
G. Recriminatory Petition
H. Withdrawal, Abetment and Appeal
I. Election to President and Vice President
J. Composition and Powers of Election Commission (Part XV-Article 324-329 of the
K. Constitution of India)

UNIT-2

Qualification and Disqualification of Candidates

A. Meaning and Distinction Between Qualification and Disqualification
B. Qualifications and Disqualifications Provisions under Indian Constitution and the
C. Representation of Peoples' Act, 1951
D. Office of Profit
E. Government Contract
F. Disqualifications on Convictions under the Representation of Peoples' Act, 1951
G. Anti-Defection Law

UNIT-3

Nomination (Sections 30-39, s 100(1)(c), s100(1)(d) of the Representation of Peoples' Act, 1951

A. Meaning of Valid Nomination
B. Procedure for Filing of Nomination Security Deposits etc.
C. Grounds of Rejection of and Withdrawal of Nominations
D. Voter's Right to Know Antecedent of the Candidates
E. Recognition of Political Parties and Election Symbols

UNIT-4

Corrupt Practices

A. Meaning and Distinction between Corrupt Practices and Electoral Offences
B. Substantive Corrupt Practice: Bribery, Undue Influence, Character, Assassination of
C. Candidates, Appeal on the Grounds of Religion, Race, Caste, etc.

D. 106
E. Needs of Educational Qualification for Candidates
F. Criminalization of Politics
G. Election Expenses
H. Model Code of Conduct
I. Use of Government/Private Electronic Media and Social Media by Political Parties
J. Opinion and Exit Polls
K. Defacement of Public and Private Properties
L. Reservation for Women in Parliament and State Legislatures

Text Books:

1. V.S. Rama Devi & S.K. Mehendiratta, *Election Law, Practice and Procedure*, Butterworths Publishers, 2013
2. P.C. Jain & Kiran Jain, *Election Law and Practice*, Chawla Publishers, 2012

References:

1. P.M. Bakshi, *The Constitution of India*¸ Universal Publishing Company Ltd., 2014
2. The Representation of Peoples' Act, 1950 (Bare Act), Universal Publishing Company Ltd., 2014
3. The Representation of Peoples' Act, 1951(Bare Act), Universal Publishing Company Ltd., 2014
4. The Presidential and Vice-Presidential (Election) Act, 1952(Bare Act), Universal Publishing Company Ltd., 2014
5. The Registration of Elector Rules, 1960(Bare Act), Universal Publishing Company Ltd., 2014
6. The Conduct of Election Rules, 1961(Bare Act), Universal Publishing Company Ltd., 2014

B.B.A.LL.B VIII SEMESTER

SERVICE LAW (H4)

COURSE OUTLINE

TEACHING METHODOLOGY

Dialectic system of learning would provide better appreciation of the constitutional governance in India through class room debate and moot court exercise after the basic issues are identified by lecture and discussion. Research of issue based conflict of interest through court cases may be an added advantage.

As per the norms of the University for this Course there will be 6 classes per week. Clinical and tutorial form of learning should be followed. Teaching methodology will include Lectures-cum-discussion, Assignments, Projects and Presentations.

EVALUATION SCHEME

- Continuous Assessment- 40%
- Mid-Term- 20%
- End Term- 40%

UNIT-1
Preliminary Matters

A. Scope of the treatise
B. Constitutional Provisions
C. Historical Background
D. Dominance of Rules
   - Relationship governed rules etc.
   - Article 309 and other Sources of Rule Making
   - Administrative instructions

UNIT-2

Creation of Relationship

A. Recruitment
B. Process of Selection
C. Public Service Commission

D. Reservation
E. Appointment
F. Probationer
G. Temporary Appointment
H. Regularisation
I. Absorption
J. Re-Employment

UNIT-3
Incidents of Relationship

A. Lien
B. Remuneration Pay and Pension
C. Transfer
D. Seniority
E. Confidential Reports
F. Promotion
G. Deputation
H. Reversion
I. Reduction in Rank
J. Leave
K. Break in Service

UNIT-4
Disciplinary Control

A. Introductory Overview
B. Suspension
C. Disciplinary Proceedings
D. Natural Justice and Disciplinary Proceedings
E. Punishment in Disciplinary Proceedings
F. Corruption and Criminal Liability of Public Servants

B.B.A.LL.B VIII SEMESTER

UNIT-5
End of Relationship

A. General Overview
B. Termination of Permanent Employee For Reasons other than Misconduct
C. Termination of Service of Probationers Temporary Employees and Tenure Employees
D. Termination by way of Punishment for Misconduct
E. Compulsory / Premature Retirement
F. Superannuation
G. Voluntary Retirement
H. Resignation
I. Abolition of Post
J. Abandonment of Service
K. Judicial Review and Public Interest Litigation

Text Books:

- Pal, S. (2011). *Law Relating to Public Service.* Third Edition: LexisNexis.
- Pancholi, D. P. (2012). *Public Interest Litigation Legal Aid And Para Legal Services.* Neha Publishers & Distributors.

B.B.A.LL.B VIII SEMESTER

(INTELLECTUAL PROPERTY LAW GROUP)

PATENT DRAFTING AND SPECIFICATION WRITING
(H3)

Course Objectives-

The objectives of the course are to;

1. Develop a proper understanding of the basics of patent and patent drafting.
2. Give practical knowledge of patent drafting and specification writings.

COURSE OUTLINE

UNIT-1

Basic of the Patent of law

A. Evolution of the Patent System
B. Basis for Protection
C. Criteria of Patentability;
    a. Invention
    b. Novelty
    c. Utility
    d. Inventive step/ Non-obviousness;
1. Non-patentable Inventions

UNIT-2

Patent Drafting

A. Basic of patent specification drafting
B. Provisional specification & complete specification
C. Contents of the complete specification

UNIT-3

Claim/Claims writing

1. Defining claims
2. Techniques of claim writing

UNIT-4

Drafting speciation on specific field part-1

1. Basic Chemistry patent
2. Basic pharmaceutical patent

UNIT-5

Drafting speciation on specific field part-2

1. Basic Biotechnology patent
2. Basic computing and computational patent

Text Books and references

1. Cornish, W. R., *Intellectual Property* (London: Sweet & Maxwell, 1996);
2. Cornish, Llewelyn & Aplin, Intellectual Property (Sweet & Maxwell, 2013)
3. Bently and Sherman, *Intellectual Property Law* (OUP, latest edition (currently 2008)
4. Law Relating to Intellectual Property Rights by V. K. Ahuja (latest 2013)
5. Prabudh Ganguli, *Gearing up for Patents*
6. Kalyan C. Kanaknala,Arun K. Narasani & Others, *Indian Patent Law and Practice,* (New Delhi; Oxford University Press,2010)
7. Office of the Controller General of Patents, Designs & Trade (CGPDTM) : Manual of Patent Office Practice and Procedure
8. WIPO : WIPO Patent Drafting Manual
9. https://www.icsi.edu/media/webmodules/publications/9.4%20Intellectual%20Property%20Rights.pdf

B.B.A.LL.B VIII SEMESTER

LAW RELATING TO DESIGN AND GEOGRAPHYCAL INDICATION
(H4)

The objectives of the course are to;

3. Develop a proper understanding of the student with the basic concept of law relating to the design and layout of integrated circuits
4. Make aware with the international and national treaties and laws dealing with them.
5. Develop critical understanding of the subject matters.
6. Make students understand when infringement takes place in relating to the above subject matter and what are remedies and defenses available in case of infringement.

COURSE OUTLINE

UNIT-1
Meaning, kinds and evolution of Trademarks Law

A. Historical evolution of Design law
B. International treaties and conventions dealing with Design law
C. Definition of design - Copyright in Design (duration)
D. Need for protection of industrial designs

UNIT-2
Conditions for Registration and procedure for registration of Design

A. Criteria for protection
B. Subject matter of protection
C. Procedure for obtaining design protection
D. Registration of design for articles

UNIT-3
International Registration and Effect of Registration

A. International Registration through Hague System
B. Rights in registered design
C. transfer of rights
D. Duration and renewal

UNIT-4

Infringement and remedies

A. Piracy or Infringement of copyright in Design
B. Cancellation of Design
C. Remedies

UNIT-5

The Semiconductor and Integrated Circuits layout

A. The Semiconductor Integrated Circuits Layout
B. Requirements and procedure for registration
C. Duration and effect of registration
D. Assignment and transmission

Text Books and Reference Materials

1. Ashwani Kumar Bansal, Design Law, Universal Law Publishing Company, 2012.
2. B L Wadehra : Law Relating to Patents, Trademarks, Copyright, Designs and Geographical Indications.
3. G.V.G Krishnamurthy : The Law of Trademarks, Copyright, Patents and Design.
4. Office of the Controller General of Patents, Designs & Trade (CGPDTM) : Manual of Designs Practice and Procedure

CURRICULUM AND SYLLABI

(9th Semester)

B.B.A.LL.B.
(Integrated Law degree course)

SCHOOL OF LAW

RAFFLES
UNIVERSITY

Japanese Zone, National Highway 48 Neemrana, Rajasthan 301020

www.rafflesuniversity.edu.in

LABOUR & INDUSTRIAL LAWS- II

Course Objectives:

This course has the following objectives

1. To provide provisions for equitable distribution of profits and benefits emerging from industry.
2. To safeguard workers' rights, promote trade union activities and make employment more secure.
3. To discuss the maternity and medical benefits
4. To protect workers' rights, ensure safe and healthy working conditions, promote fair wages, and prevent exploitation

Course Outcomes:

The students shall be able to:

1. Understand the basic concept of different labour Act
2. Resolve the labour welfare problems and Students will learn the laws relating to Industrial Relations.
3. Know the Social Security, private sector wages problems etc.
4. Identify the working conditions and also learn the enquiry procedural and industrial discipline.

Unit-I Credit 6
Workmen's Compensation Act, 1923 (Hours 60)

A. Conceptual framework of Social Security-Evolution and concept of Social Security, Scheme of Social Security, Workmen's Compensation Act, 1923, Aims & Object, Liability of Employer,

B. Notional Extension of Defense, Determination of Amount of Compensation, Compensation when due-Penalty for default, Contracting Out (Section.17), Appointment & Powers of Commissioner (Section.19-31)

Unit-II
Maternity Benefit Act, 1961 (Section 3-18)

A. Aims & Object, Definition, Restriction on employment,

B. Right to Maternity Benefit, Medical Bonus,

C. Leave Dismissal during Pregnancy (Section 10-16), forfeiture of Maternity Benefit, Leave for Miscarriage, Penalty for contravention of Act of Employer, Cognizance of offences.

Unit-III
The Payment of Gratuity Act, 1972

A. The Payment of Gratuity Act, 1972, Aims and Objects of Act, Definition, Controlling Authority,
B. Payment of Gratuity, Recovery of Gratuity, Determination of the amount of Gratuity
C. Conceptual frame work of Social Security-Evolution and concept of Social Security, Scheme of Social Security.

Unit-IV
The Code of on Wages 2019

Minimum Wages

A. Payment of Minimum rate of Wages
B. Fixation of Minimum Wages
C. Components of Minimum Wages
D. Procedure for fixing & revising of Minimum Wages
E. Wages of employers who work for less than normal working day
F. Minimum time rate Wages for Piece work
G. Fixing hours of work for the working day
H. Wages for two or More classes of work
I. Fixing hours of work for normal working days
J. Wages for overtime work
K. Deductions which may be mode from Wages fines

Unit-V
The Payment of Bonus

A. Eligibility for bonus, etc.
B. Disqualification for bonus
C. Payment of bonus out of available surplus
D. Set on & Set-off of available surplus
E. Adjustment of Customary or interim bonus
F. Time limit for payment of bonus
G. Non-Applicability of this chapter

Suggested Readings

1. A. J. Fonseca: Wage Determination and Organised Labours in India, Oxford University Press, New York.
2. Dr. S.R. Myneni: Labour Laws, Asia Law House, Hyderabad.

3. A. J. Fonseca: *Wage Determination and Organised Labours in India*, Oxford University Press, New York.
4. S. N. Misra: Labour & Industrial Law, Central Law Publication, Allahabad.
5. 15. S. D. Punekar: Labour Welfare, Trade Unionism and Industrial Relations, Himalaya Publishing House, Bombay.

EQUITY AND TRUST

Course Objectives:

This course has the following objectives:

1. To discuss the general concept of trust and equity.
2. There are also instances where even in the absence of specific trust, the law has to protect the beneficial interests of persons on equitable considerations.
3. Trusts may also be created for public purposes of charitable and religious nature.
4. The existing laws in respect of trusts, equitable and fiduciary relations connected with property are to be taught in detail.
5. Students should also be conscientious of the emerging public trust doctrine of common property resources.

Course Outcomes

The students shall be able to:

1. Understand the development and concept of equity.
2. Know the legal maxims and equitable rights
3. Analyses the provisions related to Duties of Trustees & Rights of Trustees, Powers of trustees
4. Apply critically the various laws regarding Religious Endowments

Unit I — Credit 6
General Concept of Equity — (Hours 60)

A. Origin, Growth & Concept of Equity
B. Definition, nature and scope of equity
C. Equity as a branch of law
D. Equity under the Indian Legal System
E. Classification of Equity Jurisdiction.

Unit II
Equitable Rights and Maxims

A. Nature of Equitable Rights and Interests
B. Difference between Legal and Equitable Estate “Choose in Action and" Choose in Possession"
C. Maxims of Equity.
    a) Equity will not suffer a wrong to be without a remedy
    b) Equity follows the Law
    c) He who seeks Equity must do Equity
    d) He who comes to Equity must come with clean hands
    e) Delay defeats equities
    f) Equity acts in personam
    g) Where the Equities are equal, the first in time shall prevail

h) Where there is equal Equity, the Law shall prevail

Unit III
General View of Trust

A. Introduction, Origin, Development and Definition of Trust.
B. Creation of Trust
C. Benefits of Trust
D. Charitable & Religious Trust

Unit IV
Trustee: Duties of Trustees & Rights of Trustees, Powers of trustees

A. Rights and Power, duties and Liability of Trustees
B. Disabilities of the Trustees
C. Rights and Liabilities of the beneficiary

Unit V
Religious Endowments

A. Definition and nature of religious endowments
B. Essentials of Valid Endowments
C. Object and Scope of Religious Endowment
D. Maths
a) Shebaitship,
b) Power and duties of shebait.
E. Wakf
a) Definition
b) Object of Wakf
c) Essentials of Wakf

Suggested Readings:

1) Equity by Hanbury
2) Trust and Trustees: Cases and Materials, R.H. Maudsley and E.H. Burn
3) Aqil Ahmad, Equity Trust and Fiduciary Relations
4) The Indian Trust Act, 1982
5) The Religious Endowments Act, 1863
6) The Wakf Act, 1995

ALTERNATIVE DISPUTE RESOLUTION

INTRODUCTION TO THE COURSE

The resolution of disputes forms a large part of the justice delivery system. India has a long tradition of resolving disputes through Alternative Dispute Resolution methods viz Nya Panchayat System. At present, there are about 30 million cases pending in the Indian Courts.

A major step to expedite the judicial process in this direction was initiated by the Central Government by the enactment of the Arbitration and Conciliation Act, 1996 which made significant changes in the law of Arbitration. Institutions such as Lok Adalats have been given statutory recognition by the Legal Services Authorities Act, 1987. The Code of Civil Procedure, 1908 has been amended by incorporating Section 89 and Order X, Rules 1A, 1B, and 1C, making it obligatory on the courts to explore the settlement of disputes by ADR Methods in pending suits, which will create more demand for trained Arbitrators, conciliators and Mediators, to cater to the needs of more than 10,000 courts spread all over the country.

The need of the hour is to create an awareness of ADR Methods among the people and to prepare a large pool of trained professionals in the field of ADR who will be able to practice these ADR Methods to resolve disputes.

COURSE OBJECTIVE:

This course has the following objectives:

1. To discuss the strengths and weakness of various dispute resolution methods.
2. Explain the primary dispute resolution process and functions
3. To discuss and describe the ADR movement.
4. To apply the maxims of equity for providing practical justice by understanding the real spirit of equity.

COURSE OUTCOMES:

The students shall be able to:

1. Understand the fundamental principles of equity, justice and good conscience
2. Know the real spirit of the equity which was prevailing in Great Britain. The application of these principles will analyse for providing real justice in India.
3. Apply the provisions of equity with reference to constitutional law in India.
4. Analyse the principles and maxims of equity for the application of the spirit of justice.

COURSE OUTLINE

UNIT-I Credit 6

Alternative Dispute Resolution (ADR) (Hours 60)

A. ADR – Concept and Meaning Objectives of Arbitration Historical Developments Differences of Arbitration with other methods, Relevance in the Present Scenario

B. Conciliation – Appointment of Conciliator – Rights and Duties of Conciliator – Interaction between conciliator and parties – Communication – Confidentiality – Legal Counseling – Different facets of legal counselling – Duties and responsibilities of Counselor

C. Mediation – Objectives of Mediation – Models and Approaches – Stages of Mediation –Mandate of the Mediator – Role of the Mediator – Duties and Responsibilities of the Mediator

D. Negotiation – Theories of Negotiation–Different strategies of Negotiation – Models/Types of Negotiation – Duties and Responsibilities of Negotiator.

E. Dispute Resolution through Lok Adalat – Different types of Lok Adalat – Nyaya Panchyats and Grama Nyayalayas – Important provisions of Legal Services Authorities Act, 1987 – Fast Track Arbitration – Section 89 of Civil Procedure Code, 1908.

F. Criminal Justice System–Victim vis-à-vis Offender mediation and reparation– Offences–Plea Bargaining–Charge Bargaining–Sentence Bargaining–Fast Track Criminal Courts

UNIT-II

Indian Law on Alternative Dispute Resolution

A. Arbitration – Types of Arbitration – Adjudicatory, Non – adjudicatory, Institutional and Ad-how mandatory Arbitration.

B. Arbitration and Conciliation Act, 1996

C. Arbitral Tribunals–Appointment of Arbitrators–Eligibility and qualifications of Arbitrators–Powers and functions–Competency and Jurisdiction of Arbitrators.

D. Arbitral proceedings–Procedural justice for parties–Rules of procedure and Evidence, Statement of Claims and Defence; Hearings and Written proceedings–Interim Measures–Settlement Awards.

E. Determination of Applicable Law–Choice of Law–Proper law of Contract and Conflict of law principles

F. Awards–Kinds of Awards–Rules of Guidance–Form and contents of awards–Correction and

G. Interpretation of award–Additional award–Setting aside of Awards–Appealable Orders–Enforcement of Awards–Legality and Fairness of Arbitral Awards–Reasoned Awards.

H. Evolution of Conciliation as a mode of Dispute Settlement–Role of Conciliator–Conciliation proceedings–Scope and Nature of award by the Conciliator.

I. Two Tier Arbitration Procedure under Indian Laws

J. Scope and Extent of Judicial Intervention in Arbitration Process–Role of Courts-Setting Aside Arbitration Awards on Grounds of Public Policy, Fraud, and Partiality–Recent Trends and developments.

UNIT-III

International Commercial Arbitration

A. Meaning and kinds of International Commercial Arbitration

B. Development of International Arbitration – International Non-Commercial Arbitration and International Commercial Arbitration –International Commercial Arbitration Institutions viz. ICC, CiArb, DAC, ICA etc. – Rules of these Major International Arbitral Institutions- Global Application of International Arbitration Rules.

C. Constitution of Arbitral Tribunal

D. Appointment of Arbitrators–Powers, Duties and Jurisdiction of Arbitral Tribunal–Code of Conduct of Arbitrators–Rules of Arbitration Proceedings–Principle of Party Autonomy.

E. Nationality of Parties–Applicable Law–The intervention of domestic courts in International Commercial Arbitration–Interim remedies by Courts–Conflict of Law Principles as applicable to International Arbitrations–Sovereign Immunity and International Commercial Arbitration

F. UNCITRAL Model Law, 1985–Uniformity in International Commercial Arbitration Laws in various countries–Enforcement of Foreign Arbitral Awards–State practice

with respect to enforcement of foreign arbitral awards–Geneva Convention, 1927 and New York Convention, 1958.

G. International Arbitrations under the Arbitration and Conciliation Act, 1996–Comparative analysis of ADR system in selected Countries.

H. Dispute Resolution under GATT–WTO Dispute Settlement Mechanism–ICSID Convention.

UNIT-IV

Conciliation, Mediation & Negotiations

A. Conciliation: Introduction Overview, Purposes and Uses.

B. Mediation: Introduction Overview, Purposes and Uses.

C. Negotiations: Introduction Overview, Purposes and Uses

UNIT-V

Practical Application of ADR Methods in Different Fields and Areas

A. Labour and Industrial Disputes

B. Commercial and Financial Disputes

C. Family and Matrimonial Disputes

D. Consumer Disputes

E. Accident Claims

(DRAFTING, PLEADING AND CONVEYANCING)

INTRODUCTION TO THE COURSE

By the art of legal drafting (also commonly called the legal composition) we mean the art of composing or writing all documents which are either expressly intended to be, or which frequently become the subject of legal interpretation. It is concerned chiefly, therefore, although not exclusively, with the documents which declare or regulate rights. This at once distinguishes the art of legal composition from the art of ordinary composition or literature, which deals not with rights but with thoughts or facts. Of course, the bases of literary composition and legal composition are all the same, grammar and logic. The latter, perhaps, more strictly than the former kind of composition is bound by the rules of the grammar and logician but we do not intend, except incidentally, to touch on the rules of grammar or logic. It is a composition as legal - as dealing with or affecting rights - which we have in view. This differs so much from a literary composition that, though they have a common basis, same rules do not apply to both. The style of good legal composition (for it has a style of its own) is free from all color, from all emotion, and from all rhetoric. It is impersonal as if the voice, not of any man, but of the law, dealing with the necessary facts. It disdains emphasis and all other artifices. It uses no metaphor or figure of speech. It is always consistent and never contradicts itself. It never hesitates or doubts. It says in the plainest language, with the simplest, fewest and fittest words, precisely what it means. These are qualities that might be used to advantage more frequently than is common in literature, and unfortunately, they are not to be found in many legal compositions, but they are essential to good legal composition and not essential to literary composition.

Pleadings are a statement in writing drawn up and filed by each party to a case, stating that his contentions will be at the trial and giving all such details as his opponent needs to know in order to prepare his case in answer. The function of pleadings is not simply for the benefit of the parties, but also and perhaps primarily for the assistance of the court by defining with precision the area beyond which, without the leave of the court and consequential amendment of the pleadings, the conflict must not be allowed to extend. The purpose of rules regarding pleadings is to advance justice and to prevent a multiplicity of proceedings.

Conveyancing is the process by which legal title to property is transferred. As a consequence, over time, conveyancing has become the description for the document affecting the such transfer. In many ways conveyancing is like Shakespeare's character, Autolycus in The Winter's Tale, 'a snapper-up of unconsidered trifles. Like this amiable rogue, conveyancing takes from here, there, and everywhere, from within the full gamut of the law. Conveyancing rests and has been built upon the three foundations of land law, contract law, and equity and trusts. Because of this, a confident appreciation of land law is crucial for success in conveyancing. You will also need to have a prior knowledge and understanding of the details concerning the formation of contracts, the formalities of written contracts, misrepresentation and remedies for breach of contract. A detailed understanding of the influence of equity as well as trust will always be a prerequisite for a successful conveyancer.

COURSE OBJECTIVE

This course has the following objectives:

1. To present substantive law under the Indian context of pleading.
2. To draft documents relating to various deeds.
3. To assess and analyse the rules of pleading
4. The course is framed to help the students for understanding the basics of practical aspects of pleading

COURSE OUTCOMES:

The students shall be able to:

1. Understand the basics of pleadings and conveyancing.
2. Apply the practical law in drafting the various kinds of deeds.
3. Know the law pertaining to the rules of pleading.
4. Analyse affirmative actions in practice.

COURSE OUTLINE

UNIT-I — Credit 6
Pleadings — (Hours 60)

A. Meaning and Importance
B. Functions of Pleadings - Order 6 of CPC
C. Essentials of Pleading Particulars of Pleading
D. Striking out pleadings- Signing and verification
E. Amendment in Pleadings
F. Applicability of Order 6 CPC in Other Proceedings.

Cases

1. Lakshmi Narayan Deo Vasti Temple vs. Narayan F. Marathy (1995) 2 Bom CR 610
2. Prabodh Verma vs. State of UP (1984) 4 SCC 251
3. Someswer vs. Tribhuban AIR 1934 PC 130

UNIT-II
Civil Pleadings - Substantive Aspects and Drafts

A. Plaint (Order 7 of CPC)
B. Written Statement (Order 8 of CPC)
C. Notice under Sec.80 of CPC
D. Injunction Application
E. Interlocutory Application
F. Revision Petition
G. Review Petition
H. Appeals

Cases

1. Phula Devi vs. Mangtu Maharaj AIR 1969 Pat 284
2. Jagjiban Das vs. Gunan Bhai AIR 1967 Guj 1
3. N.Naidu vs. K.Naidu AIR 1969 Mad 329

UNIT-III

Criminal Pleadings - Substantive Aspects and Drafts

A. Meaning - Criminal Pleadings in India
B. Complaint (Sec.2d of Cr PC)
C. Application for Bail (Sec.436, Sec. 437 of Cr PC)
D. Anticipatory Bail (Sec.438 of Cr PC)
E. Application U/S. 125 of the Code of Criminal Procedure, 1973

UNIT-IV

Other important Pleadings - Substantive Aspects and Model Forms

A. Complaints under Sec.138 of the Negotiable Instruments Act
B. Petition for Dissolution of Marriage under the Hindu Marriage Act
C. Suit for Permanent Injunction
D. Application for Temporary Injunction
E. Writ Petition under Article 226 of the Constitution of India

UNIT-V

Conveyancing

A. Conveyancing - Meaning and Definition
B. Sale Deed
C. Mortgage Deed
D. Lease Deed
E. Gift Deed
F. Partnership Deed

Suggested Readings

1. DK Gupta, *A Guide to Conveyancing, Drafting and Deeds*, Vol. 2- 8, 2nd Edn - 2005, Kamal Law House, Kolkata.
2. NS Bindra, *Conveyancing,* Vol.2-7, Delhi Law House, Delhi, 2008
3. GF Harwood, *Odgers on Pleadings and Practice, 20th* Edn- 1971, Universal Law Publishing Co. Pvt Ltd., Delhi.
4. Rodney D. Ryder, *Corporate and Commercial Agreements Drafting Guidelines, Forms and Precedents,* Universal Law Publishers, New Delhi 2005.

HONOURS PAPER

CONSTITUTIONAL LAW GROUP

AFFIRMATIVE ACTION AND DISCRIMINATIVE JUSTICE

TEACHING METHODOLOGY

A dialectic system of learning would provide a better appreciation of constitutional governance in India through classroom debate and moot court exercises after the basic issues are identified by lecture and discussion. Research of issue-based conflict of interest through court cases may be an added advantage.

As per the norms of the University for this Course, there will be 6 classes per week. Clinical and tutorial forms of learning should be followed. The teaching methodology will include Lectures-cum-discussion, Assignments, Projects and Presentations.

COURSE OBJECTIVES:

This course has the following objectives:

1. To teach the historical concept of affirmative action and discriminative justice.
2. Classroom discussion about the international position of affirmative action.
3. To learn about real justice in relation to the privileged class of society
4. To compare the judgment of the competent court pertaining to affirmative action for the betterment of society

COURSE OUTCOMES:

The students shall be able to:

1. Understand the applications of real justice in the development of society
2. Know the principles of protective discrimination for the upliftment of the privileged class.
3. Apply the principles of affirmative action and principles of equity.
4. Examine the reservation policy as existing in the global legal framework.

UNIT-I **Credit 4**

Historical Aspect **(Hours 40)**

A. Introduction
B. Origin of Affirmative Action
C. Need for Affirmative Action
D. Reverse Discrimination

UNIT-II
International Position Regarding Affirmative Action

A. Position in the USA
B. Comparison between caste in India and Race in the USA
C. Position in the UK
D. Position in Canada

UNIT-III
National Position

A. Position of OBC, SC, and ST in India
B. Caste as the basis for affirmative action in India
C. Gender as a basis for affirmative action in India
D. Minority as a basis for affirmative action in India
E. Constitution of India
F. Article 14, Article 15, Article 16, Article 29 and Article 41
G. Kalekar Commission
H. Mandal Commission
I. Rangnath Commission
J. Sachar Committee
K. Reasonable classification

UNIT-IV
Affirmative Action in Practice

A. Reservation in promotion
B. Implementation of affirmative action
C. Role played by Judiciary
D. Strengths and Weaknesses of the Affirmative Action Program in India

Reference Books

P.M. Bakshi, Constitution of India, Universal
M.P. Jain Indian Constitutional Law, Wadhwa
Granville Austin The Constitution of India, Oxford
Basu Constitutional Law of India, Prentice Hall of India 200

GENDER JUSTICE AND FEMINIST JURISPRUDENCE

COURSE OUTLINE:

This subject will help the learners to gain an understanding of the issues, legal policy framework and action plans that focus on the empowerment of vulnerable genders including Female and Transgender Persons. The issues that have a strong bearing over these section's empowerment, protection and eradication of gender-based inequalities would form the base of this subject.

COURSE OBJECTIVES:

This course has the following objectives:

1. To describe the gender-sensitive legal knowledge and skills among students.
2. To study the domestic and international standards of gender equality jurisprudence.
3. To deals with the history and development of the gender justice system in India.
4. To provide various legal provisions in regard to gender equality and feminism.

COURSE OUTCOMES:

The students shall be able to:

1. Understand the basic concept and law related to the gender justice system.
2. Know the controversial issues, theories and texts with a critical lens and an open mind.
3. Develop the ability to research and write substantive analytical research papers
4. Apply the professional activities in the national and international law in the Indian legal system

UNIT I **Credit 4**

HISTORICAL EVOLUTION **(Hours 40)**

A. Gender Justice and Feminism- Meaning, nature and Scope
B. Gender Theories- Conflict, Integrationists and Hermeneutic approaches
C. Feminist Theories- Liberal Feminism, Cultural Feminism, Radical Feminism and Post-Modern Feminism
D. Notions of Patriarchy, Sex and Gender, Gender Discrimination, homophobia, labour division- Global and Indian Perspectives
E. Feminist Justice Movement in Europe, USA and India- Status, impact and significance

UNIT II

GENDER JUSTICE AND HUMAN RIGHTS:

A. Historical critique of gender discrimination- Global and Indian Views
B. UNO and Gender Equality- UN Charter, UDHR, UN Convention on Traffic in Women and Children 1949, UN Sub-Commission on the Status of Women, ILO and Gender Justice, ICCPR 1966, ICESCR 1966, CEDAW 1979

C. EU Human Rights Law and Gender Discrimination
D. Sexual Harassment and discrimination at Workplace, Domestic Violence, Sex Traffic and Prostitution, Forced Marriage, Sexual Reproductive Rights, Surrogacy, Marital Rape and Consent
E. Feminist Perspective on Global Environmental Issues and Judicial Response

UNIT III

FEMINIST JURISPRUDENCE IN INDIA:

A. Gender Equality under Indian Constitution- Preamble, Fundamental Rights and Directive Principles of State Policy
B. Critique of selective Offences provided under IPC 1860- Kidnapping, Abduction, Rape-Gang Rape-Custodial and Marital Rape, Stalking, Acid Attack and Adultery

UNIT IV

FEMINIST JURISPRUDENCE IN INDIA

A. Women's Labour Rights and Healthy Working Conditions
B. Gender and Marital Rights in the Family- A Critique of the Deviations in Hindu, Muslim and Christian Personal Laws
C. Adoption, Guardianship and Maintenance Issues

UNIT V

GENDER JUSTICE FOR LGBTQIA PERSONS:

A. Notions of LGBTQIA, Transgender, Homosexuality
B. Historical Analysis of the Human Rights Movements for LGBTQIA persons- Indian and Global Scenario
C. Status of Legal Protection
D. Same-Sex Marriage Unions and the Family
E. Problems faced by LGBTQIA community-Socio-economic and political exclusion, hate crimes, discrimination and violence
F. How to achieve gender equality-gender and sustainable development goal (2015-2030).

RECOMMENDED READINGS:

- Patricia Smith, Feminist Jurisprudence
- Gender Justice & Feminist Jurisprudence by Dr. Sheetal Kanwal, Amar Law Publication
- Bina Agrawal, Introduction of the Structures of Patriarchy
- Kamla Bhasin & Nighat Said Khan, Some Question on Feminism and their relevance in South Asia
- Maria Mies, Patriarchy and Accumulation on a World Scale
- S K Kuba, Status of Women in International Law
- Alison M Jaggar, Feminst Thought and Human Nature (Sussex Harvester Press)

- Ratna Kapoor & Brenda Cossman, Sub-Serve Sites- Feminist Engagements with Law in India (Sage Publications New Delhi 1992)
- Jenifer Perce, Gender Trials: Emotional Lives in Contemporary Law Firms, University of California Press 1996
- D Kelly Weisberg, Feminist Legal Theory: Foundations, Temple University Press 1993
- Annie M O Griffiths, In the Shadow of Marriage: Gender and Justice in an African Community, University of Chicago Press 1998
- Adrien Wing, Critical Race Feminism: A Reader, 2nd Edition, NYU Press 2003
- Vandana Shiva, Staying Alive: Women, Ecology and Development, London Zed Books 1989
- Nomita Agrawal, Women and Law in India, New Century Publications Delhi 2002
- Rashmi Agrawal and BVLN Rao, Gender Issues- A Road Map to Empowerment, Shipra Publications, New Delhi 2004
- Kamala Bhasin, Understanding Gender, New Delhi 2000
- Maitrayee Chaudhary (ed.), Feminism in India, New Delhi 2004
- Anjani Kant, Women and the Law, APH Publishing Corporation New Delhi 1997
- Cook, Rebecca J., ed. Human Right of Women: National and International Perspectives, University of Pennsylvania Press 2012
- Grabe Shelly, ed., Women's Human Rights: A Socio-Psychological Perspective on Resistance, Liberation and Justice, Oxford University Press, 2017
- Ross S. D., Women's Human Rights: The international and comparative law casebook, University of Pennsylvania Press 2008

OPTIONAL READINGS:

- Charlesworth H (2005), Not Waving but Drowning: Gender Mainstreaming and Human Rights in United Nations, Harvard Human Rights Journal, 18.
- MacKinnon, C.A., (1991), Reflections on Sex Equality under Law, Yale Law Journal, 100 (5), 1281-1328
- Muravyeva, M (2014), Traditional Values and Modern Families: Legal Understanding of Tradition and Modernity in Contemporary Russia, Journal of Social Policy Research, 124
- Universal Declaration of Human Rights 1948
- Convention on the Elimination of All Forms of Discrimination against Women, 1979

CRIMINAL LAW GROUP

INTERNATIONAL CRIMINAL LAW)

Course Objectives:

This course has the following objectives:

1. To Widespread violations of International Humanitarian Law as it becomes a practice in the contemporary world.
2. To teach crime and its conceptualised aspect as applicable in international criminal law.
3. Lectures on war crime and preventive mechanism
4. To disseminate knowledge about the procedure and practice of international tribunals and courts.

COURSE OUTCOMES:

The students shall be able to:

1. Understand the principles of International Criminal law for its application.
2. Know the legal provisions of the International Criminal courts.
3. Examine the procedure and practice of remedial forums related to International Criminal law.
4. Analyse the contemporary issues on the International Criminal law regime.

Unit – I Credit 4

Introduction (Hours 40)

A. Historical Background and Development of International Criminal Law
B. Individual Criminal Responsibility – Historical Development
   - Treaty of Versailles
   - Nuremberg and Tokyo Trials
   - Genocide Convention, 1948
   - Geneva Convention, 1949
C. State Sovereignty and International Criminal Law

Unit – II
Crimes and Elements of Crimes

D. General Principles of International Criminal Law
E. Elements of Crimes
F. Genocide – Article 6 of ICC Statute – Prosecutor v. Akayesu (ICTR 1998)
G. War Crimes – Article 7 of ICC Statute
H. Crimes Against Humanity

Unit – III
Courts and Tribunals

A. International Criminal Court – Rome Statute
B. International Criminal Tribunal for Yugoslavia (ICTY)
C. International Criminal Tribunal for Rawanda (ICTR)

Unit – IV
Certain Specialised Tribunals

A. The Iraqi Special Tribunal
B. Special Court of Sierra Leone
C. Extraordinary Court of Cambodia

Unit – V
Contemporary Issues

A. Response of South Asian Countries to ICC
B. Indian Perspectives of ICC
C. The Future of ICL

Suggested Readings:

1. Cryer, Robert, Friman, Hakan, Robinson, Darryl and Wilmshurst, Elizabeth; *An Introduction to International Criminal Law and Procedure;* Oxford University Press
2. Cassese, A. International Criminal Law, Oxford University Press
3. Schabas, W. An Introduction to International Criminal Court, Cambridge University Press

COMPARATIVE CRIMINAL LAW

Course Objectives:

This course has the following objectives:

1. To teach the introductory principles of comparative criminal law.
2. Lectures on pre-trial procedures under the various criminal legal system.
3. Trial procedure, the role of judges, prosecutor and role of defence attorney under the criminal administrative justice
4. To interpret the provisions of remedy as available under the various provisions of criminal law.

COURSE OUTCOMES:

The students shall be able to:

1. Understand the comparative legal provisions of crime
2. Know about the trial procedure under the legal regime of various criminal systems.
3. Analyse and assess the legal mechanism related to the remedy available under the comparative criminal system
4. Examine the reformative legal techniques under the criminal law.

Course Outline

Unit-I **Credit 4**

Introduction **(Hours 40)**

A. Organization of courts and prosecuting Agencies
B. Hierarchy of criminal courts and their jurisdiction, organization of prosecuting agencies, prosecution and the policy.

Unit II

Pre-Trial Procedure

A. Arrest and questioning of the accused
B. Rights of the accused
C. Evidential value of statements or articles collected by police.
D. Role of the prosecutor and judicial officer in investigation.

Unit III

Trial Procedure

A. The accusatory system of trial and the inquisitorial system
B. Role of the judge, prosecutor and defence attorney in the trial main features of session's trial, weren't
C. Trial and summons trial
D. Summary trial and plea bargaining.

Unit-IV
Appeals, References and revisions

A. Appeals: Reference and revisions.
B. Provision as to Bails and Bail Bonds

Unit-V
Substantive Comparative Criminal Law

A. Summary of the substantive criminal law of Japam
B. Application of substantive portion of criminal law of USA
C. Summary of substantive portion of criminal law in UK

Note:- The Comparative study will be with the Criminal Law of Japan, U.S.A. & U.K. with reference to the above-mentioned four Modules.

IPR GROUP

PATENT AND PATENTABILITY OF BIOTECHNOLOGICAL INVENTION

Course Objectives

The objectives of the course are:

1. To develop an understanding of the basics of intellectual property law.
2. To give an overview of the domestic and international legal regimes dealing with intellectual property law.
3. To understand the current norms relating to bioethics and bio-safety in the context of patenting.
4. To understand the interplay between intellectual property and bioethics.

Course Outcomes:

The students shall be able to:

1. Understand the basics of intellectual property law.
2. Analyse the Legal System and solve the problem relating to intellectual property rights.
3. Know the registration process of patents, copyright trademarks etc.
4. Context the cases relating to the IPR before the appropriate forum

Course Outline

UNIT-I **Credit 4**

Introduction **(Hours 40)**

A. Intellectual Property-Origin Development and Objectives,
B. Classification of Intellectual Property-Patents, Copyright, Trademark, Industrial Design, Geographical Indications, *sui-generis* rights (Protection of Plant Varieties and Traditional Knowledge),
C. Relevance of Intellectual Property Rights for Science and Technology

UNIT-II

International IP Law and Indian IPR Legislations

A. International Conventions relating to Intellectual Property;
B. General Agreement on Trade and Tariff (GATT);

C. Trade Related Aspects of Intellectual Property Rights (TRIPS);
D. Establishment of WIPO – Mission and Activities;
E. Indian Position on WTO Regime
F. Indian IPR legislations - National Intellectual Property Policy and Unfair Competition

UNIT-III
Patent and Patentability of Biotechnological Invention

A. Nature, Origin and Scope of Patents;
B. Essentials of Patents- Patentability Criterion-Discovery and Invention, Patentable Subject Matters; Novelty, Utility (Industrial Applicability), Non-Obviousness (Inventive Step), Product Patents vis-à-vis Process Patents;
C. Patentability of Biotechnology Inventions;
D. Patent Laws in Indian and International Perspective;
E. Indian Patent Act 1970 (Patent Amendment Acts-1999, 2002 and 2005)
F. -Patentable Inventions, Patent Application, Procedure, Patent Claims and Specification and Infringement of Patents
G. Patent Case study: Basmati Case, Neem Controversy, Turmeric Case

UNIT-IV
Bio-safety

A. Bio-safety: Definition and requirement;
B. Bio-safety in relation to human health, environment, transgenic research and applications; International Legal Instruments on Bio-safety-Cartagena Protocol on Bio-safety, Nagoya Protocol
C. Laws relating to Bio-safety in India: The Biological Diversity Act, 2002, Bio-safety procedures, rules and guidelines under Environment (Protection) Act 1986 and Rules 1989;
D. Bio-safety Regulation: Principles and Practices in Microbial and Biomedical Labs;
E. Guidelines for research involving DNA molecules;
F. Regulatory bodies at the National and International level

UNIT-V
Bio-ethics and Bio-piracy

A. Nature, Concept and Relevance of Bioethics;
B. Basic Principles of Bioethics;
C. Legal, Social and Economic Impacts of the Products and Techniques in Biotechnology;
D. Bioethics in Plants, Animals and Microbial Genetic Engineering;
E. Ethical issues in Healthcare;
F. Biopiracy and Bioethics: Application of IPR regime to Biological Resources and Biopiracy, Access to Biological Resources, Benefit Sharing and Informed Consent

Text & References

1. Cornish, W. R., *Intellectual Property* (Latest Edition)
2. *Intellectual Property Rights* by Paul Goldstein
3. *Intellectual Property Rights by* K. R. G. Nair, Ashok Kumar, K. R. G. Nair
4. Kilner, John, et.al, eds., *Cutting-Edge Bioethics*. Eerdmans 2002.
5. B.L. Wadera, *Patents, Trademarks, Copyright, Designs and Geographical Indications*
6. S. Ignacimuthu, *Bioethics*, Alpha Science International, Limited (2009)
7. Matthew Rimmer, *Intellectual Property* and Biotechnology: Biological Inventions (2008)
8. Arthur L. Caplan, Robert Arp, *Contemporary Issues in Bioethics* (2014)
9. Kshitij Kumar Singh, *Biotechnology and Intellectual Property Rights: Legal and Social Implications* Springer (India) (2014) (in press)
10. Refer to Periodicals, Industry directories, Articles and report in journals on the regulatory issues,
11. "Biotechnology" series by Rehm & Reed.
12. Nuffield Council on *Bioethics* (2002), *The Ethics of Patenting DNA*, A Discussion Paper, London: Nuffield Council on *Bioethics*
13. Kshitij Kumar Singh "Human Genome and Human Rights: An Overview", *Journal of Indian Law Institute (JILI),* Vol. 50 No.1 (Jan-Mar) 2008 pp. 67-80;

INTELLECTUAL PROPERTY RIGHTS & PHARMA INDUSTRY

Course Objectives

The objectives of the course are:

1. To develop an understanding of the nature, scope, and importance of the pharmaceutical industry in India
2. To give an overview of the domestic and international legal regimes dealing with intellectual property law, particularly pharmaceutical patenting.
3. To understand the role of intellectual property rights law in pharmaceutical research and development.
4. To understand the interplay between intellectual property and the right to health in particular access to essential medicine.

Course Outcomes:

The students shall be able to:

1. Understand the basic concept of the pharmaceutical industry in India.
2. Know the domestic and International legal regime in relation to IPR
3. Critically analyse the role of IPR law in pharmaceutical development in India.
4. Analyse the role of IPR and the right to health in particular access

Course Outline

UNIT-I **Credit 4**
Introduction **(Hours 40)**

A. Brief Introduction of Intellectual Property Rights;

B. Nature and Scope of Pharmaceutical Industry;

C. Pharmaceutical Industry in India: Background, Importance and Current Status;

D. IPRs and Pharmaceutical Industry;

E. The Role of Intellectual Property Rights in Pharmaceutical Research and Development

UNIT-II
Pharmaceutical Patents under International Patent Regime and India's Obligations to TRIPS

A. International Patent Regime: GATT, WTO and TRIPS, Doha Declaration;

B. Patentability of Pharmaceuticals under TRIIPS;

C. Patent Term Extension;

D. Mail Box and Exclusive Marketing Rights;

E. Generic Medicine and Grace Period;

F. TRIPS Plus-Free Trade Agreements;

G. India's Obligations to TRIPS;

H. Implications of TRIPS on the Indian Pharmaceutical Industry

UNIT-III
Patentability of Pharmaceuticals: A Comparative Study

A. Nature, Scope and Essentials of Patent;

B. Patentability of Chemical, Biotechnological and Pharmaceutical Inventions;

C. Patentability of Pharmaceuticals in the United States and United Kingdom;

D. Patentability of Pharmaceuticals under Indian Patent Act 1970;

a) Status of Pharmaceutical Patents Before 1995
b) Pre-Product Patent Regime (Grace Period: 1995-2005)
c) Product Patent Regime: Patentability Aspect of Innovations
d) Section 3(d) - Defining the Enhanced Therapeutic Efficacy of Pharmaceutical Products and Ever-greening-Novartis Case,

E. India's Position on Doctrine of Equivalents (DOE) and Examining its Link to Infringement

UNIT-IV
Implications of Pharmaceutical Patents on Access to Essential Medicines and Health

A. IP-Related Issues in Access to Essential Medicines;

B. Implications of Pharmaceutical Patents on Innovators;

C. The Doha Declaration on TRIPS and Public Health;

D. Negotiations on TRIPS Agreement and Public Health: From Seattle to Doha;

E. Trade Disputes Relating to Pharmaceutical Patents;

F. Role of Compulsory Licensing in Ensuring Access to Essential Medicine;

G. Compulsory Licensing Relating to Pharmaceuticals and Health

Text and References:

1) Sudip Chaudhari, *The WTO and India's Pharmaceutical Industry* (Oxford University Press, 2005)
2) Kenneth C. Shadlen, Samira Guennif et.al, Intellectual Property Pharmaceuticals and Public Health-Access to Drugs in Developing Countries (Cheltenham, Edward Elgar Publishing Ltd., 2011)
3) Subba Rao Chaganti, Pharmaceutical in India (New Delhi, Gitam Institute of Foreign Trade in Association with Excel Books Pvt. Ltd., 2005)
4) Jakkrit Kuanpoth, Patent Rights in Pharmaceuticals in Developing Countries-Major Challenges for the Future (Cheltenham, Edward Elgar Publishing Ltd, 2010)

5) Philip W. Grubb, Peter L. Thomsen et. al., ―Patents for Chemicals, Pharmaceuticals and Biotechnology-Fundamentals of Global Law, Practice and Strategy (Oxford University Press, 2010)
6) Journal of Intellectual Property Rights (NISCAIR)
7) The WIPO Journal Oxford Journal of Intellectual Property Law & Practice

CORPORATE LAW GROUP

LAW OF MERGER & ACQUISITIONS

Course Objectives:

This course has the following objectives:

1. To study the basic concept of the law of merger & acquisition.
2. Study how to enforce provisions encapsulated in the mergers and acquisitions agreement in the event of non-compliance.
3. To expand the economy, increasing market capitalization, valuations, and demand and supply.
4. By taking on or combining the assets of another business, regardless of its size, your business will increase its market share.

Course Outcomes:

The students shall be able to:

1. Understand legal obligations in terms of mergers and acquisitions.
2. Know the Corporate Restructuring and implication for society and economy.
3. Appreciate the importance of merger and acquisitions (M&A) in the present corporate world.
4. Analyse the process of M&A, essentialities of valuation and various methods thereof in case of Mergers and Acquisitions.

UNIT-I **Credit 4**

Corporate Restructuring **(Hours 40)**

A. Why Restructuring
B. How Restructuring/Implication for society / Economy)
C. Type of Restructuring

UNIT-II

Introduction of Merger and Acquisition

A. Merger and Acquisition –Definition
B. History related to Mergers and Acquisitions in India
C. Types of Mergers and Acquisition
    a) Non-Banking Companies
    b) Banking Companies

D. Difference between Merger and Acquisition

UNIT-III
Law of Merger and Acquisition

A. Company Act 2013

B. Competition Act

C. Take Over Code

UNIT-IV
Law of Merger and Acquisition

A. Foreign Exchange Law

B. Taxation

C. SEBI Guidelines

UNIT-V
Due Diligence in Merger and Acquisition

A. Documentation Issues in Merger and Acquisition

B. Indian Case Studies

C. International Case Studies

INTERNATIONAL TRADE LAW

Course Objectives:

This course has the following objectives:

1. To study the basic concept of International Trade Law.
2. To describe the concept related to Payments in International Trade and the Carriage of Goods by Sea.
3. To provide the provisions of Global Economics and International Trade Law
4. To discuss the law related to Trade Remedies under WTO and Dispute Settlement Procedures.

Course Outcomes:

The students shall be able to:

1. Understand basic concept of International Trade Law.
2. Know the procedure of Payments in International Trade and the Carriage of Goods by Sea.
3. Analyse the legal regime under the Global Economics and International Trade Law.
4. Analyse the various remedies provided under WTO and Dispute Settlement

Unit-I Credit 4

International Trade Law: Meaning and Concept (Hours 40)

A. Meaning and Evolution of International Trade Law
B. Types of International Trade Law
C. INCOTERMS, 2020
D. Formation and Enforcement of International contracts under CISG
E. Rights Liabilities of Panies to International sales Contracts

Unit-II

Payments in International Trade and Carriage of Goods by Sea

A. Bills of Exchange; law Relating to Bills of Exchange
B. Bank Guarantee in International trade transactions

C. Commercial Credit in International Trade; Letter of Credit: Types and the Law Relating to Commercial Credit

D. Carriage Of Goods and Trade Barriers

E. Bills of lading and Charter Parties, Rights and Liabilities of the Parties to Contract of Carriage

Unit-III

Evolution of GATT & WTO

A. Global Economics and International Trade Law

B. GATT and Rounds of Negotiations

C. The WTO: Objective, Function and Structure of WTO. Decision Making Process.

Unit-IV

Evolution of GATT & WTO

A. The Principle on Non-Discrirainationin GATT, Most-favoured-Nation Treatment (MFN), Exceptions to MIN

B. National treatment principle (NT) Article Ill, GATT; Regional Trade Agreements and WTO.

Unit-V

Trade Remedies under WTO and Dispute Settlement Procedures

A. Anti-dumping and WTO, Subsidies and WTO, Safeguards and WTO

B. Dispute settlement under GATT: Article XXII, Article XXIII, its merit & de-merit

C. Difference between the GATT and WTO dispute settlement procedures

D. Dispute Settlement Procedure under the WTO charter

E. DSU and India and its reform

Treaties/Conventions

1. UN Convention on Contracts for the International Sale of Goods
2. INCOTE'RMS, 2020
3. Marrakesh Agreement Establishing World Trade Organization and its Annexes
4. UCP 600
5. Indian Carriage of Goods Sea Act, 1925

6. Foreign Trade Policy of India

Prescribed Books:

1. Leo D' Arcy et al, *Schmitthoff's Export Trade*: The Law and Practice of Internal Trade, Sweet and Maxwell, London, 2007.
2. Peter Van den Bossche and Werner Zdour, The Law and Policy of the World Trade Organization: Text, Cases and Materials, Cambridge University Press
3. Autar Krishen Kati, A Guide to the W.T.O. and GATT: Economics, Law, and Politics, Kluwer Law International

Reference Books

1. Raj Bhaia, International Trade Law: An Interdisciplinary Non-Western Textbook (Vols I & 2) Lexis Nexis
2. J.C.T. Chuah, *Law of International Trade*, Sweet and Maxwell: London
3. Ingeborg Schwenzer Peter Schlechiriem, Commentary on the UN Convention on the International Sale of Good's (CISG), Oxford University Press, New York. 2010
4. John H. Jackson, The World Trading System: Law and Policy of International Economic Relations, 2nd edition (Cambridge: MIT Press, 1997), 1-30, 133-148, and 189-202.
5. Simon Lester and Bryan Mercurio (ed.), World Trade Law- Text, Materials and Commentary Universal Law Publishing C. Pvt. Ltd. New Delhi

B.B.A.LL.B 10th Semester

CURRICULUM AND SYLLABI

(10th Semester)

B.B.A.LL.B. (Hons.)
(Integrated Law degree course)

SCHOOL OF LAW

RAFFLES
UNIVERSITY

Japanese Zone, National Highway 48 Neemrana, Rajasthan 301020
www.rafflesuniversity.edu.in

B.B.A.LL.B 10th Semester

INSOLVENCY AND BANKRUPTCY LAWS

Course Objectives and learning outcome:

- Course aim to facilitate the students with an in-depth understanding and hands-on approach in relation to the legal and practical approach of Insolvency and Bankruptcy
- Its aim is to better understand the coherent and speedy process for early identification of financial distress and resolution.
- It seeks to impart skills required to practice insolvency law with effective drafting and pleadings with parties by providing a comprehensive and holistic solution.
- It will also encourage the students to engage in critical scholarship on law and policy issues.
- To attain a sound understanding of best practices in the field of legal and professional ethics.

Course learning outcome: At the end of the course the students will be able

- To identify and describe various concepts relating to Bank Insolvency and Bankruptcy
- To understand and comprehend the necessity of Bank Insolvency and Bankruptcy law in India
- To appreciate and be able to anywise the insolvency and liquidation process.
- To evaluate and assess the concept of the insolvency resolution process and Bankruptcy Board.

Pedagogy for Course Delivery:
Blended mode of lectures, discussions, case studies, presentations, assignments etc.
Lectures 60 Sessions, Presentations/seminars 5 sessions. Mid-Term Test, End Term Exam 2 Sessions Quizzes 6 sessions

Unit 1

INTRODUCTION

A. Origin and Development of Law pertaining to Insolvency and Bankruptcy in India,
B. Need and Objectives of Insolvency and Bankruptcy Cod-2016
C. Definitions, charge, Claim, Debt, Financial Information, Financial Products,, Financial Institutions, Financial Services, Insolvency Professionals, Insolvency Professionals Agency, Person,

Unit. 2

CORPORATE INSOLVENCY RESOLUTION PROCESS

A. Person who may initiate corporate insolvency resolution Process.
B. Institution of Corporate insolvency resolution process by financial creditors.
C. Insolvency Resolution by operational Creditors.

B.B.A.LL.B 10th Semester

UNIT 3

RESOLUTION PROCESS BY CORPORATE APPLICANT

A. **I**nstitution of Corporate insolvency resolution process by corporate applicant.
B. Time Limit for incorporation insolvency resolution process
C. Moratorium
D. Interim Resolution Professional and Resolution Professionals.

Unit 4

LIQUIDATION PROCESS AND ADJUDICATING AUTHORITY

A. Liquidation Process:
   (a) Institution of Liquidation
   (b) Appointment of Liquidator.
   (c) Powers and duties of Liquidator.
   (d) Claims
   (e) Orders in case of preferential transactions, undervalued transactions,
   (f) Distribution of Assets.
B. Adjudicating Authority for Corporate persons
   (a) Adjudicating Authority for Corporate persons
   (b) Appeal and Appellate Authority

UNIT 5

INSOLVENCY RESOLUTION PROCESS AND BANKRUPTCY BOARD OF INDIA

A. Fast Track Insolvency Resolution Process
   (a) Fast Track Corporation of Insolvency Resolution Process
   (b) Time period for completion of Corporate Insolvency Resolution Process
   (c) Manner of initiating of Fast Track Corporate Insolvency Resolution Process
B. Insolvency and Bankruptcy Board of India
   (a) Establishment of Board
   (b) Powers and function of Board.

Bank Insolvency and Bankruptcy Code 2016
C.S (Dr.) D.K. Jain
Vinod Kothari & Shikha Bansal
Jyoty Singh and Vishnu Shriram
M.S.Sahu
Taxmann
Datey V,S
Saeed Manzar S.K.Thakur
Wahi V,S.
Insolvency Acts

B.B.A.LL.B 10th Semester

CLINICAL & PRACTICAL-III
(PROFESSIONAL ETHICS)

INTRODUCTION TO THE COURSE

"In law a man is guilty when he violates the rights of others. In ethics he is guilty if he only thinks of doing so."

A lawyer's job is as important as that of a doctor's as both of them have power to save the life of a person who comes to seek their professional service. Vested with vast powers, legal Professionals are also imposed with vast duties and responsibilities to which they are morally as well as legally bound. Failure of such duty can invite criticism as well as legal sanctions including suspending such advocate from practicing and removing his name from the Roll of Advocates. Hence, knowledge of such duties, responsibilities and sanctions is indispensable for an advocate to have a better professional career.

Legal profession developed at various stages, which underwent vast changes during the period of British rule in India. The course throws light upon the scenario of legal profession in India during different periods - ancient, medieval and modern period. Hence the nature of legal education and legal profession and its development will be analyzed in the course. The impact of globalization on legal education, profession and practice will also be a part of curriculum. An Advocate shall, at all times, comport himself in a manner befitting his status as an officer of the Court, a privileged member of the community, and a gentleman, bearing in mind that what may be lawful and more for a person who is not a member of the Bar, or for a member of the bar in his non-professional capacity may still be improper for an Advocate, without prejudice to the generality of the foregoing obligation, an Advocate shall fearlessly mentioned both in letter and in spirit. A lawyer being a member of the legal profession owes certain duties towards the society, court and country at large. The sources of such duties including code of ethics, statutes like Advocate's Act, Bar Council of India Rules, etc will be a part of the course.

Every profession has rules of ethics to which its members are bound and the one who violates them will be imposed with liability in various forms. Likewise, a lawyer who does not follow Ethical and other rules of professional conduct can be censured and can also be suspended from law practice or even disbarred. The role played by Bar Councils in regulating legal profession and the provisions of law including those from The Advocates Act, 1961 will be the core module of

the course. The powers vested with Bar Council, provisions dealing with regulation of legal profession and legal education, issues relating to contempt proceedings will be discussed in detail.

OBJECTIVE OF THE COURSE

This course will introduce students to the rules of professional ethics which applies to lawyers in India. This course is designed with a main purpose of making law students [on the verge of completing their law course] to get acquainted with, analyze and critically examine such rules of professional ethics.

TEACHING METHODOLOGY

As per the norms of the university in this course there will be 6 classes per week. Teaching methodology will include Lectures-cum-discussion, Assignments, Projects and Presentations.

COURSE OUTLINE

The course shall comprise of the following:

Unit-1
Introduction

- Historical Perspective and Regulation of Legal Profession.

Unit -2
The Advocate Act, 1961

- Admission,
- Enrolment
- Rights of Advocate,
- Bar Councils.

Unit -3
Ethics of Legal Profession

- Meaning, Nature and Need
- Professional Ethics
- Punishment for breach

Unit -4
Contempt of Court

- Civil Contempt
- Criminal Contempt

- Punishment for Contempt
- Defences against Contempt.
- Constitutional Validity of Contempt Law.
- Contempt by Lawyers, Judges, State, and Corporate Bodies
- Strike by the Lawyers

Unit -5

Extent of Professionalization of Legal Profession

- Code of Ethics for Lawyers
- Professional Misconduct and its Control
- Bar-Bench Relations
- Accountability of Lawyers towards Court, Clients and Society
- Role of Law and Legal Profession in Social Transformation
- Writs Jurisdiction

Selected major judgments of the Supreme Court

1. In the matter of D, An Advocate, AIR 1956 SC 102
2. P.J.Ratnam v. D. Kamikaram, AIR 1964 SC 244.
3. N.B Mirzan v. The disciplinary committee of Bar Comcil of Maharastra and Another, AIR 1972 SC 46.
4. Bar Council Of Maharastra v. MVDebholkar afc., AIR 1976 SC 242.
5. VC Rongadurai v. D.Goplan and others, AIR 1979 SC-201
6. Chandra ShekharSoni v. Bar Council of Rajasthan and Chers, AIR 198 SC 1017
7. In Re on Advocate, AIR 1989 SC 245.
8. In Re Vinay Chandra Mishra, 1995 (Vol-1) IBR 118.
9. Supreme Court Bar Associations. Union of India, AIR 1998 SC 1895
10. Ex Capt. Harish Uppalv. Union of India AIR 2003 SC 739/

Selected bibliography

1. Raju Ramachandran, Professional Ethics: Changing Profession and Changing Ethics
2. (LexisNexis,Butterworths).
3. Dr. P. B. Mukharji, Professional Ethics of The Advocate (University of Burdwan).
4. P. Ramanatha Aiyer,Legal & Professional Ethics – Legal Ethics, Duties & Privileges of a
5. Lawyer (Wadhwa Publications, Nagpur).
6. Justice V. R. Krishna Iyer, Law, Lawyers and Justice (b. R. Publishing Corpn, Delhi).
7. Stephen Gillers, Regulation of Lawyers: Problems of Law & Ethics(Little, Brown & Com
8. Boston Toronto, London).
9. 6. Ross Grauston (ed.), Legal Ethics & Professional Responsibility(Clarendon Press, Oxford).
10. Gupta S.P., Professional Ethics, Accountancy for Lawyers & Bench Bar Relations.
11. Rai Kailash, Professional Ethics, Accountancy for Lawyers & Bench Bar Relations.
12. Sirohi (Dr.), Professional Ethics, Accountancy for Lawyers & Bench Bar Relations

B.B.A.LL.B 10th Semester

CLINICAL & PRACTICAL-IV
(MOOT COURT & ART OF PERSUADING JUDGES)

OBJECTIVE OF THE COURSE

This paper is aimed at imparting the practical skills of research, case analyses and strategy, witness handling, and presentation of arguments at the trial and appellate stages of a case. The teaching methods used in the course will include hypotheticals, role plays, simulation, and court visits. This course has been divided into four components dealing with Moot courts, Mock trials, Court visits and Viva Voce. The students will be working in teams. Your active participation will create and maximise learning opportunities.

EVALUATION SCHEME & COURSE OUTLINE

This paper shall have three components of 30 marks each and a viva for 10 marks.

(a) Moot Court (30 marks). Every student may be required to do at least three moot courts in a year with 10 marks for each. The moot court work will be on assigned problem and it will be evaluated for 5 marks for written submissions and 5 marks for oral advocacy.

(b) Observance of Trial in two cases, one Civil and one Criminal (30 marks);

Students may be required to attend two trials in the course of the last two or three years of LL.B. studies. They will maintain a record and enter the various steps observed during their attendance on different days in the court assignment. This scheme will carry 30 marks.

(c) Interviewing techniques and Pre-trial preparations and Internship diary (30 marks).

Each student will observe two interviewing sessions of clients at the Lawyer's Office/Legal Aid Office and record the proceedings in a diary, which will carry 15 marks.

Each student will further observe the preparation of documents and court papers by the Advocate and the procedure for the filing of the suit/petition. This will be recorded in the diary, which will carry 15 marks.

(d) The fourth component of this paper will be Viva Voce examination on all the above three aspects. This will carry 10 marks.

BOOKS RECOMMENDED

1. Dr. Kailash Rai: Moot Court, Pre-Trial Preparations & Participation in Trial Proceedings(Central Law Publications)
2. Prof. S.K. Awasthi: Practical Training of Law, Moot Court & Viva-Voce (Agra Law Agency)

3. R.N. Chaturvedi:
   A. Pleadings, Drafting & Conveyancing (Central Law Publications)
   B. The Advocates Act 1971
   C. The Legal Services Authorities Act, 1987
   D. Indian Penal Code, 1860
   E. Code of Criminal Procedure, 1973
   F. The Indian Evidence Act, 1872
   G. Code of Civil Procedure, 1908

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B.B.A.LL.B 10th Semester

(CONSTITUTIONAL LAW GROUP)

MEDIA LAW (H7)

OBJECTIVES

This paper deals with the interaction between law and mass media. The objective of this course is to examine the major laws, regulations and court decisions affecting the media. It aims to familiarise the theoretical debates on media, law and ethics in the Indian context. It also attempts to evolve an understanding of the complexities of ethical and legal media practice.

TEACHING METHODOLOGY

Teaching methodology will comprise class room debates and moot court exercise after the basic issues are identified by lecture and discussion. Research of issue based conflict of interest through court cases may be an added advantage.

As per the norms of the University for this Course there will be 6 classes per week. Clinical and tutorial form of learning should be followed. Teaching methodology will include Lectures-cum-discussion, Assignments, Projects and Presentations.

EVALUATION SCHEME

- Continuous Assessment- 40%
- Mid-Term- 20%
- End Term- 40%

UNIT 1

MEDIA & PUBLIC POLICY

A. Understanding the concept of Media History of Media Theories of Media Evolution of Media
B. History of Media Legislation
C. Media Legislation - British experience Media Legislation in U.S. Media Legislation in Indian Context
D. Media in the Constitutional Framework
E. Development of laws relating to Mass Media vis a vis International regime

(a) Censorship of films

(b) Censorship under Constitution

(c) Censorship under the Cinematograph Act.

(d) Pre-censorship of films

UNIT 2

FREEDOM OF SPEECH AND EXPRESSION -ARTICLE 19 (1) (A)

A. An introduction to Freedom of expression

B. Issues of Privacy

C. Evolution of Freedom of Press

D. Restrictions under Constitution

(a) Article 19 (2)

(b) Government Power to legislate - Article 246 read with the Seventh Schedule

(c) Power to impose Tax -licensing and licence fee

(d) Advertisement & Ethics: Misleading Advertisement vis-à-vis Consumers rights

UNIT 3

MEDIA - REGULATORY FRAMEWORK

A. Legal Dimensions of Media

B. Media & Criminal Law

(a) Defamation

(b) Obscenity

(c) Sedition

(d) Media Trial and Administration of Criminal Justice

C. Media & Tort Law (Defamation & Negligence)

D. Media & Legislature – Privileges of the Legislature

E. Media & Judiciary – Contempt of Court Media & Executive – Official Secrets Act

F. Media & Journalists – Working Journalists (Conditions of Service) Act & Press Council Act

G. Media and Ethics Self-Regulation Vs Legal regulation

H. Media & Human Rights Issues relating to entry of Foreign Print Media

B.B.A.LL.B 10th Semester

UNIT 4

CONVERGENCE & NEW MEDIA

A. Understanding Broadcast Sector
B. Evolution of Broadcast Sector Airwaves and Government control Open Skies policy Licensing issues in Broadcast Sector
C. Legislative efforts on Broadcast sector
D. Prasar Bharti Act 1990 Broadcasting Bill Cinematography Act 1952 Cable T.V. Networks (regulation) Act of 1995
E. Opening of Airwaves
F. Public policy issues on Airwaves Community Radio Advocacy Telegraph Act and Broadcast interface
G. The New Media of Internet
H. Evolution of Internet as New Media Regulating the Internet IT Act of 2000 and Media Convergence Bill (to be enacted)
I. Regulatory Commissions of New Media Indian Telegraph Act of 1885

UNIT 5

MEDIA, ADVERTISEMENT & LAW

A. Concept of Advertisement Advertisement & Ethics Advertisement Act of 1954
B. Indecent Representation (Prohibition) Act, 1986
C. The Drugs and Magic Remedies (objectionable) Advertisements Act of 1954
D. Issues of Consumer Protection Competition Bill and impact on Advertisements

Recommended Readings:

Introduction to Media Laws And Ethics, Juhi P. Pathak

Media Law, Dr. S.R. Myneni

Law of the Press, Dr. D.D. Basu

Advertising Law and Ethics, Justice P B Sawant

B.B.A.LL.B 10th Semester

GENDER JUSTICE AND FEMINIST JURISPRUDENCE (H8)

COURSE OUTLINE:

This subject will help the learners to gain understanding of the issues, legal policy framework and action plans that focus over empowerment of vulnerable genders including the Female and Transgender Persons. The issues that have their strong bearing over these section's empowerment, protection and eradication of gender-based inequalities would form the base of this subject.

TEACHING METHODOLOGY:

As per the norms of the University for this Course there will be 6 classes per week. Clinical and tutorial form of learning should be followed. Teaching methodology will include Lectures-cum-Discussion, Assignments, Projects and Presentations.

LEARNING OBJECTIVES:

The Course aims at forming gender sensitive legal knowledge and skills among students with a special focus on expert knowledge of domestic and international standards of gender equality jurisprudence.

PROGRAMME OUTCOMES:

1. **Students must gain knowledge on:**
   - Substantive understanding of law's view about itself and its relationship with sex and gender
   - Introduce the students to reading critical theory and legal analysis
   - Introduce students to reading criminal and constitutional law, cases and facts
2. **Students must gain skills and abilities:**
   - Foster student's ability to approach controversial issues, theories and texts with a critical lens and an open mind
   - Develop the ability to research and write substantive analytical research papers
   - Foster ability and confidence to think critically
3. **Students should gain the following competencies:**
   - Ability to work with information (search, evaluate, use information necessary for fulfillment of scientific and professional tasks including application of the systematic approach
   - Ability to carry out professional activities in the national and international environment
   - Learn how to work cooperatively in the groups

B.B.A.LL.B 10th Semester

EVALUATION SCHEME:

• Continuous Assessment- 20%

• Mid-Term- 20%

• End Term- 60%

UNIT 1

HISTORICAL EVOLUTION

A. Gender Justice and Feminism- Meaning, nature and scope
B. Gender Theories- Conflict, Integrationists and hermeneutic approaches
C. Feminist Theories- Liberal Feminism, Cultural Feminism, Radical Feminism and Post-Modern Feminism
D. Notions of Patriarchy, Sex and Gender, Gender Discrimination, homophobia, labour division- Global and Indian Perspectives
E. Feminist Justice Movement in Europe, USA and India- Status, impact and significance

UNIT 2

GENDER JUSTICE AND HUMAN RIGHTS:

A. Historical critique of gender discrimination- Global and Indian Views
B. UNO and Gender Equality- UN Charter, UDHR, UN Convention on Traffic in Women and Children 1949, UN Sub-Commission on the status of Women, ILO and Gender Justice, ICCPR 1966, ICESCR 1966, CEDAW 1979
C. EU Human Rights Law and Gender discrimination
D. Sexual Harassment and discrimination at Workplace, Domestic Violence, Sex Traffic and Prostitution, Forced Marriage, Sexual Reproductive Rights, Surrogacy, Marital Rape and Consent
E. Feminist perspective on Global Environmental Issues and Judicial Response

UNIT 3

FEMINIST JURISPRUDENCE IN INDIA:

A. Gender Equality under Indian Constitution- Preamble, Fundamental Rights and Directive Principles of State Policy
B. Critique of selective Offences provided under IPC 1860- Kidnapping, Abduction, Rape-Gang Rape-Custodial and Marital Rape, Stalking, Acid Attack and Adultery
C. Women's Labour Rights and Healthy Working Conditions
D. Gender and Marital Rights in the Family- A Critique of the deviations in Hindu, Muslim and Christian Personal Laws
E. Adoption, Guardianship and Maintenance Issues

UNIT 4

GENDER JUSTICE FOR LGBTQIA PERSONS:

A. Notions of LGBTQIA, Transgender, Homosexuality
B. Historical Analysis of the Human Rights Movements for LGBTQIA persons- Indian and Global Scenario
C. Status of Legal Protection
D. Same-Sex Marriage Unions and the Family
E. Problems faced by LGBTQIA community-Socio-economic and political exclusion, hate crimes, discrimination and violence
F. How to achieve gender equality-gender and sustainable development goal (2015-2030).

RECOMMENDED READINGS:

- Patricia Smith, Feminist Jurisprudence
- Gender Justice & Feminist Jurisprudence by Dr. Sheetal Kanwal, Amar Law Publication
- Bina Agrawal, Introduction of the Structures of Patriarchy
- Kamla Bhasin & Nighat Said Khan, Some Question on Feminism and their relevance in South Asia
- Maria Mies, Patriarchy and Accumulation on a World Scale
- S K Kuba, Status of Women in International Law
- Alison M Jaggar, Feminst Thought and Human Nature (Sussex Harvester Press)
- Ratna Kapoor & Brenda Cossman, Sub-Serve Sites- Feminist Engagements with Law in India (Sage Publications New Delhi 1992)
- Jenifer Perce, Gender Trials: Emotional Lives in Contemporary Law Firms, University of California Press 1996
- D Kelly Weisberg, Feminist Legal Theory: Foundations, Temple University Press 1993
- Annie M O Griffiths, In the Shadow of Marriage: Gender and Justice in an African Community, University of Chicago Press 1998
- Adrien Wing, Critical Race Feminism: A Reader, 2nd Edition, NYU Press 2003
- Vandana Shiva, Staying Alive: Women, Ecology and Development, London Zed Books 1989
- Nomita Agrawal, Women and Law in India, New Century Publications Delhi 2002
- Rashmi Agrawal and BVLN Rao, Gender Issues- A Road Map to Empowerment, Shipra Publications, New Delhi 2004
- Kamala Bhasin, Understanding Gender, New Delhi 2000
- Maitrayee Chaudhary (ed.), Feminism in India, New Delhi 2004
- Anjani Kant, Women and the Law, APH Publishing Corporation New Delhi 1997
- Cook, Rebecca J., ed. Human Right of Women: National and International Perspectives, University of Pennsylvania Press 2012
- Grabe Shelly, ed., Women's Human Rights: A Socio-Psychological Perspective on Resistance, Liberation and Justice, Oxford University Press, 2017
- Ross S. D., Women's Human Rights: The international and comparative law casebook, University of Pennsylvania Press 2008

OPTIONAL READINGS:

- Charlesworth H (2005), Not Waving but Drowning: Gender Mainstreaming and Human Rights in United Nations, Harvard Human Rights Journal, 18.
- MacKinnon, C.A., (1991), Reflections on Sex Equality under Law, Yale Law Journal, 100 (5), 1281-1328
- Muravyeva, M (2014), Traditional Values and Modern Families: Legal Understanding of Tradition and Modernity in Contemporary Russia, Journal of Social Policy Research, 124
- Universal Declaration of Human Rights 1948
- Convention on the Elimination of All Forms of Discrimination against Women, 1979

B.B.A.LL.B 10th Semester

(CRIMINAL LAW GROUP)

LAW OF WOMEN AND CHILDREN (H7)

PRELUDE TO THE COURSE:

In an era where offences against women have reached the pivot, there is a need for having a sound system for the perpetrators and victims of crimes against women. The paper aims to give an overview of the various crimes committed against women and the national and international efforts undertaken to preserve women.

OBJECTIVES OF THE COURSE: The aims of this course is to:

1. Make the students aware of the protection available to women at the national and International level
2. the students with procedural safeguards available to the women
3. Have an understanding of the legal position of women in India in the 21st century

OUTCOMES OF THE COURSE:
After completion of the course, the students will be able to:

1. Understand the concept of legal protection to women.
2. Discuss national and international perspectives of women rights.
3. Interpret the rights of women at national and international level.

TEACHING PEDAGOGY:

The teaching in this course is done by way of lectures, seminars and tutorial sessions. The lecture series is devoted to detailed study of the national and international perspectives on the protection of women rights. The course will incorporate with understanding of the concepts of women rights and its protection in domestic and international regime. Participation in class discussion is the primary mode of teaching/learning.

THE EVALUATION SCHEME

• Continuous Assessment- 40%
• Mid-Term- 20%
• End Term- 40%

COURSE OUTLINE:

B.B.A.LL.B 10th Semester

UNIT-1

Introduction

A. Status of Women in India and Abroad
B. Constitution of India and Women

UNIT-2

Personal Law

A. Rights of women
B. Rights of Children
C. Guardianship
D. The Prohibition of Child Marriage Act, 2006

UNIT– 3

Criminal Laws

A. Rape
B. Outraging Modesty
C. Domestic Violence
D. Prostitution: Typology, Causes & Legislative Measures
E. The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013 – Salient Provisions & Penalties
F. Protection Of Children from Sexual Offences Act, 2012
G. Arrest of a Woman
H. Section 177 CRPC, Section 164A, Section 26, Section 198A, Section 125 CRPC
I. Juvenile Justice (Care and Protection of Children) Act, 2015

UNIT – 4

Women Welfare Laws in India

A. Labour Laws and Women Welfare
B. The Pre-Conception and Pre-Natal Diagnostic Techniques (Prohibition of Sex Selection) Act, 1994
C. The Indecent Representation of Women (Prohibition) Act, 1986
D. The Domestic Workers Welfare and Social Security Act, 2010
E. The Immoral Traffic (Prevention) Act, 1956

UNIT-5
Rights of Child and International Law

A. Declaration of the Right of the Child-1959
B. Convention on the Right of Child, 1989
C. The World Summit for Children 1990

D. World Conference on Human Right 1993
E. ILO- Conventions regarding Minimum Age

References:

1. SC Tripathi and Vibha Arora, Law relating to Women and Children, Central Law Publication, 2006
2. DK Tiwari & Mahmood Zaidi, Commentaries on Family Courts Act, 1984, Allahabad Law Agency, 1997
3. BN Chattoraj, Crime against Women: A Search for Peaceful Solution, LNJN-NICFS, 2007
4. Nomita Agarwal, Women and Law, New Century Publishing House, 2005
5. Manjula Batra, Women and Law & Law Relating to Children in India, Allahabad Law Agency, 2001

Bare Acts:

1. The Indian Penal Code, 1860
2. The Hindu Laws (Bare Act)
3. The Guardianship and Wards Act, 1890
4. The Pre-Conception and Pre-Natal Diagnostic Techniques (Prohibition of Sex Selection) Act, 1994
5. The Indecent Representation of Women (Prohibition) Act, 1986
6. The Domestic Workers Welfare and Social Security Act, 2010
7. The Immoral Traffic (Prevention) Act, 1987
8. The Family Courts Act, 1984

B.B.A.LL.B 10th Semester

FORENSIC SCIENCE (H8)

COURSE OUTLINE

Unit 1

Introduction, Criminal Justice System & forensic science in India;

A. History and Development of Forensic Science
B. Definition of Forensic Science
C. Scope of Forensic Science and Need of Forensic Science
D. Basic Principles of Forensic Science
E. Tools and Techniques of Forensic Science.

Unit 2

Crime Scene Investigation:

Response to Crime Scene, Plan of action, Secure the scene, Preliminary Survey, Photography, sketch, chain of custody,

Evidences collection

A. Blood, Semen & other Biological fluids
B. Viscera
C. Shoe impressions, Tool marks, Tyre marks
D. Bite Marks
E. Hair – Animal & Human, Fibres & Fabrics
F. Glass, Soil, pollen Paint

Unit 3

Forensic Ballistics and vehicular accident reconstruction

A. Firearms & Their Classification
B. Ammunition, Projectiles, Mechanism of Firing
C. Bullet, Weapon & Cartridge case Identification
D. GSR-Detection and analysis
E. Nature of Injuries – Entry & Exit wounds
F. Range of Fire and factors affecting it
G. Primary causes of vehicular accidents
H. analytical tools to evaluate accidents

Unit 4
Body fluids, DNA and Finger Impression

A. **DNA**-Introduction, source of DNA in Forensic case work, Extraction of DNA, Techniques of DNA fingerprinting- RFLP, STR, PCR. DNA fingerprinting in paternity disputes, mass disaster and other forensic case work, legal issues in DNA fingerprinting, case study.

B. Finger Printing: Type of Finger Prints, Classification of Finger Prints, Latent Finger Print, Causes of Formation of latent Finger Prints, Comparison of Finger Prints, ridge details. Presentation of Expert Evidence: Data, Reports, Evidence in the Court

Unit 5

Methods of Interview and Interrogation

A. **Narco analysis**: theory, forensic significance of narco-analysis, admissibility in court, future prospect, case study.

B. Brain mapping- introduction, EEG, P-3000 wave, brain mapping in forensic Science, Limitation of technique, admissibility in court, case study.

C. Polygraph: Principle and technique polygraph as a forensic investigative tool, NHRC guidelines for a polygraph test, case study.

Books for Reference

1. Ramanujan T. Prevention Detection of Crime
2. Sullivan: Police Science.
3. Swenson and Wendell: Techniques of Crime Scene Investigation.
4. De Angeles: Crime Scene Investigation.
5. Sodderman and O'Connell: Modern Criminal Investigation.
6. Horgan: Criminal Investigation.
7. SheshagiriRao: Prevention and Detection of Crime

B.B.A.LL.B 10th Semester

(INTELLECTUAL PROPERTY LAW GROUP)

PROTECTION OF PLANT VARIETIES, FORMER'S AND BREEDER'S RIGHTS & TRADITIONAL KNOWLEDGE
(H7)

Course Objectives-

1. Students will be imparted complete understanding and knowledge about the development of Plant Varieties & Traditional Knowledge related laws.
2. Students will be learning about the functioning of international organizations related to Plant Varieties & Traditional Knowledge.
3. Students will be imparted knowledge about the contemporary issues related to Plant Varieties & Traditional Knowledge.

COURSE OUTLINE

Unit 1
Introduction

A. Introduction to Plant Varieties – Law& Science
B. Evolution of Plant Patents & Plant Varieties Protection
C. Justification for IP Protection
D. UPOV

Unit 2
Kinds and criteria for protection under PVFR

A. Concepts of Different kinds of Varieties in PVFR
B. Criteria of Protection Objectives
C. Requirements for Protection
D. Period of Protection

Unit 3
Rights, Limitations & Infringement

A. Exclusive Rights
B. Breeders' Rights v. Farmers' Rights
C. Researcher's Rights; Farmers' rights and Rights of Communities
D. Compulsory Licence
E. Benefit Sharing
F. Infringement & Remedies

Unit 4
Traditional Knowledge: Meaning, Nature and Need for Protection..

A. Meaning, Nature, and Characteristics
B. Need for protection of TK
   a) Equity Considerations
   b) Conservation Motive
   c) Preservation of Traditional Practices and Cultures
   d) For Indigenous Peoples' Participation in Development Process
   e) To Facilitate Access
   f) For the Conservation of Environment and Management of Bio-Diversit
C. International Initiatives on TK Protection
D. International bodies and Institutions responsible for the Protection of TK

Unit 5
Interface between IPR and TK and Options for Protection

A. Interface between IPR & TK
   a) Protection of Traditional Knowledge under the Existing Modes of Intellectual Property and Issues thereof.
   b) Concepts of Prior Informed Consent (PIC) and Agreement to befit sharing (ABS) National Initiatives
B. Defensive protection of TK through legislative efforts:
   a) Constitutional Provisions, The Biological Diversity Act, 2002;
   b) Protection of Plant Varieties and Farmers' Rights Act, 2001;
   c) The Patent Amendment Acts 2002 and 2005;
   d) The Geographical Indications of Goods (Registration and Protection) Act, 1999;
   e) The Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, etc.
C. TKDL
D. Need for a sui generis protection

Text Books and Reference Material

1. Anthony J. Stenson and Tim S. Gray, The Politics of Genetic Resource Control,
2. Macmillan Press Ltd., London, 1999
3. Brush S.B & D. Stabinsky (ed.), Valuing Local Knowledge- Indigenous people andIntellectual Property Rights, Island Press, Covelo, California, 1996
4. Carlos M Correa, Traditional knowledge and Intellectual Property, Issues and
5. Options Surrounding the Protection of Traditional Knowledge, Quaker United
6. Nations Office, Geneva, 2001

7. David Downes, Using Intellectual Property as a Tool to Protect Traditionally
8. Knowledge: Recommendations for Next Steps, Center for International EnvironmentalLaw, Washington, DC, 1997
9. P. Drahos and M. Blakeney (ed.), Perspectives on Intellectual Property: IP in
10. Biodiversity and Agriculture, Sweet and Maxwell, London, 2001
11. Vandana Shiva, Biopiracy: The Plunder of Nature and Knowledge, South Press, 1997
12. Vandana Shiva, Protect or Plunder: Understanding Intellectual Property Rights,Zed Books Ltd., London, 2001

B.B.A.LL.B 10th Semester

IPR MANAGEMENT & LITIGATION
(H8)

Prelude to the Course:

IPR Management has played a pivotal role in the recent decade. The process of management of the various Intellectual Property Rights is indeed an important and integrating factor contributing to the growth of IPRs and research in the field of IPR. The course aims to acquaint the students with the same.

Unit 1
Introduction

Economics of Innovation: Classical Theories – Neo-classical Theories – Exogenous and Endogenous Growth Theories – Schumpeterian Growth Theories – Human Capital Theories Evolutionary Growth Theories

Unit 2
Domain of Public Funded Research

Industrial Classification: Traditional v. Knowledge Based Industries – Intangible Assets – Definition & Characteristics – Intangible Assets & Accounting Standards – Intellectual Property as Strategic Corporate Assets

Unit 3
Commercialization of Intellectual Property

Traditional IP and Evolving IP - Assignment – Licensing – Cross License – Patent Pool – Negotiations – Defensive Publications – Technical Disclosures – Patent Pooling – Patent Trolling - Brand Management- Brand and Pricing Strategies – Patent Mining – Patent Landscaping and Patent Mapping

Unit 4
Strategic Management of Intellectual Property

Defensive & Offensive Strategies – Intellectual Asset Management - Intellectual Property Audit – Identification & Grouping of Intangible Assets into Bundles - Intangible Asset Management Plan – Value Maximization Strategies – Value Extraction Strategies – Licensing Process and Management

Unit 5
Valuation of Intellectual Property & Litigation

Need for IP Valuation – Approaches of IP Valuation – Cost Approach – Income Approach – Market Approach – Methods of IP Valuation – “25% Rule” Method - Industry Standards Methods

- Ranking Method - Surrogate Methods - Disaggregation Methods - Monte Carlo Method - Real Options Methods - The CAV Method - Market Value Method -Collateralization of IPA

Reference Books

1. Sunita K. Sreedhararn, An Introduction to Intellectual Asset Management
2. Patrick H. Sullivan, Profiting from Intellectual Capital: Extracting Value from Innovation
3. Tulika Rastogi, IP Audit: Your Way to Healthy Organisation
4. Gordon V. Smith and Russell L. Parr, Valuation of Intellectual Property and Intangible
5. Bruce Berman, From Assets to Profits: Competing for IP Value and Return (Intellectual Property-General, Law, Accounting & Finance, Management, Licensing, Special Topics)
6. Loganathan, E.T. “IPR” (IPRS), TPIPS Agreement and Indian Laws

CURRICULUM AND SYLLABI

(5th Semester)

B.B.A.LL. B
(Integrated Law degree course)

SCHOOL OF LAW

RAFFLES
UNIVERSITY

Japanese Zone, National Highway 48 Neemrana, Rajasthan 301020

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FAMILY LAW – I

INTRODUCTION TO THE COURSE

India being a country of rich cultural and religious diversity offers personal laws pertaining to each religion, be it Hindus, Muslims, Christians, etc. Personal laws govern matters like marriage, divorce, adoption, succession, maintenance etc. Family Law I deals with the sources and development of Hindu Law. This course is a study of the fundamentals of Hindu Law and includes the Hindu Marriage Act, 1955, the Hindu Adoptions and Maintenance Act, 1956, the Hindu Minority and Guardianship Act, 1956 and the structure of Family Courts in India.

COURSE OBJECTIVES

This course has the following objectives

1. To evaluate the strength of the family system in India.
2. and the extent of legal support provided to the same and also to examine when and how and to what extent the constitutional directive of Uniform Civil Code enables to regulate a religious part of family life if any, may emerge. Besides this to give an overview of some of the current problems arising out of the foundational inequalities.

TEACHING METHODOLOGY

As per the norms of the University for this Course, there will be 6 classes per week. Clinical and tutorial forms of learning should be followed. The teaching methodology will include Lectures-cum-discussion, Assignments, Court room exercises, Projects, and Presentations.

THE EVALUATION SCHEME

- Continuous Assessment- 40%
- Mid-Term- 20%
- End Term- 40%

COURSE OUTLINE

Unit-I Credit 6

Concept of Hindu law & Sources of law (Hours 60)

Philosophy & Concept of Hindu law, Schools of Hindu law, Sources of Hindu law, who is a Hindu, un codified general law among the various religious groups of people of India.

Unit-II

The Hindu Marriage and Divorce

A. Applicability of Legislation (Section 2)
B. Concept and forms of Marriage (Section 5 R/w Section 7)
C. Conditions for the Validity of Marriage (Section 5 R/w Section 3 R/w Section 18)
D. Solemnization of Marriage (Section 7)
E. Section 3 of PCMA R/w Section 9 of PCMA
F. Child Marriage R/w Provisions of POCSO
G. Void and Voidable Marriages (Section 11 and Section 12)
H. Registration of Marriage (Section 8)
I. Restitution of Conjugal Rights (Section 9 R/w Article 21 of Indian Constitution)
J. Judicial Separation (Section 10) R/w 13 (1A)
K. Status of sologamy?
L. Unisex Marriages and Question of living together?

Divorce (Hindu Marriage Act, 1955)

A. Theories of Divorce- Guilt Theory and Consent Theory
B. Grounds of Divorce Cruelty, Desertion, Adultery along with Joseph Shine vs. UOI, 2018, SC
C. Study on Section 13
D. Options of Puberty, Breakdown of Marriage, Mutual Consent (Section13B), Grounds for Divorce for Woman Only (Section 13(2))
E. Irretrievable Breakdown of Marriage as a ground of Divorce.

Cases:

- *Dr. Surajmani Stella Kujur*v. *DurgaCharanHansdah* AIR 2001 SC 938
- *S. Nagalingam*v. *Sivagami*(2001) 7 SCC 487 4
- *Bhaurao Shankar Lokhande*v. *State of Maharashtra,* AIR 1965 SC 1564 8
- *Lily Thomas* v. *Union of India,* AIR 2000 SC 1650 12
- *PinnintiVenkataramana*v. *State*, AIR 1977 AP 43 23
- *AshaQureshi*v. *AfaqQureshi*, AIR 2002 MP 263 33
- *P*. v. *K.,* AIR 1982 Bom. 400 37
- *BabuiPanmatoKuer*v. *Ram Agya Singh,* AIR 1968 Pat. 190 47
- *Seema*v. *Ashwani Kumar* (2006) 2 SCC 578 51
- *Javed&Ors. v. State of Haryana &O*rs. AIR 2003 SC 3057
- *Kailashwati*v. *AyudhiaParkash,* 1977 C.L.J. 109 (P.& H.) 55
- *SwarajGarg*v. *K.M. Garg,* AIR 1978 Del. 296 66
- *Saroj Rani* v. *Sudarshan Kumar,* AIR 1984 SC 1562 74
- *N.G. Dastane*v. *S. Dastane,* AIR 1975 SC 1534 81
- *Samar Ghosh* v. *Jaya Ghosh*, 2007 (3) SCJ 253 101
- *Bipin chandra Jaisingh bai Shah* v. *Prabhavati*, AIR 1957 SC 176 122
- *Dharmendra Kumar* v. *Usha Kumar,* AIR 1977 SC 2213 139
- *T. Srinivasan* v.*T. Varalakshmi*, 1 (1991) DMC 20 (Mad.) 142
- *Hira chand Srinivas Managaonkar*v. *Sunanda,* AIR 2001 SC 1285 149
- *Sureshta Devi* v. *Om Prakash,* 1 (1991) DMC 313 (SC) 155

Unit-III

Hindu Adoptions and Maintenance

ADOPTION

A. Law on the legitimacy of children and adoption.

B. Legitimacy of the issue in void and voidable marriage and the rights of such children

C. Issues relating to custody of children

D. Requisite of Valid Adoption- Conditions for giving in, taking of person adopted procedure and conditionality.

E. When adoption is complete

F. Effects of Adoption

G. Inter-Country adoption

H. Adoption in different religious groups.

MAINTENANCE

A. Maintenance during the pendency of the suit.

B. Maintenance after the dissolution of marriage and conditions of permanent alimony (Section 24 R/w Section 25 HMA, 1955, Section 18 HAMA, 1956, Section 125 CrPC, Section 20 DVA)

Unit-IV
Hindu Minority and Guardianship Act, 1956

A. Guardian under the Guardian and Wards Act
B. Who can be appointed
C. Procedure of application – who can apply – what are powers – what matters court would consider for appointment of a guardian – cessation of authority
D. General and special liability of a guardian
E. Natural guardian and his/her power

Unit-V
The Hindu Succession Act,

A. Origin and Nature of Joint Family and Coparcenary
B. Characteristic features of Coparcenary
C. Classification of Property
D. Karta: Position, Power and Liabilities, Privileges and Obligations.
E. Partition: Definition, Persons entitled to demand partition, Reopening and Reunion.

Cases:

- *Brijendra*v. *State of M.P.*, AIR 2008 SC 1058 164
- *Amar KantaSen*v. *SovanaSen*, AIR 1960 Cal. 438 159
- *Padmja Sharma* v. *Ratan Lal Sharma*, AIR 2000 SC 1398 162
- *GithaHariharan*v. *Reserve Bank of India* (1999) 2 SCC 228 169

Recommended Readings

Aqil Ahmad, *Mohammedan Law*, (Central Law Agency, 24th ed. 2011)

R.K. Agarwala, *Hindu Law*(Central Law Agency, 22nd ed. 2007)

ParasDiwan, *Law of Intestate and Testamentary Succession* (1998), Universal

Basu, N.D., *Law of Succession* (2000), Universal

Kusem, *Marriage and Divorce Law Manual* (2000) Universal

Machanda.S.C.*Law and Practice of Divorce in India* (2000) Universal

P.V.Kane, *History of Dharmasastras* Vol.2 pt.1 at 624-632 (1974)

A.Kuppuswami (ed.) *Mayne's Hindu Law and Usage*Ch.4(1986)

B.Sivaramayys, *Inequalities and the Law*, (1985)

K.C.Daiya, "*Population control through family planning in India, "Indian Journal of Legal Studies,*85 (1979)

J.D.M. Derrett, *Hindu Law: Past and Present*

J.D.M. Derrett, *Death of Marriage Law*

A.A.A.Fyzee, *Outline of Muhammadan Law*, (1998)

AlladiKuppuswami,(ed.) *Mayne's Hindu Law and Usage*, (1986)

J.D.M.Derret, *A Critique of Modern Hindu Law*, (1970)

ParasDiwan, *Hindu Law* (1985) Law 45

S.T.Desai (ed.) *Mulla's Principles of Hindu Law*, (1998) -Butterworths-India.

Pares Diwan, *Family Law: Law of Marriage and Divorce in India*, (1984).

A.M.Bhattacharjee, *Muslim Law and the Constitution* (1994) Eastern Law House, Calcutta.

CRIMINAL LAW-III
CRIMINAL PROCEDURE CODE

INTRODUCTION TO THE COURSE

The primary objective of criminal law is to maintain law and order in society and to protect the life and liberty of people. It is for this reason that people place their ultimate reliance on this branch of law for protection against all injuries that human conduct can inflict on individuals and institutions. Due to these reasons, the penal law cannot afford to be weak, ambiguous or ineffective. Nor can it be harsh and arbitrary in its impact. The application of criminal law has to be uniform regardless of any discrimination on grounds of class, caste, religion, sex or creed etc. of either the criminal or the victim.

COURSE OBJECTIVE

This course has the following objectives

1. Identify the stages in investigation and procedure of trial in criminal cases.
2. Explain the powers, functions, and limitations of the police investigation.
3. To study procedural nuances of criminal court inquiry and trial.
4. Make the distinction between different types of trials provided under the code.
5. To use their skill of knowledge to protect and promote the basic fundamental rights provided by our constitution.

COURSE OUTCOMES

The students shall be able to;

1. Understand the nature and scope of the code.
2. Analyze the drawbacks of complicated procedural requirements of the code.
3. Develop necessary understanding of procedural knowledge of court proceedings.
4. Apply necessary skill set to assist the court and law enforcement agencies

Unit-I Credit 6

INTRODUCTORY (Hours 60)

a) Object and Importance of Cr.P.C
b) Functionaries under the Cr.P.C
c) Basic Concepts: Bailable Offence, Non-Bailable Offence, Cognizable Offence,

d) Non-cognizable Offence, Complaint, Charge, Police Report, Investigation, Inquiryand Trial, Summons Case, Warrant Case
e) Constitution & Powers of Criminal Courts & Offices
f) Public Prosecutor

Unit-II

PRE-TRIAL PROCEEDINGS

a) Information to Police & their Powers to investigate
b) Jurisdiction of Criminal Courts in Inquiries & Trials
c) Conditions requisite for Initiation of proceedings
d) Complaints to Magistrates
e) Commencement of proceedings before Magistrates
f) Provisions as to Bail & Bonds
g) The Criminal Procedure (Identification)Bill, 2022

Unit-III

TRIAL PROCEEDINGS

a) Framing of Charge & Joinder of Charges
b) Trial before a Court of Session
c) Trial of Warrant cases by Magistrates
d) Trial of Summons cases by Magistrates
e) Summary Trials
f) Evidence in Inquiries & Trials & General provisions

Unit-IV

MISCELLANEOUS

a) Appeals
b) Reference & Revision
c) Inherent Power of Court
d) Transfer of Criminal cases & Execution, Suspension, Remission & Commutation of Sentences
e) Irregular Proceedings & Limitation for taking Cognizance of certain offences
f) Plea Bargaining
g) Maintenance of Public Order and Tranquillity
h) Security for peace and good behaviour
i) Maintenance of wives, children and parents
j) Compounding of Offences

Unit-V

SPECIAL PROVISIONS RELATED TO PROBATION AND JUVENILE JUSTICE

a) **Probation of Offenders Act, 1958**

Concept of Probation System-Origin and Development in India

b) **Juvenile Justice (Care and Protection of Children) Act,2000**

Power, composition, functions and procedure to be followed by the Juvenile Justice Board.

Text Books:

1. Rattan Lal & Dhirajlal- Code of Criminal Procedure

2. R.V. Kelkar - Code of Criminal Procedure

3. Chandrasekharan Pillai, Kelkar Lecturer on Criminal Procedure, 1998 Eastern Book Co.

4. Woodroffe, Commentaries on Criminal Procedure Code, 2000 Universal

5. Sarkar on Criminal Procedure Code

6.N.K. Chakrabarti- Probation System in the Administration of Criminal Justice

7. Ved Kumari- Juvenile Justice System s – (sections 441 – 462)

CORPORATE LAW-I

INTRODUCTION OF THE COURSE

The course is designed to understand the formation, management, and other activity of the companies. Because of the changing facts of global governance corporate governance plays a vital role in the development of an economy at both national and international levels. The companies Act 1956 has not been repealed but certain provisions replaced by the new Act of 2013. The notified sections which replace the provisions of the Companies Act 1956 will be highlighted. Accordingly, the paper aims to introduce to the students the nuance of corporate law and its obligations of it toward society in discharging its trade relations and being a good corporate citizen. Therefore, the paper needs to be taught in light of the new companies Amendment Act 2013.

COURSE OBJECTIVES

This course has the following objectives

1. To acquire knowledge and develop the regulatory framework of companies
2. To study various provisions of the Companies law
3. To differentiate between schedules, rules, notifications and circulars etc.
4. To develop legal skills about the dimensional issues of company law.

COURSE OUTCOMES

The students shall be able to;

1. Apply the practical aspect of company law in the global system of economic
2. Understand multinational companies in the legal system.
3. Frame the legal requirement for registration for companies.
4. Contest the cases pertaining to corporate law

COURSE OUTLINE

Unit-I **Credit 6**
Company and its Nature and Scope **(Hours 60)**

- Meaning, Definition, and characteristics of the company.
- Historical background of the company
- Kinds of companies
- Merits and Demerits of Incorporation of a company - Lifting the corporate veil.

Unit-II
Procedure for Incorporation of companies

- Role of promoters, Legal Position of Promoter
- Pre-incorporation contracts

- Memorandum of Association - Meaning, Purpose, Contents, Ultravires, and Doctrine of Ultra-vires
- Articles of Association - Meaning Purpose, Content. Alternation, Constructive Notice.
- Doctrine of Indoment Exceptions

Unit-III

Prospectus, Shares, and Debentures

- Meaning - Formalities of issue Prospectus - Misrepresentation of Prospectus - Golden Rule
- Shares - Meaning, Types of Shares, and Transfer of shares
- Share Capital, Meaning, Kinds, Alternation, Reduction, and Voting Rights
- Debenture - Meaning, Types, Charge-Fixed and Floating, Crystallization of Floating charge
- Borrowing Powers - Effective of unauthorized borrowings

Unit-IV

Members, Membership Rights &Management and Administration of Company

- Modes of acquiring Membership
- Rights and Privileges of Members and Shareholders
- Transfer and Registration of Transfer of Securities
- Transmission of Securities
- Dividend - Rules as to Payment of Dividend
- Directors - Appointment, Qualifications, Types, Position, Powers, Functions
- Duties and Liabilities of Directors
- Meetings, Kinds, Requisites of Valid Meeting
- Audit and Accounting System - Legal Position of Audit

Unit-V

Oppression, Mismanagement &Amalgamation and winding up

- Meaning of Oppression and Mismanagement
- Prevention of Oppression and Mismanagement - Rule in Foss v/s Harbottle (1843)
- Powers of the Company Law Board and Central Government
- Inspection and Investigation
- Role of Serious Fraud Investigation Office (SF10).
- Merger and Demerger of the Company
- Amalgamation, Compromise, and Arrangement
- Winding up - Meaning, Types, Procedure
- Payment of Liabilities in the event of winding up
- Role of Official Liquidator, Court, and National Company Law Tribunal

Case Studies:

1. Salomon v. Salomon & Co., Ltd. (1897) A.C. 22 (H.L.) :(1895-95) All ER Rep. 33
2. R.C. Cooper v. Union of India (1970) 3 SCR 530
3. *Kelner v Baxter* (1866) LR 2 CP 174
4. *Ashbury Railway Carriage* and Iron Co Ltd v Riche (1875) LR 7 HL 653

5. *Royal British Bank v Turquand* (1856) 6 E&B 327
6. Regal Hastings Ltd. V. Gulliver, [1942] 1 All ER 378
7. Foss v. Harbottle (1843) 2 Hare 461 : (1843) 67 ER 189
8. Nagappa Chettiar V. Madras Race Club, ILR 1949 Mad 808
9. JonesV. Ahman Son (1970) 70 Col LR 1079
10. Derej Vs Peale

Act and Statute (As Amended)

- The Companies Act, 2013

Text Book

1. C.A.Kamal Garg, Bharat's Corporate and Allied Laws, 2013
2. Institute of Company Secretaries of India, Companies Act 2013, CCH Wolter Kluver Business, 2013
3. Lexis Nexis, Corporate Laws 2013 (Palmtop Edition)
4. Avtar Singh: Company Law
5. Dutta on Company Law
6. N.D. Kapoor on Company Law, Charles Wild, and Stuart Weinstein Smith and Keenan, Company Law, Pearson Longman, 2009
7. The Companies Acts from 1956 to 2014 as amended up to the date.
8. The New Company Law, Dr. N.V. Paranjape, Central Law Agency.

Reference Book

1. Smith and Keenan's, Company Law (2002)
2. Andrew Lidbetter, Company Investigations ad Public Law (1999)
3. Saleem Sheikh & William Rees, Corporate Governance & Corporate Control (2002).
4. Gower's Principles of Company Law 8thEdition 2008, R. Cambray & Co. Pvt. Ltd.
5. Smith and Keenan's Company Law.
6. S. K. Verma & Suman Gupta, Corporate Governance and Corporate Law Reform in India. (2005).
7. Companies Act, 1956
8. Suman Gupta: Shareholder's Democracy: Fact or Fiction. (1992)
9. Paul L. Davies, Gower and Davies Principles of Modern Company Law (8th ed., 2008)
10. Avtar Singh, Indian Company Law (2008), Eastern, Lucknow.
11. L.C.B. Gower, Principles of Modern Company Law (1997) Sweet and Maxwell, London
12. Ramaiya, Guide to the Companies Act, (2007), Wadha.

INTELLECTUAL PROPERTY LAW

COURSE OUTLINE

Objective: Intellectual property in the modern world is not confined only to the protection of intellectual creations or inventions. Rather now it has become a powerful tool of economic growth and prosperity by stimulating creative and innovative ideas, of generating revenue, promoting investment, enhancing literary, social and cultural values of mankind. It prevents 'brain-drain', and nurture over-all economic health. Every sphere of life is getting molded by intellectual properties. It has become an important component of business transactions. The developments in international telecommunications have increased its importance and put new challenges to the protection of intellectual property. With such an importance of IP, well-crafted IP courses require to be devised. The objective of the current draft is to impart knowledge the substantive intellectual property law and infuse with the skill of applying and construing the law to different factual situations. On theoretical level, students should be able to have the basic understanding of the IP. Subsequently they are required to engage in a critical discourse on the policy factors of each and every kind of intellectual property to become aware of their rights for the protection of their creations and inventions. Apart from the introductory levels, students should be increasingly exposed to international aspects of IP law. As a summary of the objectives are as follows:

1. To study the conceptualization of IPR
2. To focus on the investment, enhancing literary knowledge and cultural values of mankind.
3. To go through the substantive portion of IPR for the depth study.
4. To increase the international aspect of IPR

COURSE OUTCOMES

The students shall be able to;

1. Understand the international origin of IPR
2. Think over the Indian IPR law in relation to the International legal system.

3. Critically analyses the IPR law for protecting the intellectual property
4. Apply critically the principles of IPR laws for the protection creative activities.

Unit- I **Credit 6**

Introduction **(Hours 60)**

1. The meaning of Intellectual property
2. Competing rationales of the legal regimes for the protection of intellectual property
3. The main forms of intellectual property: copyright trademarks, patents, designs
4. Introduction to the leading international instruments concerning intellectual property rights:

a. The Berne Convention
b. The Paris Convention
c. Universal Copyright Convention
d. TRIPS Agreement
e. WCCT
f. WPPT

5. The role of the World Intellectual Property Rights Organisation (WIPO) and UNESCO in IP Protection.

Unit- II
Copy Rights Law

1. Historical evolution of copyrights law
2. Meaning of copyright; idea and expressions dichotomy
3. Subject matter of copyrights

a. Copyright in literary, dramatic, and musical works and artistic works
b. Copyright in sound records and cinematograph films
c. Copyright in computer programme
d. Copy right in data
e. Copy right in computer-created work and artificial intelligence

4. Rights protected by copyright
5. Moral Rights
6. Related rights
7. Acquisition, transfer &protection of Copyright
8. Limitations and exceptions to Rights
9. Notion of infringement
10. Criteria of infringement
11. Importation and infringement
12. Remedies, especially, the possibility of Anton pillar injunctive relief in India.

13. The Folklore: The cultural expressions meaning and justification for protestation through sui generis Community IP legislation

Unit- III
The Law of Intellectual Property: Patents

1. Historical view of the patents law in India
2. Patent defined
3. Criteria for patenting;

a. Invention
b. Inventive steps
c. Obviousness non
d. Patentable and non-patentable invention

4. Process of obtaining a patent: application, examination, prior publication or anticipation opposition and sealing of patents: general introduction
5. Procedure for filing patents under Patent co-operation treaty
6. Ground for pre-grant and post-grant opposition
7. Duration of patents: law and policy considerations
8. Compulsory licenses
9. Defences in suits for infringement
10. Traditional knowledge:Need and justification for community IP
11. Plant varieties and farmers rights: Criteria and procedure for protection

Unit- IV
Intellectual Property in Trademarks

1. The rationale of protection of trademarks
2. Definitions and concept of trademarks
3. Criteria for registration

a. Absolute grounds for refusal
b. Relative grounds for refusal
c. Procedure for Registration of Trade Marks

4. Process of International registration: the Madrid System
5. The doctrine of deceptive similarity
6. Protection of well-known marks
7. Domain name and its registration process
8. Passing off and infringement of trademarks and domain name
9. Remedies
10. Geographical Indications and Appellation of Origin
11. The Lisbon treaty and registration of the Appellation origin

Unit- V

Designs- The Designs Act, 2000

1. Definition of design - Copyright in Design (duration)
2. Need for protection of industrial designs
3. Subject matter of protection and requirements
4. Procedure for obtaining design protection
5. Process of International Registration of Industrial design:The Hague System
6. Registration of design for articles
7. Cancellation of Design
8. Infringement of copyright in Design
9. Remedies
10. Trade secret meaning and essetails

Recommended readings

- Cormish W.R., Intellectual Property, Patents, Trade Marks, Copy Rights and Allied Rights (1999),
- Asia Law House, Hyderabad.
- Vikas Vashishth, Law and Practice of Intellectual Property (1999), Bharat Law House, Delhi.
- P. Narayanan, Intellectual Property Law (1999), (ed) Eastern Law House, Calcutta.
- Bibeck Debroy (ed.) Intellectual Property Rights (1998) Rajiv Gandhi Foundation, Delhi.
- U.I.F. Anderfelt, International Patent Legislation and Developing Countries (1971).
- W.R. Cornish, Intellectual Property(3rd ed.) (1996) Sweet and Maxwell
- W.R. Mann, Transfer of Technology (1982)
- Mata Din, Law of Passing off and Infringement Action of Trade Marks (1986).
- P.S. Sangal and Kishore Singh, Indian Patent System and Paris Convention: Legal Perspectives(1987).
- K. Thairani, Copyright: The Indian Experience (1987)
- W.R. Cornish, Para and Materials on Intellectual Property (1999), Sweet &

PUBLIC INTERNATIONAL LAW

INTRODUCTION TO THE COURSE

Public international law concerns the structure and conduct of sovereign states; analogous entities, such as the Holy See; and intergovernmental organizations. To a lesser degree, international law also may affect multinational corporations and individuals, an impact increasingly evolving beyond domestic legal interpretation and enforcement. Public international law has increased in use and importance vastly over the twentieth century, due to the increase in global trade, environmental deterioration on a worldwide scale, awareness of human rights violations, rapid and vast increases in international transportation and a boom in global communications.

COURSE OBJECTIVE

This course has the following objectives

1. To provide the fundamental standing of international law
2. To study the law of treaty and the law of the sea
3. To learn the provisions of international relations among the nations
4. To examine the international provisions of state recognition

The objective of this course is to provide a basic understanding of the present scenario to the student so that they are able to understand the complete aspects of international relations among the nations.

COURSE OUTCOMES

The students shall be able to:

1. Understand the basic concept and sources of international law
2. Demonstrate knowledge and understanding of the international rights frame work, its origins and justifying theories
3. Establish the capacity to assess how specific human rights may be asserted, enforced or violated.
4. Critically evaluate the relationship between international and domestic law

COURSE OUTLINE

Unit- I Credit 6
INTRODUCTION (Hours 60)

1. Definition and nature and scope of Public International Law
2. Distinction between Public International Law and Private International Law
3. Subjects of International law
4. Sources of International Law
5. Relationship between international law and municipal law (Monism, Dualism, British, American and Indian Practice)

Unit- II
Law of Treaty and Law of Sea

1. Law of Sea:

a. Meaning of Treaty and kinds of Treaty
b. Important of consent in the treaty formation
c. Process of formation of Treaty
d. Interpretation of the Treaty
e. Reservation against a Treaty
f. Termination of the Treaty
g. Pacta sunt servenda. Rebus Sic Stantibus and Peremptory norms of International Law

2. Law of Sea:

a. Development of Law of Sea
b. Territorial Sea,
c. Contiguous Zone,
d. Continental Shelf,
e. Exclusive Economic Zone,
f. The High Seas
g. International Tribunal for the Law of the Sea
h. International Seabed Mining- Parallel System of Mining

Unit- III
State Jurisdiction, State Recognition and State Responsibility

1. State Recognition:

a. Meaning, kinds of the State Recognition
b. Recognition of the Government
c. Theories of Recognition,
d. Legal Effect of Recognition

e. Withdrawal of Recognition States Succession

2. State Jurisdiction; meaning kinds of jurisdiction and exceptions to it.

3. State Responsibility, Meaning kinds of state responsibility and general defences

Unit- IV
Air and Space Law

1. Air Space: Various Theories, Aerial Navigation (Five freedom of Air), Outer Space Treaty, 1967 and recent trends
2. International Humanitarian Law: Meaning, Development and brief introduction to the Four Geneva Conventions and its Optional Protocols
3. International Organizations; Meaning, Characteristics
4. United Nations: Origin and Development, Purpose and Principles Main Organs and their compositions and functions.

Unit- V
Individuals under international law

1. Nationality meaning, legal consequence and termination of nationality
2. Stateless Person and Refugee; Meaning and their rights and duties under international law
3. Extradition: Definition, purpose and principles of extradition
4. Asylum: Meaning, types of asylum, and relation between asylum and extradition
5. Diplomatic Agents and Consuls: definitional and classification of heads of mission, the basis of immunities and privileges, privileges and immunities, waiver of immunity, termination of the diplomatic mission.

Recommended Readings

1. "International Law" Gurdip Singh/Macmillan India Ltd.
2. **"**International Law" J.G. Starke
3. "Cases and materials in International Law" Harris
4. "Principles of International Law" Brownlie/ Universal Publication
5. "Principles of International Law" S.K Kapoor / CLA
6. "International Law" Charles G. Fenwick/Oxford University Press
7. "WTO and International Trade" M. B Rao and Manjula Guru
8. "Understanding International Trade Law" Simone Scnitzer/Universal Publishing House
9. "The Law and Policy of the World Trade Organization" Peter Van den Bossche/Werner Zdouc Paperback
10. "International Trade Law" Indira Carr/Cavendish Publishing House

ECONOMICS-V

(LAW AND ECONOMICS)

INTRODUCTION TO THE COURSE

This course utilizes the standard tools of economic analysis for the study of law and legal institutions, with a special focus on (i) the economics of property;(ii) the economics of contracts; (iii) the economics of tort law, and (iv) economics of law making. This course explains the economic aspects of law making. It describes the normative aspect of economics. It appraises legal rules to determine the extent to which they meet the social goal of efficiency, an application of welfare economics.

COURSE OBJECTIVE

This course has the following objectives

1. To examine the importance of Economics to law
2. To examine legal impediments to the field of Economics
3. To understand law acts as an instrument for economic policymaking
4. To understand the economic basis of the Law of Property, Law of Contract, Law of Torts, and Criminology.

COURSE OUTCOMES

The students shall be able to:

1. Understand the relationship between law and economics
2. Know the basic concept of law and economics
3. Analyses the economics in relation to property law, the law of Tort and other laws
4. Apply critical thinking in crime and punishment in regard to economics

COURSE OUTLINE

Unit- I **Credit 6**

Basic Concepts of Economics & Law **(Hours 60)**

a) Basic concepts of law – the common law & civil law tradition
b) Basic concepts of economics – Review of Price Theory
c) Concepts of Economic Efficiency – Pareto Optimum, Theory of Second Best
d) The theory of markets

e) Market failure -Externalities, Monopoly, Public goods & information
f) The Game Theory

Recommended Readings

Cooter and Ulen: chapter 2; A Review of Microeconomic theory

Cooter and Ulen: chapter 3; An Introduction to Law and Legal Economics

Kenneth Gillingham, James Sweeney: "Market Failure and the Structure of Externalities" ; 2010

Vani K. Borooah: "Market Failure:An Economic Analysis of its Causes and Consequences" ; 2003

Game Theory : the library of Economics & Liberty,www.econlib.org/library/Enc/GameTheory.html

Unit- II
Economic Analysis of Property Law

a) The Coase theorem
b) Bargaining Theory
c) The economic concept of property rights and their allocation: to lubricate or allocate
d) How are property rights established & verified
e) The Economic aspects of what can be privately owned
f) Intellectual property as public goods (Patents, copyrights, trademarks)
g) Remedies of violation of property rights

Recommended Readings

Cooter and Ulen: chapter 4 & 5: An Economic theory of Property

Gary North "The Coase theorem: A STUDY IN ECONOMIC EPISTEMOLOGY". 1992

Posner, Richard A. (2005) "Intellectual Property: The Law and Economics Approach".

Web Notes Cooter & Ulen

Matt Rognlie, "Understanding the Coase theorem" 2011, *mattrognlie.com/2011/05/04/understanding-the-coase-theorem/*

Christopher K. Eppich, *Patenting Dilemma: Drugs for Profit Versus Drugs for Health*, 43 Santa Clara L. Rev. 289 (2002).

Unit- III
Economics of Law of Contract

a) Bargain Theory – Introduction to Contract
b) Economic theory of Contract
c) Perfect Contracts and market Failures
d) Remedies as Incentives
e) Specific Performance
f) Models of Remedies

Recommended Readings

Cooter and Ulen: chapter 6 & 7: An Economic Theory of Contracts
Steven Shavell, "Economic Analysis of Contract law" ; the national bureau of Economic Research, 2003.

Unit- IV
Economics of Law of Torts

- Economics of torts: Calabresi's minimum social cost rule
- Drivers & pedestrians: *Caveat Emptor* or negligence or strict liability?
  1. Caveats: activity levels; extent of precaution, administrative costs, court errors. 2. The Learned Hand rule
- Product liability: privity to negligence to strict liability to absolute liability
- Consumer Product Injuries
- Extension of Economic Model in Law of torts

Recommended Readings

Cooter and Ulen: chapter 8 & 9: An Economic Theory of Tort Law
Winand Emons, "An Introduction to the Legal & Economic Theories of torts" 1993.
Richard A Posner, "Instrumental and Non-Instrumental Theories of Tort Law" 2013.

Unit- V
Economic Theory Crime and Punishment

a) Computing the value of a legal claim
b) Settlement Bargaining
c) Economics of Trials
d) Economic Aspects of Appeals
e) The theory of criminal law
f) The concept of Rational Crime
g) Optimal Amount of Crime Deterrence and of Efficient Punishment

h) Social Cost of Crime
i) The Deterrence effect of Imprisonment and capital punishment
j) The Economics of addictive drugs and crime

Recommended Readings

Cooter and Ulen: chapter 10: An Economic Theory of Legal Process

Richard A Posner, "An Economic Approach to Legal Procedure & Judicial Administration" ;*The Journal of Legal Studies* : Vol 2, 1973

Cooter, Robert (1991) "Economic Theories of Legal Liability." *Journal of EconomicPerspectives* 5(3).

Cooter and Ulen: chapter 11 & 12: An economics of Crime & Punishment

Gary S. Becker, "Crime and Punishment: An Economic Approach"; *National Bureau of Economic Research*, Vol 1, 1974.

M.A.Cohen, "Environmental Crime & Punishment: Legal / Economic Theory"

Farmer, Amy and Dek Terrell (2001) "Crime versus Justice: Is There a Trade-off?" *The Journal of Law and Economics,* Vol. XLIV

CURRICULUM AND SYLLABI

(7thSemester)

B.B.A.LL. B
(Integrated Law degree course)

SCHOOL OF LAW

RAFFLES UNIVERSITY

Japanese Zone, National Highway 48 Neemrana, Rajasthan 301020

www.rafflesuniversity.edu.in

HUMAN RIGHTS LAW AND PRACTICE

Prelude to the Course:
The objective of this subject is to lay the foundation of Human Rights law and acquaint the students with basic documents of human rights. The course caters to provide with all the basic connotations needed for the development of human rights jurisprudence in India.

Learning Objectives:
The course aims to:
- Provide an overview of the historical development of human rights.
- Explore the various documents on human rights.
- Enumerate the Indian perspectives on human rights.
- Evaluate the protection to vulnerable groups.
- Discuss the modern trends in human rights.

Learning Outcomes:
After completion of the course, the students will be able to:
1. Understand the meaning and historical development of human rights.
2. Classify relevant documents on human rights.
3. Interpret legal provisions on human rights under Indian laws.
4. Examine effective implementation of human rights of vulnerable groups.
5. Appraisal of contemporary issues on human rights

Unit – 1
Introduction to Human Rights Law

- Origin and Development of Human Rights
- Meaning of Human Rights
- Evolution of the Concept of Human Rights: First Generation, Second Generation and Third Generation

Unit – 2
Relevant Documents on Human Rights

- Universal Declaration of Human Rights (1948)
- International Covenant on Civil and Political Rights, 1966
- International Covenant Economic, Social and Cultural Rights, 1966

Unit – 3
Human Rights in India

- Indian Constitution and Human Rights
- Judicial activism & Protection of Human Rights in India
- The Protection of Human Rights Act, 1992

Unit – 4
Human Rights and Vulnerable Groups

- Rights of Women and Children
- Rights of Disabled, Tribal, Aged and Minorities

Unit –5
Contemporary Issues and Human Rights

- Human Rights and the Third Gender
- Human Rights of Homosexuals, Bisexuals and Lesbians
- War against Terrorism and Human Rights

Suggested Readings:

Sl. No.	Name of the Textbooks	Year of Publication
	TEXT BOOKS	
1.	Kapoor, S. K., *Human Rights*, Central Law Publications	2010
2.	Agarwal, H. O., *Public International Law& Human Rights*, Central Law Agency	2010
	REFERENCE BOOKS	
3.	Baxi, U., *Human Rights*, Allahabad Law Agency	2010

INTERPRETATION OF STATUTES AND PRINCIPLES OF LEGISLATION

OBJECTIVE:

Statutes are framed by the legislature with the help of legal experts in very clear and express terms and it is perceived that there would be no room for their interpretation. It is, however, found that the Courts are busy unfolding the meaning of the terms and provisions of the statutes. Therefore, the duty of the judges is to interpret the statutes, so that their provisions would become meaningful and devoid of lacunas. Generally, the statutes are designed to meet and solve the problems of society. Different statutes are passed by the legislature dealing with different aspects of society. Therefore, this paper aims to make the students understand how these statutes are interpreted by the Courts. This paper aims to provide the students with exposure to different rules of interpretation. The paper also offers an understanding of the principles of legislation in law-making.

TEACHING METHODOLOGY

As per the norms of the University for this Course, there will be 6 classes per week. Clinical and tutorial forms of learning should be followed. The teaching methodology will include Lectures-cum-discussion, Assignments, Projects and Presentations.

THE EVALUATION SCHEME

• Continuous Assessment- 40%
• Mid-Term- 20%
• End Term- 40%

COURSE OUTLINE

Unit – 1
Introduction

- Meaning of Interpretation
- Need for Interpretation
- Understanding Statutes: Its Commencement, Operation, Repeal and Revivaletc.

Unit – 2
Rules of Statutory Interpretation

- **Primary Rules:** Literal (Grammatical) Rule of Construction-Golden Rule of Construction-Mischief Rule (Heydon's Rule) of Construction-Harmonious Rule of Construction.
- **Secondary Rule:** Construction *Expositio*-Construction in *Bonam Partem- Noscitur a Sociis-Expressio Unius* Rule-*Ejusdem Generis* Rule-*Redendo Singula Singulis*

Unit – 3
Aides to Construction

- **Internal (Intrinsic) Aides**: Title, Preamble, Heading, Marginal Notes, Schedule, Interpretation Clauses, Illustration, Explanation and Proviso.

- **External (Extrinsic) Aides**: Historical Setting-History Parliamentary Legislation-International Convention-Reference to Legislation-Objects and Reason of the Act-Dictionaries-Text Books.

Unit – 4
Construction of Different Statutes

- Penal Statute
- Taxing Statute
- Constitution
  - Harmonious Construction
  - Pith and Substance
  - Eclipse
  - Severability
  - Colourable legislation

Unit – 5
Principles of Legislation and Presumption in Statutory Interpretation

- **Law Making:** Legislature, Executive and Judiciary-Process of Law Making-Relevancy of Each Steps-Draft-Bill-Act-Assent

- **Principle of Utility**: Presumption as to Validity and Territorial Operation-Presumption as toOperation of Statutes (Prospective & Retrospective)-Presumption Regarding Court's Jurisdiction

Suggested Readings

1. Amita Dhanda: N S Bindra's Interpretation of Statutes, LexisNexis India, Gurgaon.
2. Avtar Singh & Harpreet Kaur: Introduction to Interpretation of Statutes, LexisNexisIndia, Gurgaon.
3. Justice G P Singh (Revised by Justice A. K. Patnaik): Principles of Statutory Interpretation (Also including the General Clauses Act, 1897), LexisNexis India, Gurgaon.
4. P. St. J. Langan: Maxwell on the Interpretation of Statutes, LexisNexis India, Gurgaon.
5. N. S. Bindra: Interpretation of Statutes LexisNexis India, Gurgaon.
6. P. M. Bakshi: Statutory Interpretation of Statutes, Orient Publishing Company, Orient Publishing Company.
7. P. S. Narayan: Statutory Interpretation, Asia Law House, Asia Law House, Hyderabad.
8. M. P. Tandon: Interpretation of Statutes & Legislation, Allahabad Law Agency, Allahabad.
9. Bawa & Roy: Interpretation of Statues, Allahabad Law Agency, Allahabad.
10. A. B. Kafaltiya: Interpretation of Statues, Universal Law Publishing Co Pvt. Ltd., New Delhi

PRINCIPLES OF TAXATION LAW

INTRODUCTION OF THE COURSE

The course is designed to help students to understand the technicality of the Taxation system. The Indian tax system is well structured and has a three-tier federal structure. The tax structure consists of the central government, state governments, and local municipal bodies. When it comes to taxes, there are two types of taxes in India - Direct and Indirect tax.

OBJECTIVES OF THE COURSE

The basic objective of taxation is to raise resources for the State. It can be used to reduce inequalities, and accelerate economic development, as a tool to regulate consumption, imports, and exports, in addition to its basic objective of raising revenues.

TEACHING METHODOLOGY

A case-study method shall be the main method of learning to be followed. The dialectic method of mooting and argumentation plays a very convincing procedure in learning. The information sharing and flow of information among the teacher and teachers have to work as bonding of the entire course. Case comments and book reviews can also be a method of research writing in this paper.

COURSE OUTLINE

Unit-1

Introduction & General Perspective

A. Meaning of Tax

a. History of tax law in India
b. Fundamental principles relating to tax laws
c. Governmental financial policy, tax structure, and their role in the national
d. economy.
e. Concept of tax:
f. Nature and characteristics of taxes
g. Distinction between:
h. Tax and fee
i. Tax and cess
j. Direct and indirect taxes
k. Tax evasion and tax avoidance
l. Scope of taxing powers of Parliament, state Legislature, and local bodies.
m. Canons of Taxation by Adam Smith and Additional/Modern Canons
n. Important Definitions
   - Previous Year
   - Assessment Year
   - Income
   - Assess
   - Person
   - Company
   - Average Rate of Income Tax

- Business
- Capital Asset
- Total Income

B. Charge (Section 4)
C. Residential Status of Assesses
D. Scope of Total Income
E. Basic Concept of Total Deduction at Source (TDS)
F. Agricultural Income and Its Tax Treatment

UNIT-2

Income from Salaries

A. Meaning and Characteristics of Salary
B. Relationship of Employer and Employee
C. Incomes Forming Part of Salary (a. Basic Salary b. Fees, Commission and Bonus c. Taxable Value of Allowances d. Taxable Value of Perquisites e. Retirement Benefit)
D. Deductions from Gross Salary (Sections 16 and 80)

UNIT-3

Income from House Property

A. Basis of Charge (Section 22)
B. Applicability of Section 22 (Buildings or lands appurtenant thereto, Ownership of house property, Property used for own business or profession, Rental income of a dealer in house property, House property in a foreign country)
C. Deduction from Income from House Property

Unit-4

Income from Profit and Gains of Business or Profession

A. Concept of Profit and Gains
B. Scope of Section 28 (Basis of Charge)
C. Business, Profession, and Vocation
D. Different Deductions under This Head a. Schemes of Business Deductions b. Specific Deductions under this Act c. Deductions under sections 30 & 31

UNIT-5

Tax Avoidance, Tax Evasion, Tax Planning & Income Tax Authorities

A. Basic Concept of Tax Avoidance, Tax Evasion, and Tax Planning
B. Reason for Tax Avoidance, Tax Evasion
C. The distinction between Tax Avoidance and Tax Evasion
D. Recommendation of Wanchoo Committee to Fight Tax Evasion
E. Effect of Tax Avoidance and Tax Evasion
F. Hierarchy
G. Appointment
H. Powers: Search and Seizure- Section 132 a. Fulfillment of statutory Conditions b. Test of ‘Reason to believe

Prescribed Books:

1. Principles of Taxation Law 2019 By Thomson Reuters
2. Principles of Taxation & Tax Law-I - S.R Myneni 2017
3. Amar Law Publication's Principle of Taxation Law for LLB Paperback – 1 January 2017
4. Taxmann's Guide to Taxation Laws (Amendment) Act 2019 (2020 Edition) Paperback – 1 January 2019
5. V. K. Gupta's Income Tax Ready Reckoner AY 2020-21 and 2021-22 As Amended by Taxation Laws - Finance Act of 2020. - English Paperback. Paperback – 1 January 2020
6. Principles of Taxation Laws with Goods and Service Tax Act, 2017 (GST) by Prof. Ullas Kumar Saha | 1 January 2019
7. Principles of Taxation for Business and Investment Planning, 2014 Edition by Sally Jones and Shelley Rhoades-Catanach | 16 April 2013
8. Lectures on Law of Taxation (Income Tax and GST) by P.K. Singh | 1 January 2018
9. Principles of Taxation by V. Gaurishankar | 1 January 2007
10. Principles of International Taxation by Angharad Miller and Lynne Oats | 21 January 2015
11. A C Sampath Iyengar, The Law of Income Tax, Bharat Law House
12. Chaturvedi and Pithisaria's Income Tax Law
13. Girish Ahuja & Ravi Gupta, Direct Tax- Law and Practice
14. Girish Ahuja & Ravi Gupta, Direct Taxes Ready Reckoner (Bharat Publication)
15. Kanga, Palkhiwala and Vyas, The Law and Practice of Income Tax (Lexis Nexis Butterworths)
16. Vinod K Singhania and Kapil Singhania, Taxman's Direct Tax- Law and Practice.

Case Laws:

1. SC upholds linking of Aadhaar number with PAN: [Justice K.S. Puttaswamy (RETD.) v. Union of India [2018] 97 taxmann.com 585 (SC)]
2. Discounts offered by Flipkart.com to buyers aren't intangible assets: ITAT: [Flipkart India Private Limited v. ACIT [2018] 92 taxmann.com 387 (Bangalore - Trib.)]
3. A gift received by an individual from HUF isn't exempt: ITAT: [Gyanchand M. Bardia v. ITO [2018] 93 taxmann.com 144 (Ahmedabad - Trib.)]
4. Sec. 68 additions not tenable on grounds that relatives gave gift without any occasion: High Court: [Pendurthi Chandrasekhar v. DCIT [2018] 91 taxmann.com 229 (Hyderabad)]
5. MasterCard shall have a PE in India and its fees for processing card payments are taxable as business income: AAR: [MasterCard Asia Pacific Pte. Ltd., In re. [2018] 94 taxmann.com 195 (AAR - New Delhi)]
6. The market value of other business assets not relevant to determine FMV value of unlisted shares of a co.: [Minda S M Technocast (P.) Ltd. v. ACIT [2018] 92 taxmann.com 29 (Delhi - Trib.)]
7. Domain registration fee received by 'GoDaddy' is taxable as royalty: ITAT: [Godaddy.com LLC v. ACIT [2018] 92 taxmann.com 241 (Delhi - Trib.)]
8. HC upheld additions on basis of 'window-dressed' financials prepared for bank loans: [Binod Kumar Agarwala v. CIT [2018] 94 taxmann.com 422 (Calcutta)]
9. 'Sachin Tendulkar' entitled to vacancy allowance as he failed to find tenant for vacant flat: [Sachin R. Tendulkar v. DCIT [2018] 96 taxmann.com 253 (Mumbai - Trib.)]
10. Sum received on relinquishment of 'right to sue' is non-taxable capital receipt: ITAT: [Bhojison Infrastructure (P.) Ltd. v. ITO [2018] 99 taxmann.com 26 (Ahmedabad -

Trib.)]

11. AO should apprise counsel on all facts to avoid delays in disposal of cases: HC: [PCIT v. Grasim Industries Ltd [2018] 94 taxmann.com 81 (Bombay)]
12. Mushroom farming is an agricultural operation even if vertical space is used instead of horizontal space on soil: [DCIT v. Inventaa Industries (P.) Ltd. [2018] 95 taxmann.com 162 (Hyderabad - Trib.)]
13. Delhi HC directs I-T Dept. to allow filing of ITR without Aadhaar No.: [Shreyasen, & Anr. v. Union of India & ORS [2018] 95 taxmann.com 256 (Delhi)]
14. No capital gain tax on 'Power of Attorney' holder just because real owner didn't file ITR: ITAT: [Samir Trikambhai Patel v. ITO [2018] 96 taxmann.com 291 (Ahmedabad - Trib.)]
15. Brand promotion by 'Shilpa Shetty' not an international transaction in absence of prerequisite agreement: [Shilpa Shetty v. ACIT [2018] 96 taxmann.com 443 (Mumbai - Trib.)]
16. Compensation received by 'Jackie Shroff' for withdrawing criminal case was capital receipt and not taxable: [ACIT v. Jackie Shroff - [2018] 97 taxmann.com 277 (Mumbai - Trib.)]
17. Reopening of cases of Rahul Gandhi and Sonia Gandhi is valid as they failed to disclose shares allotted in excess of FMV: HC: [Sonia Gandhi v. ACIT [2018] 97 taxmann.com 150 (Delhi)]
18. ITAT grants stay of demand for non-deduction of tax by 'Uber' from payment made to drivers: [Uber India Systems (P.) Ltd. v. JCIT [2018] 98 taxmann.com 199 (Mumbai - Trib.)]
19. Excess share premium not taxable in hands of closely held co. if its shareholders are relatives: ITAT: [Vaani Estates (P.) Ltd. v. ITO [2018] 98 taxmann.com 92 (Chennai - Trib.)]
20. No concealment penalty if assessee has bonafide belief that notional income isn't taxable: ITAT: [DCIT v. Shah Rukh Khan [2018] 93 taxmann.com 320 (Mumbai - Trib.)]
21. Australia has taxing rights under Australia-India DTAA even if there is no provision in its domestic law: Australian Court: [Satyam Computer Services Ltd. (Now Tech Mahindra Limited) v. Commissioner of Taxation [2018] 98 taxmann.com 358 (FC-Australia)]
22. Madras HC quashes proceedings initiated under Black Money Act against Chidambaram family: [Srinidhi Karti Chidambaram v. PCIT [2018] 99 taxmann.com 181 (Madras)]
23. Sum received by Sushmita Sen as compensation for being sexually harassed not taxable: [Sushmita Sen v. ACIT [2018] 99 taxmann.com 252 (Mumbai - Trib.)]
24. Payment of advance salary to defeat the purpose of demonetisation won't come under the purview of Benami transaction: [G. Bahadur v. ACIT [2018] 100 taxmann.com 179 (PBPTA – AT)]
25. Priyanka Chopra shall pay tax on car gifted to her by 'Toyota' for brand promotion: Mumbai ITAT: [Priyanka Chopra v. DCIT [2018] 89 taxmann.com 286 (Mumbai - Trib.)]

CODE OF CIVIL PROCEDURE, 1908

INTRODUCTION TO THE COURSE

There was a stringent need for reinforcement of the rights especially when the country gained its independence. Unlike in the pre-independence era, every citizen of the country was made aware about his/her rights and this also awakened the need of thorough procedural laws to have your granted rights enforced.

The Code of Civil Procedure, 1908 ensures that other than the substantive laws, the courts which happen to be the guardian of these rights do understand and respect their duties of upholding the constitutional values. The 1908 Act, still existing without any further amendments, depicts the infallible pillars on which the foundation of our preliminary judicial bodies rests upon. How these courts function is again very objectively defined but the subordinate courts undoubtedly, plays an important role to uphold the virtues of a string democracy and an independent judiciary with illustrative powers and a comprehensive approach.

OBJECTIVE OF THE COURSE

The main objectives of the Course are

- To Analyses the significance of the Code of Civil Procedure and the Law of Limitation.
- To Familiarize the students with the key concepts and foundation of the Code of Civil Procedure;
- To Keep students abreast about the latest developments and changes in the field of Procedural Law.
- To understand the scope & Extent of the Applicability of the Code of Civil Procedures and rules thereof.
- To equip the students to develop the attitude of legal reasoning and research

TEACHING METHODOLOGY

As per the norms of the university in this course there will be 6 classes per week. Teaching methodology will include Lectures-cum-discussion, Assignments, Projects and Presentations.

THE EVALUATION SCHEME

- Continuous Assessment- 40%
- Mid-Term- 20%
- End Term- 40%

COURSE OUTLINE

Unit –1
INTRODUCTION

- History of the Code of Civil Procedure
- Amendments Objective behind the Code;
- Overview of the Code
- Definitions: decree, judgment, order, mesne profits, pleader, legal representative, judgment-debtor, decree-holder, foreign judgment

Unit – 2
JURISDICTION OF CIVIL COURTS

- Kinds of Jurisdiction covered under CPC1908
- Effects of Lack of Jurisdiction
- Transfer of Civil Suits (Section 22-25)
- Suits Expressly and Impliedly Barred- Section 9
- Res Sub Judice- Section 10
- Res Sub-Judicata- Section 11
- Bar to Further Suit- Section 12 R/w Order II, Rule 2

Unit – 3
FOREIGN JUDGMENT

- When Foreign Judgment not conclusive
- Presumption as to foreign judgments
- Enforcement (Section 13 and 14 R/w Section 44A)

Unit – 4
PARTIES TO SUIT

- Plaintiff, Defendant, Co-plaintiffs, Co-defendants
- Joinder of parties; consequences of joinder, non-joinder and mis-joinder of parties
- Representative suit
- Impalement and deletion of parties
- Recognized agents and pleaders

Unit –5
INSTITUTION OF A SUIT & APPEARANCE OF PARTIES

- Pleadings Generally
- Plaint: Particulars, Documents relied on in plaint,
- Return of Plaint, Rejection of Plaint
- Written Statement

- Set Off, Counter Claim
- Issue and Service of Summons
- Consequences of non-appearance of parties, non-appearance of plaintiff or defendant
- Disposal of suit at the first hearing
- Examination of Parties by the Court

Unit – 6

ADMISSION, DISCOVERY, INSPECTION & PRODUCTION OF DOCUMENTS

- Admissions & Effect of Admission
- Discovery by interrogatories
- Discovery by Documents
- Production of Documents
- Impounding and Return of Documents

Unit – 7

TRIAL

- Affidavits
- Summoning and Attendance of Witnesses
- Attendance of Witnesses confined or detained in prisons
- Hearing of suit and examination of witnesses
- Death, Marriage

Unit – 8

JUDGMENT AND DECREE

- Judgment and Decree
- Interests
- Costs
- Restitution
- Settlement of Disputes outside Court
- Execution of Decree
- Execution in general & courts that may execute decrees
- Application for execution & Stay of Execution
- Mode of Execution
- Arrest Detention & Attachment of Property
- Garnishee & Resistance to Delivery of Possession to Decree Holder or Purchaser

Unit –9

APPEAL REVIEW AND REVISION

- Appeals
- Review
- Revision

- Reference
- Caveat
- Inherent powers

Unit – 10

SPECIAL SUITS/PROCEEDINGS

- Suit By or Against Government
- Suit By or Against Minors or Persons of Unsound Mind
- Suit By or Against Indigent Persons
- Interpleader Suits
- Temporary Injunctions and Interlocutory Orders

READINGS:

Prescribed Statutes:(Bare Acts)

1. The Code of Civil Procedure,1908

Recommended Books

1.Takwani, C. K. and Thakke M.C
2. Prasad B.M, Mulla,
3. Jain M.P,
4. Mulla, The Key to Indian Practice
5. Jatindra Kumar Das
6. Sarkar's Law of Civil Procedure

Cases:

- A.R. Antulay V R.S. Nayak (1988)2 SCC 602 at P.650
- A.V. Papayya Sastry v. Govt. Of A.P., (2007) 4SCC221 at p.231: AIR2007SC15
- Abubakar Inamdar V Harun InamdarAIR1996SC112
- Abubakar Inamdar V Harun InamdarAIR1996SC112
- Administrator general of Bengal V Premlal Mallick ILR1895
- Aligarh Muslim University v. Vinay Engineering Enterprises Pvt.Ltd.,(1994)4SCC710
- Anand Enterprises V Syndicate Bank AIR1990 Kant175
- Bheru Lal V Shanti Lal 1985Raj.53
- Binayak Swain V Ramesh Chandra AIR1966SC948atP.950
- Charanlal VS. L.B.S.H.S.K SansthaAIR1976Pat293
- Citybank N.A V Hiten P. Dalal (2016) ISCC411
- Dabur India v. K.R. Industries (2008) 10 SCC 595
- Daryao V State of U. PAIR 1961
- Delhi Lottteries V Rajesh Aggarwal AIR1998Del.198
- Dr. Subramanian Swamy v. State of Tamil Nadu & Ors 2014 (1) SCALE 79

- GajananSheshendriPandharpurkarVShantabaiAIR1939Bom.374
- GhanshyamDasVDominionofIndia(1984)
- HiraSinghVSatya KumarSinghAIR2007Jhar34
- ICICILombard GICLtdVN.S.KBuilder2015(3)MWN
- UnitedBankofIndia VNareshKumarAIR 1997SC3
- Salem Advocates Bar Association vs. Union Of India, 2005, SC

HONOURS PAPER

(CONSTITUTIONAL LAW GROUP)

INDIAN FEDERALISM

COURSE OUTLINE

TEACHING METHODOLOGY

As per the norms of the University for this Course, there will be 6 classes per week. Clinical and tutorial form of learning should be followed. The teaching methodology will include Lectures-cum-discussion, Assignments, Court room exercises, Projects and Presentations.

THE EVALUATION SCHEME

• Continuous Assessment- 40%

• Mid-Term- 20%

• End Term- 40%

UNIT – 1
Federalism

- Definition and characteristics of federalism
- Backgrounds of federal principle under the Indian Constitution
- Advantage & Disadvantage
- Advantages and disadvantages of the Federal Constitution
- Advantages and disadvantages of Unitary Constitution

UNIT – 2
Modification of the strict federal principle under the Indian Constitution

- Governor's role
- Centre's powers over the State Emergency
- Jammu and Kashmir Special status

UNIT – 3
Comparative study on federalism in

- India
- U.K. and
- USA

UNIT – 4
Center-state Relations

- Legislative Relation
- Administrative Relation
- Financial Relation

UNIT – 5
Types of Federalism

- Confederation
- Co-operative Federalism

Recommended Readings:

M.P.Jain Indian Constitutional Law, Wadhwa

D.D. Basu, Comparative Federalism

Hamid Hussain, Indian Federalism Emerging Trends

LOCAL SELF-GOVERNMENT

Prelude to the Course:
The course aims to provide insight into the law governing local self-government in India. It given an insight into the development of self-governing institutions and their impact on the governance of Indian Federalism.

Learning Objectives:
The course aims to:
1. Give an insight into the development of self-governing institutions in India.
2. Provide the constitutional scheme of self-governance in India.
3. Enumerates the functions of various self-governing institutions in India.

Learning Outcomes:
After completion of the course, the students will be able to:
1. Discuss the development of Local Self Government in India.
2. Critically analyse the working of self-governing institutions in India.
3. Explore the recent trends in Local Self Government in India.

UNIT – 1
Introduction

- Meaning and Genesis of Democratic Decentralization
- History, Growth and Development of Panchayati Raj in India- Lord Rippon's Resolution, Royal Commission, Balwant Rai Mehta Committee Report, Ashok Mehta Committee Report
- 73rd& 74th Amendment
- Gram Swaraj: Gandhian Concept
- Community Development Programme
- Administrative Framework

UNIT – 2
Constitutional Scheme

- Federalism in India and Local Self Government
- Directive Principles of State Policy - Art. 40
- Schedules XI and XII of the Constitution
- Second Administrative Reforms Commission
- Sarkaria Commission, Punchi Commission and Local Governments

UNIT –3
Gram Sabha

- Gram Sabha: Meaning, importance, functions, meetings, Social Audit, Nyaya Panchayat
- Gram Panchayat: Introduction, Composition, functions, Sarpanch, Powers and functions of Sarpanch

- Taluk/Block Panchayat: Introduction, Composition, Functions, Chairman: Powers and Functions
- Zilla Panchayat-Introduction, Composition, Functions
- Financial Administration: Devolution of Financial Powers, Composition of State Finance Commission
- State Control over PRIs

Unit – 4
Urban Government

- Municipal Corporation: Organization and functions; Municipal Council; Mayor: Functions and Powers; committee-wards committees, district planning committee, Metropolitan planning Committee; Municipal Commissioner- appointment, tenure, powers and functions
- Cantonment Boards
- Special Purpose Urban Development Agencies
- Municipal Finance
- State Control and Supervision

Unit – 5
Modern Dimensions

- Planning for Rural Development: Planning machinery at the National and State Levels
- Role of Panchayat Raj Institutions in Planning
- Panchayati Raj and Rural Development
- Panchayats and NGO's
- Panchayati Raj in Tribal Sub-plan Areas
- Right to Information and Panchayati Raj
- Women Empowerment and Panchayati Raj Institutions
- Reservation and Local Governments
- Finance Commission & Issues in Local Finance

Sl. No.	Name of the Textbooks	Year of Publication
1.	Myeni, S. R. *Local Self Government*, Allahabad Law Agency	2019
2.	Sharma, M.P. *Local Self Government in India*, M. M. Publishers	2019
3.	Smith, J. *Local Self Government & Centralization*, J Chapman	2015

CRIMINAL LAW GROUP

CRIMINOLOGY

INTRODUCTION TO THE COURSE

The classical theorists believe in the concept of free will when explaining crime. If the rewards for being a criminal are greater than the retribution it would bring then criminal behaviour seems more likely. This theory would predict that extreme punishments such as flogging or death would deter people from all crimes.

Cesare Beccaria in the 18th century successfully argued that the punishment should fit the crime. Excessive punishments could be counterproductive as a criminal would reason that if they were to be hung for stealing a sheep they might as well commit more serious offences such as murder and robbery. Jeremy Bentham, the British philosopher of the early eighteenth century, justified punishment in terms of its being able to prevent further crime rather than encouraging it. Why would Bentham, if he were alive today, argue that the Bulger killers should not go to an adult prison?

Classical theory was prominent in the late 18th and 19th Centuries but positivist theories then became popular instead. Since the 1970s there has been a resurgence of interest in the classical theory of crime, with many people calling for harsher punishments.

Positivist theories have been criticised for failing to discover the causes of crime and to develop effective strategies for controlling crime. Positivist theories discount the role of free will; instead it takes into account factors such as genetic transmission, personality, learning and moral development. The sociological perspective is also taken into account. Emphasis is placed on anomie (a lack of moral standards in society) and strain resulting from poverty imposed by a rigid class structure. Strategies to reduce crime would involve treatment at an individual level or intervention at a social level.

THE FREUDIAN APPROACH:

The central concept of psychoanalysis, and the one that Freud first put forth, is the unconscious. The concept had been around before Freud, but he was the one that made the most out of it, arguing that traumatic experiences in early childhood left their mark on the individual despite the fact that the individual was not aware of these experiences. The idea of unconscious determination of behavior flew headfirst against the idea of free will, and was quickly jumped on by positivistic criminology.

The next most important idea is conflict, and Freud postulated the existence of a three-part personality (an idea going back to Plato) consisting of id, ego, and superego which operated in constant conflict with one another (primarily between the id and superego) producing the basic problem of guilt which required the use of one or more defense mechanisms. The idea of personality conflict as a cause of crime became quite popular among both scientists and the general public.

This course provides an overview of how and why societies punish wrongdoers, and how punishments vary with historical contexts. First, we examine social theories of punishment,

reading and interpreting original philosophical texts about why and how governments and societies punish wrongdoers generally. Second, we examine criminological theories of punishment, evaluating justifications for the punishment of individual wrongdoers. Students analyze a variety of sources, including historical, philosophical and criminological accounts of punishment. We will use theories of punishment to interpret recent legal decisions and debate current punishment policies.

OBJECTIVE OF THE COURSE

In sum, the course objectives are for students to be able to:

- Explain the basic social and individual justifications for punishment
- Understand the relationship between theories of punishment and historical context
- Analyze and evaluate the relevance of theories of punishment to current penal policy

TEACHING METHODOLOGY

As per the norms of the university in this course there will be 6 classes per week. Teaching methodology will include Lectures-cum-discussion, Assignments, Projects and Presentations.

COURSE OUTLINE

Unit –1
General principles on criminal law

- Nature, Definition and elements of crime
- General Principles of Criminal Liability

Unit – 2
Criminological Theories

- Pre classical, Classical, Neo-classical Thoughts Currents
- Positive Theories
- Psychological Theories
- Sociological Theories
- Radical Theories
- Sociological theory of crime

Unit – 3
Crime and Justice

- Restorative Justice
- Theories of Punishment
- Victimology

- Plea Bargaining
- Sentencing Policy in India
- Prison Reforms
- Alternatives to Punishment

Unit – 4
Crime against vulnerable groups

- Domestic Violence
- Juvenile Justice

Unit –5
Socio-Economic Crimes: Origin and Development

- White Collar Crimes
- Socio- economic Crimes: Origin and Development
- Socio-Economic Laws in India:
- Narcotic Drugs and Psychotropic Substances Act, 1985
- Prevention of Corruption Act, 1988

Unit – 6
Organized Crime

- Definition
- Main characteristics
- Anti-terrorism laws

Suggested Readings*

BOOKS

1. Andrew Ashworth, Principles of Criminal Law (2009).
2. Baker Denis J., Glanville Williams, Text Book of Criminal Law (2012).
3. Jerome Hall, General Principles of Criminal Law (1960).
4. K.N.C. Pillai, General Principles of Criminal Law (2005).
5. R.C. Nigam, I Law of Crimes in India (1965).
6. Smith & Hogan's Criminal Law (2011)
7. V.B. Raju, Commentary on Indian Penal Code, 1860 (1982).
8. N.V. Paranjape, Criminology and Penology (2010).

PENOLOGY & VICTIMOLOGY

Prelude to the Course:
The course aims to provide an overview about the various forms of punishment and the sanctioning mechanisms across cultures. The course also projects on the development of Victimological jurisprudence in various jurisdictions as well.

Learning Objectives:
The course aims to:

- Give an overview of the concept and rationale behind punishment.
- Conceptualize capital punishment and its nuances across countries.
- Enumerate sentencing and discuss the need for sentencing guidelines.
- Enunciate the Victimological jurisprudence and its need in India.
- Discuss the treatment to the victims of crime.

Leaning Outcomes:
After completion of the course, the students will be able to:

- Understand the objectives and rationale of punishment.
- Discuss law and efficacy of capital punishment in Indian context.
- Interpret the sentencing policies of India, U.K. and U.S.A.
- Examine the typologies and theories of victimization.
- Evaluate the procedure for the proper treatment to victims.

Unit – I
Introduction to Penology

- Meaning, Definition and Objectives of Penology
- Punishment – Meaning, Objectives and Rationale
- Theories and Kinds of Punishment under the Indian Penal Code, 1860
- Corporeal & Other forms of Punishment
- Law relating to Probation, Parole and Furlough

Unit – II
Capital Punishment

- Conceptualising Capital Punishment
- Effect of Death Penalty: Deterrent and Retributive
- Death Penalty across Cultures – U.S., U.K. and India
- Arguments For & Against Capital Punishment
- Safeguards against Miscarriage of Justice
- Aggravating & Mitigating Circumstances
- Postulates of the Rarest of Rare Doctrine

Unit – III
Sentencing Policy

- Meaning of Sentences and Sentencing
- Factors to be considered while awarding any sentence
- Comparative Analysis of the Sentencing Policies of U.S. and India

Unit – IV
Victimology

- Conceptualising Victimology – Meaning and Theories of Victimology
- Meaning and Types of Victims and Impact of Victimization
- Victim Offender Relationship
- Concept of Restorative Justice
- International Perspectives of Victim's Rights: United Nations Declaration of Basic Principles of Justice for Victims of Crime and Abuse of Power, 1985

Unit – V
Treatment to Victims

- Specific Victimization: Children, Women, Prisoners, SC/ST**,** Restitution, Compensation and Assistance to Victims in U.S.A, U.K. and India
- Victim's Right to Compensation under the Indian Criminal Justice System
- Victim Welfare Schemes and Programmes

Suggested Readings:

Sl. No.	Name of the Textbooks	Year of Publication
	TEXT BOOKS	
1.	Sutherland, E. H., *Criminology*, Eastern Book Company	2009
2.	Siddique, A., *Criminology and Penology*, Allahabad Law Agency	2009
	REFERENCE BOOKS	
3.	Maguire & Morgan, *Crime, Criminology & Criminal Justice Administration*, Oxford University Press	2009
4.	Sverdlik, S. *Punishment and Reform*	2011

INTELLECTUAL PROPERTY RIGHTS GROUP

COPYRIGHTS AND TRADITIONAL CULTURAL EXPRESSION

Course Objectives

The objectives of the course are to;

1. Develop proper understanding of the student with the basic concept of Copyrights, related rights and traditional Cultural Expressions.
2. Make aware with the international and national treaties and laws dealing with them.
3. Develop critical understanding of the subject matters.
4. Make them understand when infringement takes place and what is remedies and defenses available in case of infringement.

COURSE OUTLINE

Unit – 1
Copyright: Introduction:

1. Historical evolution of the law
2. Meaning of copyright
3. Subject Matter of Copyright
4. International Conventions and Treaties dealing with Copy rights and related rights
5. Historical development of copyright law in India

Unit – 2
Scope, Authorship and Ownership etc. of Copyright

1. Literary, dramatic and musical works
2. Sound records and cinematograph films
3. Copyright in digital Environment
4. Authorship and ownership
5. Exceptions and limitations
6. Assignment of copyright
7. Transfer and Duration of copyright

Unit – 3
Neighbouring rights, Copyright Management

1. Subject Matters of the rights
2. Duration
3. Exceptions and limitations
4. Copyright Management Society

Unit – 4
Infringement, remedies and defenses

1. Criteria of infringement
2. Importation and infringement
3. Remedies- injunctive relief in India.
4. Defenses in case of infringement

Unit – 5
Traditional Cultural Expressions (TCEs) or Expressions of Folklore

1. Meaning and its characteristics
2. Challenges in its protection through classical intellectual property laws
3. Historical development for protection of TCEs
4. Options for protection of TCEs
5. Reasons for Sui generis protection of TCEs
6. WIPO/ UNESCO model law on sui generis protection of TCEs

LAW OF TRADEMARKS AND GEOGRAPHICAL INDICATIONS

Course Objectives-

The objectives of the course are to;

1. Develop a proper understanding of the student with the basic concept of Trade Marks and Geographical Indications
2. Make aware of the international and national treaties and laws dealing with them.
3. Develop a critical understanding of the subject matter.
4. Make students understand when infringement takes place and what are remedies and defenses available in case of infringement.

COURSE OUTLINE

Unit – 1

Meaning, kinds and evolution of Trademarks Law

1. Historical evolution of Trademarks law
2. International treaties and convention dealing with Trademarks law
3. Basis and need for protection of the Trademarks
4. Meaning and essential characteristics of a of Trademarks
5. Well known Trademarks, Collective Marks, Certifications Mark, Property marks and Associated Marks
6. Distinctions between Trademarks and Doman name

Unit – 2

Conditions for Registration and procedure for registration of Trademarks

1. Criteria for registration
2. Absolute grounds for refusal for registration of a trade marks
3. Relative grounds for refusal of registration of a trademarks
4. Procedure for registration
5. Duration and renewal
6. International Registration of trademarks under Madrid protocol

Unit – 3

Effect of Registration of a Trademarks and Infringement and Remedies

1. Effects of Registration of a Trademarks
2. Infringement of trademark
3. Passing off remedy

Unit – 4

Geographical Indications; Meaning and Historical Evolution of law

1. Historical evolution of GIs protection law at international level
2. Need for protection
3. Meaning and Characteristic

4. GIs and Appellate of Origin

Unit – 5

Conditions, procedure, and effect of registration of GIs

1. Main features of The Geographical Indication of Goods Act,1999
2. Conditions for registrations of GIs
3. Procedure for registration of GIs
4. Effect of registration of a GIs
5. Infringements of GIs and remedy of passing off

Text Books and Reference Material

1. KC Kailasam and Ramu Vedaraman, Law of Trademarks including International Registration under Madrid Protocol and Geographical Indications, Lexis Nexis,2013.
2. Latha R Nair & Rajendra Kumar, Geographical Indications: A Search for Identity,Lexis Nexis, 2005
3. Office of the Controller General of Patents, Designs & Trade (CGPDTM) : Revised Draft Manual of Trademarks Practice and Procedure
4. https://www.icsi.edu/media/webmodules/publications/9.4%20Intellectual%20Property%20Rights.pdf

CORPORATE LAW GROUP

CORPORATE GOVERNANCE

Course Objectives/Course Description

Corporate governance is the set of processes, customs, policies, laws and institutions affecting the way a corporation is directed or controlled. Emergence of corporate social responsibility affecting all the stakeholders seeks to make corporations socially responsible. The course aims at providing basic idea about corporate governance and its implications on society and legal system.

Learning Outcome

By the end of the course, the students would have an understanding of Corporate Governance from a managerial as well as legal point of view. They will learn the importance of good governance which is an important tool to achieve shareholder democracy. Finally, the students will be able to understand the importance of the responsibilities of a corporation towards society.

Unit – 1
INTRODUCTION TO CORPORATE GOVERNANCE

- Meaning, need, Origin, History and objectives of corporate governance
- Importance of corporate governance
- Principles of Corporate Governance
- Globalization and Corporate Governance
- Reports of the various Committees on Corporate Governance-
  - Corporate governance in India: Reforming BOD-Birla Committee- Naresh Chandra Committee- Narayana Murthy Committee- Audit Committee-Corporate Governance Code.
  - Comparing the recommendations of various committees
  - Criticisms on the recommendation of committees
- Does corporate governance really matter?
- Protection of minority shareholder
- Theory of Corporate Governance with Stakeholder theory
- Shareholder Democracy as per New Companies Act,2013
- Corporate Governance in family business
- Corporate governance in state-owned business- the MOU System

Unit – 2
CORPORATE GOVERNANCE MECHANISM

- The procedural aspects of Corporate Governance- Clause 49 of Listing Agreement
- Reason behind shareholder being the real owner and the voting rights

- Various facets of agency problem
- Study on the Sarbanes- Oxley Act
- Corporate governance and the Indian banking system
- **Corporate Ethics:** Concept and Importance, benefits of corporate ethics, corporate philosophy and culture, managing ethics and legal compliance –case analysis.
- **The Legal and regulatory Setting:** Company Law, SEBI Regulations, FEMA – Banking and Capital Market Regulations, Takeover Code and Corporate Governance Issues. Tools for ensuring Corporate Governance: Cost Audit Methodology and Corporate Governance, Statutory Audit for Governance, An introduction to e-governance and XBRL.

Unit – 3
BOARD OF DIRECTORS

- Director as agents of a company- legal provisions-comparison with the new Act, 2013- increased responsibilities
- Kinds of directors
- Concept of independence in corporations and independent directors
- Non-executive directors
- Relevance of risk management by directors and the extent of its effectiveness
- Role of directors- comparison with other countries
- Corporate criminal liability (Analysis of various Scams)
- Analysis of Whistle Blower Policy of various companies in contemporary society- the success stories and the failures
- The need for transparency in the affairs of the company and its limitations.
- Corporate Governance Practices/Codes in India
- Clause 49 of the Listing Agreement

Unit – 4
AUDITORS AND OTHER DISCLOSURES

- Importance of an Audit Committee
- Accountability and responsibility of the authorities
- Legal Framework Under Companies Act, 2013
- Ethics and Values for an Auditor
- Role of an auditor in strengthening the business of a company
- The Companies (Auditor's Report) Order, 2015, Ministry of Corporate Affairs
- Analysis of Satyam Scam: An Eye-opener
- Need for transparency in the affairs of a company

Unit – 5
CORPORATE SOCIAL RESPONSIBILITY

- Need and New Developments.
- Strategies to create Business and Social Values

- Innovative ideas under New Companies Act, 2013.
- CSR to CNR (Corporate Nature Responsibility)
- Recent relief Activities by corporations in the aftermath of Hud Hud cyclone, Nepal Earthquake,etc
- Analysis of CSR reports of random popular corporations.
- CSR is criticized as a distraction from the objectives of a corporation
- Achievement of Good governance by way of providing training to the employees-limitations
- The possibility of the effective implementation of the new improved and innovative tools for corporate democracy in Indian society.
- Corporate crimes-company and society relations corporate social challenges-corporate accountability –business and ecology-cases analysis.
- Whistle-blowingng policy

Note: 1. Corporate Governance and post Enron scam- Worldtel, Enron, Arthur Enderson etc.
2.Corporate Governance and scam from the Indian perspective- Harsed Mehta, Satyam, Fiasco etc.

Text Books and Reference Books:

1. Richard Smerdon, A Practical Guide to Corporate Governance, Sweet & Maxwell
2. N.BalaSubramaniam, Corporate Governance, and Stewardship- Emerging Role and Responsibilities of Corporate Boards and Directors, 2010, Tata Mc Graw Hill Education Pvt Ltd
3. Sami Parthasarathy, Corporate Governance, Principles, Mechanisms, and Practice
4. Mark Cardale, A Practical Guide to Corporate Governance, 5th edn 2014, Sweet & Maxwell, Thomson Reuters UK Ltd
5. Dr. N.V.Paranjape, Company Law, 5th edn 2012, Central Law Agency, Allahabad
6. Dimple Grover, Amulya Khurana, Ravi Shankar, the Regulatory Norms of Corporate Governance in India.
7. Sadhalaxmi Vivek Rao, Legal Framework and corporate Governance: An Analysis of Indian Governance System
8. Ministry of Corporate Affairs, Voluntary Guidelines on Corporate Governance, 2009
9. Sanjay Anand, Essentials of Corporate Governance
10. Kevin Keasey, Steve Thompson, Michael Wright, Corporate Governance, Accountability, Enterprise and International Comparisions
11. The Institute of Directors, Hanbook of International Corporate Governance
12. Christine Mallin, International Corporate Governance- A case Study approach
13. Frederick Lipman & Keith Lipman, Corporate Governance Best Practices, Strategies for Public, Private and NGOs.
14. Frank B. And Robert A., Law and corporate governance, Elgar financial law series
15. Edited by Alberto Chong, Florencio Silanes, Investor protection and corporate governance, Stanford University Press.
16. Jayati Sarkar, Subrata Sarkar, Corporate governance in India, Sage Publications.

Essential Reading / Recommended Reading

1. Renu Jatanas, Crowther, David, Corporate Socusl Responsibility, Deep and Deep Publication, Delhi, 2007
2. Chatterji, Mdhumita, Corporate Social Responsibility, Oxford Publications, Delhi, 2011
3. Sehgal, B.P.Singh, Emerging Trends in Corporate Governance: Legal Issues and Chanllenges in India, Satyam Law International, New Delhi, 2015

LAW OF CORPORATE FINANCE

INTRODUCTION

Corporate Finance is concerned with the financing and investment decisions made by the management of companies in pursuit of corporate goals. This subject is concerned to the study of how the companies actually make financing and investment decisions, and it's is often the case that theory and practice disagree. In Corporate Finance, the fundamental goal is usually taken to be to increase the wealth of shareholders. Corporate finance gives an understanding of the reasons why shareholder wealth maximization is the primary financial objective of a company, rather than other objectives a company may consider.

OBJECT:

The object of Corporate Finance is the acquisition and allocation of corporate funds or resources with maximizing shareholders' wealth. In the financial management of a corporation, funds are generated from various sources and allocated or invested for desired assets. The primary function of corporate finance is resource acquisition, which refers to the generation of funds from both internal and external sources at the lowest possible cost to the corporation. There are two main categories of resources equity (shares) and liability (borrowings). The equities are proceeds from the sale of stock, returns from investments, and retained earnings. Liabilities include bank loans or other debts, accounts payable, product warranties, and other types of commitments from which an entity derives value. The second function of corporate finance is resource allocation and investment of funds with the intent of increasing shareholders' wealth over a period of time. There are two basic categories investments are current assets and fixed assets. Current assets include cash, inventory and accounts receivable. The fixed assets are buildings, real estate and machinery. In addition, the resource allocation function is concerned with intangible assets such as goodwill, patents and brand names.

TEACHING AND LEARNING METHOD

The teaching in this course is done by way of lectures, seminars and tutorial sessions. The lecture series is devoted to the examination of the relevant statutory and case law framework and to the discussion of basic legal concepts of mergers and acquisitions in India. The course will incorporate with an understanding of the meaning of merger and its practices and procedures in the corporate world. Participation in class discussion is the primary mode of teaching/learning.

Unit – I
Introduction

- Meaning, Importance, and Scope of Corporate Finance.
- Capital Needs.
    - Working Capital, Securities, Borrowings, Debentures
- Objectives of Corporate Finance

- Profit Maximization and Wealth Maximization

- Constitutional Perspective - The Entries 37, 38, 43, 44, 45, 46, 47, 52, 82, 85, and 86 of List 1 - Union List; Entry 24 of List 11 - State List.

Unit – II
Equity and Debt Finance

- Prospectus - Information Disclosure
- Share Capital -Issue, Allotment, Shares without Monetary Consideration, Non-Opting Equity Shares, and EPOS
- Debentures -Nature, Issue and Classification of Debenture and Debenture Bond
- Deposits and Acceptance
- Creation of Charges, Fixed and Floating Charges, and Mortgages
- Classification of Company Securities
- Inter-corporate Loans
- Role of Court to Protect Interests of Creditors and Shareholders, Class Action Suits, Derivative Actions

Unit – III
Conservation of Corporate Finance and Corporate Fund Raising

- Regulation by Disclosure
- Control on Payment of Dividends
- Managerial Remuneration
- Protection of Creditors, Investors and its Need
- Preference in Payment
- Right of Individual Share Holder, Corporate Membership and Qualified Members
- Depositories - IDR (Indian Depository Receipts), ADR (American Depository Receipts), GDR (Global Depository Receipts)

Unit – IV
Administrative Regulation on Corporate Finance

- Inspection of Accounts
- Central Government Control
- Control by Registrar of Companies
- RBI Control
- Statutory Control:
  - The SEBI Act, 1992
  - The Security Contract (Regulation) Act, 1956
  - The Depositories Act, 1996
  - The Securitisation and Reconstruction of Financial Assets and Enforcement of Security Interest Act, 2002
  - The Prevention of Money Laundering Act, 2002
  - The Foreign Trade (Development & Regulation) Act, 1992

- Control & Regulation of Foreign Companies in India: Specific reference to foreign collaborations, joint ventures & foreign direct investment

Unit – V
Corporate Fund Raising from Outside India

- Automatic Route of Investment
- Foreign Investment Facilitation Portal
- Angel Investment
- Venture Capital
- Private Equity
- Hedge Funds
- Compliances
    - RBI/FEMA – FEMA 20 and FEMA 24 (Amended)
    - SEBI – SEBI (Alternative Investment Fund) Regulation, 2012

Suggested readings

1. Alastair Hundson:The Law on Financial Derivatives (1998), Sweet & Maxwell.
2. Ell's Ferran, Company Law and Corporate Finance (1999), Oxford.
3. Jonathan Charkham: Fair Shares: The Future of Shareholder Power and Responsibility (1999), Oxford.
4. Ramaiya A.: Guide to the Companies Act (1998), Vol. I, II and III.
5. H.A.J. Ford and A.P. Austen: Ford's Principle of Corporations Law (1999) Butterworths.
6. J.H. Farrar and B.M. Hanniyan: Farrar's Company Law (1998) Butterworths.
7. Austen, R.P.: The Law of Public Company Finance (1986) LBC.
8. R.M. Goode: Legal Problems of Credit and Security (1988) Sweet and Maxwell.
9. Altman and Subrahmanyan: Recent Advances in Corporate Finance (1985) LBC.
10. Gilbert Harold: Corporation Finance (2nd rev. ed. 1956).
11. Henry E.Hoagland: Corporation Finance (3rd ed. 1947) Maryin M. Kristein: Corporate Finance (2nd ed. 1975) R.C. Osbom: Corporation Finance (1959).
12. S.C. Kuchhal: Corporation Finance: Principles and Problems (6th ed. 1966).
13. V.G. Kulkarni: Corporate Finance (1961).
14. V.D. Kulshreshta: Government Regulation of Financial Management of Private Corporate Sector in India (1986).
15. Journals – Journal of Indian Law Institute, Journal of Business Law, Chartered Secretary, Company Law Journal, Law and Contemporary Problems.
16. Statutory Materials – Companies Act and Law relating SEBI, Depositories, Industrial Financing and Information Technology.

Note: Student is expected to collect latest information from journals and e-sources.

CURRICULUM & SYLLABI

LL.M.
(One-year Program)

Revised (2022-23)

(COMPULSORY PAPER)

SCHOOL OF LAW

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SECTION 1

Programme Educational Objectives, Programme Specific Outcomes, and Programme Outcomes

PROGRAMME EDUCATIONAL OBJECTIVES (PEOS)

The School of law, Raffles University faculty members have formulated the **Programme Educational Objectives** (PEOs). The PEOs are **broad statements** that describe the career and professional accomplishments that the program is preparing its graduates to achieve in a few years after receiving the degree. The PEOs of the Master of Laws (LL.M.) program are as follows:

- **PEO 1:** RU LL.M. post-graduates will be able to demonstrate critical thinking in their chosen area of specialization leading to a successful career.
- **PEO 2:** RU LL.M. post-graduates will be able to develop their research skills and progress towards pursuing Doctoral studies.
- **PEO 3:** RU LL.M. post-graduates will be active members ready to serve society through their teaching skills.
- **PEO 4:** RU LL.M. post-graduates will be equipped with enhanced legal insights that will lend them a cutting edge over ordinary law graduates in the judicial profession.
- **PEO 5:** RU LL.M. post-graduates will have leadership skills with a high level of integrity and also have the ability to function professionally with ethical responsibility as an individual as well as in a multidisciplinary team with a positive attitude.

PROGRAM-SPECIFIC OUTCOMES (PSOS)

The **Programme Specific Outcomes (PSOs)** are specific statements that describe what graduates are expected to learn and be able to perform in a specialized area of discipline, upon graduation from a program. The PSOs of the Master of Laws (LL.M.) program are as follows:

- **PSO 1:** RU LL.M. post-graduates will be prepared to offer specialized expertise in the field of corporate law; benefitting the corporations at large and contributing to the growth of the business sector as a whole.
- **PSO 2:** RU LL.M. post-graduates will be able to appreciate the significance of traditional legal areas, like Constitutional Law and Criminal Law, in society, and demonstrate their research capabilities in contributing towards the growth of these broader disciplines of law.
- **PSO 3:** RU LL.M. post-graduates will be inculcated traits of critical thinking required for an expert in international law, and to use their analytical skills while undertaking any research in the legal field.

PROGRAM OUTCOMES (POS)

Program Outcomes (POs) are **attributes of the graduates** of the program that are indicative of

the graduate's ability and competence to work as a legal professional upon graduation. Program Outcomes are statements that describe what students are expected to know or be able to do by the time of graduation.

They must relate to the knowledge and skills that the students acquire from the program. The achievement of all outcomes indicates that the student is well prepared to achieve the program's educational objectives down the road. The following 10 POs have been chosen by the School the law of Raffles University. The curriculum of LL.M. at RU has been designed to fully meet all the 10 Programme Outcomes:

- **PO 1:** Conduct independent research on diverse legal topics and questions using knowledge of primary as well as secondary data. (*Legal Knowledge*)
- **PO 2:** Develop and demonstrate analytical skills to interpret various judgments of domestic and international courts of law and different provisions of law, and re-interpret the opinions and submissions of learned jurists and academicians. (*Analytical Skills*)
- **PO 3:** Demonstrate an understanding of substantive and/or procedural aspects of their chosen area of specialization, and offer solutions based on such understanding. (*Problem Solving*)
- **PO 4:** Independently write research articles and undertake research studies on different topics. (*Research Skills*)
- **PO 5:** Develop a sense of social responsibility and commitment, and work on various socio-legal issues. (*Social Responsibility*)
- **PO 6:** Establish as a competent professional in a highly competitive world with cutting-edge legal education tools. (*Competitive Skills*)
- **PO 7:** Apply the diverse knowledge to prepare for a higher research degree with clarity of purpose (*Higher Education*).
- **PO 8:** Ability to translate ideas into words, and words into practical solutions, which is reflective of their critical thinking (*Critical Thinking*).
- **PO 9:** Apply ethical principles and commit to professional ethics and responsibilities and norms of legal practice (*Ethics*).
- **PO 10:** Communicate effectively on complex legal activities with the legal community and with the society at large; thus, giving and imparting clear instructions (*Communication*).

SECTION 2

CURRICULUM FOR LL.M.

COURSE CATEGORY-WISE CREDIT DISTRIBUTION

A. Break Down of Credits

S. No.	Category	Number of Credits	Percentage Weightage
1	Programme Core	14	52
2	Programme Elective	12	44
3	MNG	1	4
4	**TOTAL**	27	100

B. Category Wise Break Down of Subject

S. No.	Category	Number of Credits	Percentage Weightage
1	Law	**27**	**100**

PROGRAMME CORE COURSES

Credits to be Earned: 13

Compulsory Paper for the Award of LL.M. Degree

SN	Code	Title	L	T	P	S	C	CH	Prerequisite	Co-requisites
1	MLA901	Research Methods and Legal Writing **(1st Semester)**	3	0	0	0	3	3	NA	NA
2	MLA902	Comparative Public Law **(1st Semester)**	3	0	0	0	3	3	LL.B.: Constitutional Law	NA
3	MLA903	Seminar (Research Article Presentation) **(1st Semester)**	1	0	0	0	1	1	LLM: Research Methods and Legal Writing	NA
4	MLA906	Law and Justice in a Globalising World **(2nd Semester)**	3	0	0	0	3	3	NA	NA
5	MLA907	Dissertation **(2nd Semester)**	3	0	0	0	3	3	LLM: Research Methods and Legal Writing	NA
Total			**13**	**0**	**0**	**0**	**13**	**13**		

PROGRAMME ELECTIVES

LL.M. 1st Semester

SN	Code	Title	L	T	P	S	C	CH	Prerequisite	Corequisites
Group A **International & Comparative Law**	**MLA101** **MLA102** **MLA103**	1. Public International Law & International Relations. 2. International Human Rights & Humanitarian Law. 3. Law of Sea, Air, and Space	**2**				**2**	**2**	LL.B. Public International Law /Administrative Law/ Banking Law & Insurance Law/Criminal Procedure Code & Indian Penal Code	
Group B **Constitutional & Administrative Law**	**MLB201** **MLB202** **MLB203**	1. Comparative Administrative Law. 2. Media & Information Laws. 3. Federalism & Local Self Government, Including Panchayat Administration.	**2**				**2**	**2**	LL.B. Human Rights Law/ Constitutional Law/ Company Law/Criminal Procedure Code & Indian Penal Code	
Group C **Corporate & Commercial Law**	**MLC301** **MLC302** **MLC303**	1. Banking & Insurance Law 2. Laws of Securities and Financial Markets **3.** International Commercial Arbitration	**2**				**2**	**2**	LL.B. Public International Law/Constitutional Law/ Alternative Dispute Resolution/ Criminal Procedure Code & Indian Penal Code	
Group D **Criminal & Security Law**	**MLD401** **MLD402** **MLD403**	1. General principles of Criminal Law 2. Criminology, Penology & Victimology **3.** Comparative Criminal Procedure Law	**2**				**2**	**2**	LL.B. Public International Law /Constitutional Law/NA /Cyber Law/Information Technology Law & Indian Penal Code	
Group E **Intellectual Property Rights**	**MLE501** **MLE502** **MLE503**	1. Nature Emergence and Development of IPR 2. Law of Copyright **3.** Law of Patents	**2**				**2**	**2**		
Group F **Cyber Law**	**MLF601** **MLF602** **MLF603**	1. Fundamentals of Computer, Networking and Network Security 2. Intellectual Property Rights and Privacy Laws 3. IT Act and other Laws for Cyber-crime	**2**				**2**	**2**		

Note: For Electives, all subjects of one specialized group are to be opted **Credit Earn: 2**

LLM 2nd Semester

Note: For Electives, all subjects of one specialized group are to opt Credit **Earn: 2**

SN	Code	Title	L	T	P	S	C	CH	Prerequisite	Co-requisites
Group A **International & Comparative Law**	**MLA104** **MLA105** **MLA106**	1. Private International Law 2. International Criminal Law 3. International Trade Law	**2**				**2**	**2**		
Group B **Constitutional & Administrative Law**	**MLB204** **MLB205** **MLB206**	1. Service Law 2. Health Laws 3. Election Laws	**2**				**2**	**2**		
Group C **Corporate & Commercial Law**	**MLC304** **MLC305** **MLC306**	1. Competition Law 2. Corporate Governance **3.** International Trade Law	**2**				**2**	**2**		
Group D **Criminal & Security Law**	**MLD404** **MLD405** **MLD406**	1. Cyber Crimes & Law 2. International Criminal Law **3.** Organized Crime and Terrorism	**2**				**2**	**2**		
Group E **Intellectual Property Rights**	**MLE504** **MLE505** **MLE506**	1. Law of Trademarks 2. Law of Design, Layout design and Geographical Indicators **3.** Protection of plant varieties and traditional knowledge	**2**				**2**	**2**		
Group F **Cyber Law**	**MLE604** **MLE605** **MLE606**	1. Auditing, Risk Management, and Financial Fraud Investigation 2. Cloud and Virtual Technology Security **3.** Digital Forensics, Mobile and Network Forensics	**2**				**2**	**2**		

SEMESTER-WISE COURSE-STRUCTURE

FIRST SEMESTER

SN	Code	Title	L	T	P	S	C	CH	Prerequisite	Co-requisites
1	MLA901	Research Methods and Legal Writing	3	0	0	0	3	3	NA	NA
2	MLA902	Comparative Public Law	3	0	0	0	3	3	LL.B.- Constitutional Law	NA
3	MLA101, MLB201, MLC301, MLD401, MLE501, MLF601,	**Elective I**	2	0	0	0	2	2	Group-specific	NA
4	MLA102, MLB202, MLC302, MLD402, MLE502, MLF602,	**Elective II**	2	0	0	0	2	2	Group-specific	NA
5	MLA103, MLB203, MLC303, MLD403, MLE503, MLF603,	**Elective III**	2	0	0	0	2	2	Group-specific	NA
6	MLA903	**Seminar Paper**			2				Research Article Presentation	
Total			**12**	**0**	**2**	**0**	**12**	**14**		

SECOND SEMESTER

SN	Code	Title	L	T	P	S	C	CH	Prerequisite	Co-requisites
1	MLA906	Law and Justice in a Globalising World	3	0	0	0	3	3	NA	NA
2	MLA907	Dissertation	3	0	0	0	3	3	NA	NA
3	MLA104, MLB204, MLC304, MLD404, MLE504, MLF604,	**Elective I**	2	0	0	0	2	2	Group-specific	NA
4	MLA105, MLB205, MLC305, MLD405, MLE505, MLF605,	**Elective II**	2	0	0	0	2	2	Group-specific	NA
5	MLA106, MLB206, MLC306, MLD406, MLE506, MLF606,	**Elective III**	2	0	0	0	2	2	Group-specific	NA
Total			**12**	**0**	**0**	**0**	**12**	**14**		

SECTION 3

SYLLABI FOR THE COURSES

FIRST SEMESTER

RESEARCH METHODOLOGY AND LEGAL WRITING

MLA901	Research Methodology and Legal Writing	L	T	P	S	C	CH
Scheme Version 1.0	LL.M	3	0	0	0	3	45
Pre-Requisites/Exposure	NA						
Co-Requisites	NA						

COURSE OBJECTIVES

1. The objective of this course is to provide the students with knowledge about different research methods.
2. It also helps in understanding the format of legal writing and enables the students to be well equipped with the skills of legal writing.
3. The subject provides the basic knowledge of techniques of legal research and its application through legal writing in their research work.

COURSE OUTCOMES

1. Students will be able to learn various research methods in the legal discipline.
2. Students will be able to develop the craft of legal writing.
3. To enable students to use different data collection methods and sampling design techniques in their research.

COURSE DESCRIPTION

This course is designed to make the students aware of the research skills and expertise in legal writing which is fundamental to any research work. Students will analysis the various tools applied in carrying out research and to implicit their work through enriched knowledge of legal writing. This course will involve textbook material and practice research assignments.

TEXTBOOKS

T1 Bruce L. Berg, *Qualitative Research Methods For The Social Sciences* (London, Allyn and Bacon, 2001).
T2 C.R. Kothari, *Research Methodology: Methods and Techniques* (New Delhi: New Age International Publishers, 2018).
T3 Dennis P. Forcese and Stephen Richer (ed.), *Stages of Social Research –Contemporary Perspectives* (New Jersey: Prentice Hall Inc., Englewood Cliffs,1970).
T4 Frederic Charles Hicks, *Materials and Methods in Legal Research* (Lawyers Cooperative Publishing, New York).
T5 Harvard Law Review Association, *The Bluebook*: *Uniform System of Citation* (Harvard Law Review, Harvard).

REFERENCE BOOKS

R1 Jonathan Anderson, *Thesis and Assignment Writing* (Wiley Eastern Ltd., New Delhi).
R2. Johan Galtung, *Theory And Methods of Social Research* (London: George Allen &Unwin Ltd., 1970).
R3 Pauline V. Young, *Scientific Social Surveys and Research* (New Delhi: Prentice-Hall of India Pvt. Ltd., 1984)
R4. S. K. Verma and Afzal Vani, *Legal Research and Methodology,* ILI, New Delhi
R5 Vijay K. Gupta, *Decision Making In The Supreme Court of India (A Jurimetric Study) Alternatives in Judicial Research* (Delhi: Kaveri Books, 1995).

UNIT-I
RESEARCH
(15 Contact Hours)

- Meaning and Objectives.
- Motivation in Research.
- Significance of Research.
- Research methods v. Research Methodology.
- Types of Research: Descriptive v. Analytical; Applied v. Fundamental; Quantitative v. Qualitative; Conceptual v. Empirical; Other types of research - one-time v. longitudinal, field-setting research v. laboratory research v. simulation research, clinical v. diagnostic research, exploratory v. formalized, conclusion-oriented v. decision-oriented, historical research.
- Research Approaches: Quantitative and Qualitative.
- Criteria of Good Research

LEGAL RESEARCH

- Meaning, Scope, and Purpose
- Purpose of Legal Research
- Major Problems while undertaking Legal Research
- Socio-Legal Research
- Jurimetrics: Meaning and Origin; Scope of Jurimetrics in Judicial Research; Assumptions of Jurimetrics; Problems encountered in Jurimetrics; Jurimetrics in Indian Judicial System.
- Role of Technology in Legal Research

UNIT -II
LEGAL RESEARCH PROCESS
(15 Contact Hours)

- Defining the Research Problem: Steps in Formulation of Research Problem; Kinds of Research Problem
- Review of Literature
- Hypothesis: Definition; Nature; Importance; Sources; Variables – Dependent and Independent; Types – Research Hypotheses, Directional Hypotheses, Non-directional Hypotheses, Associative and Causal Hypotheses, Statistical Hypothesis, Null Hypothesis, Alternative Hypothesis; Formulation of Hypothesis; Characteristics of a Good Hypothesis; Hypothesis Testing; Errors in Testing of Hypothesis
- Research Design: Meaning and Nature; Classification; Objects and Purpose; Kinds – Qualitative and Quantitative, Doctrinal and Empirical.
- Data Collection: Methods of Data Collection – Doctrinal and Empirical Method, Primary and Secondary Data, Inductive, Deductive and Abductive Method; Tools and Techniques of Data Collection – Doctrinal (Library Research and Participation Technique), Empirical (Observation, Interview, Questionnaire, Case Study, Survey, Scaling)
- Sampling: Meaning; Important Terms Associated with Sampling; Sampling Design; Purpose of Sampling; Classification of Sampling; Sampling Techniques
- Data Analysis: Meaning; Data Processing; Data Interpretation; Types of Data Analysis –

Descriptive and Inferential; Statistical Data Analysis; Precautions in Analysis and Interpretation of Data; Diagrammatic Representation.

UNIT -III
LEGAL WRITING
(15 Contact Hours)

- Meaning and Significance
- Essentials of Good Legal Writing
- Report Writing: Meaning and Significance of Report; Types of Report; General Guidelines for report Writing; Structure of a Report; Proofreading of Final Draft of Report; Precautions in Writing a report
- Dissertation & Thesis Writing
- Writing of Research Proposal
- Citation, Reference and Footnoting: Bluebook Citation, ILI Rules of Footnoting, MLA Format
- Bibliography and Bibliographic Techniques
- Research Ethics: Code of Ethics; Plagiarism; Copyright Protection.

Mode of Evaluation: The performance of students is evaluated as follows:

	Theory	
Components	**Continuous Assessment and Evaluation (CAE)**	**Semester End Examination (SEE)**
Marks	40	60
Total Marks	100	

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping Between COs and Pos		
S.No.	**Course Outcome (CO)**	**Mapped Programme Outcome (PO)**
1	Students will be able to learn various research methods in the legal discipline.	PO1, PO2
2	Students will be able to develop the craft of legal writing.	PO4
3	To enable students to use different data collection methods and sampling design techniques in their research.	PO3,PO5,PO9, PO10

		Legal Knowledge	Analytical Skills	Problem Solving	Research Skills	Social Responsibility	Competitive Skills	Higher Education	Critical Thinking	Ethics	Communication
		1	2	3	4	5	6	7	8	9	10
MLA901	**Research Methods And Legal Writing**	3	2	2	3	2				1	2

1 = addressed to small extent; 2= addressed significantly; 3=major part of course

COMPARATIVE PUBLIC LAW

MLA902	Comparative Public Law	L	T	P	S	C	CH
Scheme Version 1.0	LL.M	3	0	0	0	3	45
Pre-Requisites/Exposure	LL.B. Constitutional Law						
Co-Requisites	NA						

COURSE OBJECTIVES

1. This course is designed to understand the concepts of Comparative Constitutions of the world.
2. It also helps to impart knowledge of various stages of constitutional development and evaluation of constitutional government.
3. The subject provides the basic knowledge to critically analyse new constitutional movements that are changing the boundaries of constitutionalism and constitutional systems.

COURSE OUTCOMES

1. Students will be able to understand the similarities and differences between leading legal traditions in key areas like separation of powers, protection of rights, and the role of the judiciary
2. Students will be able to understand the methodology of comparative public law
3. Students will be able to use the comparative methodology in public law analysis

COURSE DESCRIPTION

This course is designed to make the students aware of different constitutions of the world especially after the cold war with many states in the erstwhile communist block embarking on framing new constitutions. The purpose of this course is to provide a critical understanding of the main issues, trends, and methods in comparative public law. An attempt is made not to reduce the course to a mere description of select documents and important judicial decisions, but to use the richness of social science literature and methods in the analysis of various topics

TEXTBOOKS

1. **T1** Mahendra P. Singh, *Comparative Constitutional Law* (Eastern Book Company, 1989)
2. **T2** Sudhir Krishna Swamy, *Democracy and Constitutionalism in India – A Study of the Basic Structure Doctrine* (Oxford University Press, 2009)
3. **T3** S.N Ray, *Judicial Review and Fundamental Rights* (Eastern Law House, 1974)
4. **T4** M.V. Pyle, *Constitution of the World* (Universal, 2006)

REFERENCE BOOKS

1. **R1** D.D. Basu, *Comparative Constitutional Law* (2nd ed., Wadhwa Nagpur 2009)
2. **R2** David Strauss, *The Living Constitution* (Oxford University Press, 2010)
3. **R3** Christopher Forsyth, Mark Elliott, Swati Jhaveri, *Effective Judicial Review: A Cornerstone of Good Governance* (Oxford University Press, 2010)
4. **R4** Sunil Khilnani, Vikram Raghavan, Arun Thiruvengadam, *Comparative Constitutionalism in South Asia* (Oxford University Press, 2013).

UNIT I
PUBLIC LAW AND PRIVATE LAW
(15 contact hours)

- Meaning and Nature of Public Law
- The distinction between Public Law and Private Law
- Scope of Public Law
- Basic Concepts of Public Law
- Principles of Accountability and Public Law

Constitution and Study of Comparative Constitutional Law:

- Meaning and Idea of Constitution
- Nature and Goals
- Living Constitution
- Constitution as Supreme Law
- Problems and Concerns in Using Comparison: Use of Foreign Law in Constitutional Interpretation; Methodological Concerns

Constitutionalism:

- Concept
- The distinction between Constitution and Constitutionalism
- Essential features of Constitutionalism: Written Constitution, Separation of Powers, Fundamental Rights, Independence of Judiciary and Judicial Review
- Changing Ideas of Constitutionalism: International Constitutionalism, Challenging Liberal Constitutionalism
- Constitutionalism in Global South: Meaning of Global South, Transformative Constitution, Socio-Economic Rights, and their Justiciability, Directive Principles

Unit II
FORMS OF GOVERNMENTS
15 Contact Hours

- Federal and Unitary Forms: Features, Advantages and Disadvantages, Models of Federalism and Concept of Quasi-federalism
- Parliamentary and Presidential Forms of Government

Constitutional Foundations:

- Parliamentary Sovereignty
- Rule of law: Origin and Evolution, Dicey's Concept of Rule of Law, Modern Concept of Rule of Law
- Separation of powers: Concept of Separation of Powers, Montesquieu's Theory, Checks and Balances, Separation of Powers or Separation of Functions

Fundamental Rights:

- Bill of Rights: Horizontal and Vertical Rights, Civil, Political and Socio-Economic Rights
- Right to Dignity, Privacy and Autonomy: Gender Issues and Sexual Crimes, The Abortion Debate, Rights of Victim in Euthanasia and Mercy Killing
- Right to Life: Due Process, Death Penalty
- Right to Property: UK perspective, Indian position, US position
- Secularism: Models of Secularism, Secularism in India

Unit III
JUDICIAL INDEPENDENCE AND JUDICIAL REVIEW
(15 Contact Hours)

- Meaning and Components of Judicial Independence
- Need for Independence of judiciary
- Judicial Independence in India
- Philosophical and Historical Foundations of Judicial Review
- Judicial Review inIndia
- Judicial Review in the USA
- Judicial Review in the UK

Amendment of Constitution:

- Various Methods of amendment
- Amending Power of the parliament
- Limitations on Amending Power: Comparative Perspective, Theory of Basic Structure: Origin and Development

Emergency:

- Nature and Effect of Declaration of Emergency
- History of Emergency Provisions
- Suspension of Fundamental Rights: Comparative Study with the USA

Mode of Evaluation: The performance of students is evaluated as follows:

	Theory	
Components	**Continuous Assessment and Evaluation (CAE)**	**Semester End Examination (SEE)**
Marks	40	60
Total Marks	100	

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping Between COs and Pos		
S.No.	**Course Outcome (CO)**	**Mapped Programme Outcome (PO)**
1	Students will be able to understand the similarities and differences between leading legal traditions in key areas like separation of powers, protection of rights, and the role of judiciary	PO1, PO6
2	Students will be able to understand the methodology of comparative public law	PO5, PO8
3	Students will be able to use the comparative methodology in public law analysis	PO6,PO2,PO3

		Legal Knowledge	Analytical Skills	Problem Solving	Research Skills	Social Responsibility	Competitive Skills	Higher Education	Critical Thinking	Ethics	Communication
		1	2	3	4	5	6	7	8	9	10
MLA902	**Comparative Public Law**	3	2	2		2	1		1		

1 = addressed to small extent; 2= addressed significantly; 3=major part of course

SECOND SEMESTER

LAW AND JUSTICE IN A GLOBALISING WORLD

MLA906	Law And Justice in A Globalising World	L	T	P	S	C	CH
Scheme Version: 1.0		3	0	0	0	3	45
Pre-requisites/Exposure	NA						
Co-requisites	NA						

COURSE OBJECTIVES

1. This course is designed to make the students aware of the role of law and justice in an ever-evolving world.
2. It will assist students to have insight into various legal theories which has influenced the globalization of the world.
3. The subject provides the basic knowledge of Indian philosophies that has changed the perspective of developments in India.

COURSE OUTCOMES

1. Students will be able to understand the role of law and justice in a rapidly globalizing world.
2. Students will be able to appreciate and comprehend finer aspects related to the subject.
3. Students will be able to recognize the significance of law and justice vis-à-vis the concept of globalization.

COURSE DESCRIPTION

This course is designed to make the students aware of changing dimensions of law and justice in the dynamic society. Students will analyze the various theories and jurist contributions in advancing the concept of globalization. This course will involve textbook material and classroom discussions on various legal theories influencing our ever-changing world.

TEXTBOOKS

- **T1.** Andrew Kuper, *Democracy Beyond Borders: Justice and Representations in Global Institutions* (OUP, 2006)
- **T2.** Anthony McGrew, David Held (eds.), *Governing Globalization: Power, Authority and Global Governance* (Polity Press,2002)
- **T3.** Bonaventura de Sousa Santos, Cesar A. Rodriguez-Garavito (eds.), *Law and Globalization from Below* (Cambridge University Press, 2005)
- **T4.** David B. Goldman, *Globalization and the Western Legal Tradition: Recurring Patterns of Law and Authority* (Cambridge University Press, 2008)

REFERENCE BOOKS

- **R1.** John Baylis, Steve Smith, *et al* (eds.) *The Globalization of World Politics: An Introduction to International Relations* (OUP, 2008)
- **R2.** Laura Valentini, *Justice in a Globalizing World: A Normative Framework* (OUP, 2011)
- **R3.** M. Abouharb, David Cingranelli, *Human Rights and Structural Adjustment* (Cambridge University Press 2007)
- **R4.** Pablo De Greiff and Ciaran Cronin (eds.), *Global Justice and Transnational Politics: Essays on the Moral and Political Challenges of Globalization* (MIT Press, 2002)

UNIT-I

INTRODUCTION

(15 Contact Hours)

Concept and Meaning of Law, Justice, and Globalisation; Understanding Law and Justice in a Globalising World, Substantive and procedural justice

The globalization of Law and Legal Theory: Introduction to Globalisation; Three Phases of Globalisation, Globalisation of Law, Globalisation and Legal Theory

Unit II
THEORIES OF JUSTICE
(15 Contact Hours)

Utilitarian Justice: Utilitarianism; Bentham's Utilitarianism and his Notion of Justice; J S Mill's Utilitarianism, Utilitarian Justice

Distributive Justice: John Rawls' Distributive Justice, Rawls's Conception of Original Position, John Rawls's Two Principles of Justice, Application of John Rawls's Theory

Libertarianism: Introduction to Robert Nozick and Libertarianism, Robert Nozick's Principles of Justice, Nozick's principles of just distribution

UNIT III
PHILOSOPHY OF JUSTICE
(15 Contact Hours)

Communitarianism: Introduction to Michael Sandel's Communitarianism, Communitarian critique of liberal theory, The Criticisms of Communitarianism, The Story of Ubuntu

Feminism: Introduction to Feminism and Justice; Introduction to the concept of gender justice; Feminism and realization of gender justice; Feminism in India

Justice in Indian Context: Different approaches in Indian Philosophy of Justice, Gandhi and Emancipatory Justice, Ambedkar's Emancipatory justice, Jay Prakash Narayan's Socialism, Ram Manohar Lohia's Socialism, Amartya Sen's Idea of Justice, Niti and Nyaya; Capability Approach

Mode of Evaluation: The performance of students is evaluated as follows:

	Theory	
Components	**Continuous Assessment and Evaluation (CAE)**	**Semester End Examination (SEE)**
Marks	40	60
Total Marks	100	

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping Between COs and POs		
S.No.	**Course Outcome (CO)**	**Mapped Programme Outcome (PO)**
1	Students will be able to understand the role of law and justice in a rapidly globalizing world.	PO3, PO5
2	Students will be able to appreciate and comprehend finer aspects related to the subject.	PO5, PO8
3	Students will be able to recognize the significance of law and justice in a globalizing world.	PO4, PO5, PO8

		Legal Knowledge	Analytical Skills	Problem Solving	Research Skills	Social Responsibility	Competitive Skills	Higher Education	Critical Thinking	Ethics	Communication
		1	2	3	4	5	6	7	8	9	10
MLA906	**Law And Justice In A Globalising World**			1	1	3			2		

1=addressed to a small extent; 2= addressed significantly; 3=major part of the course

DISSERTATION

MLA907	Dissertation	L	T	P	S	C	CH
Scheme Version: 1.0		3	0	0	0	3	45
Pre-requisites/Exposure	LLM: Research Methods and Legal Writing						
Co-requisites	NA						

COURSE OBJECTIVES

1. To make the students learn about the development of research skills.
2. To make the students apply their research skills in legal writing.
3. To enable the students to independently write a dissertation on the area of expertise.

COURSE OUTCOMES

1. Students will be able to deploy the research skills acquired throughout their course study and present a Dissertation on their chosen topic
2. Students will be able to apply critical thinking in their research topic.
3. Students will be able to apply the legal writing skills acquired during the program.

COURSE DESCRIPTION

This course mainly focuses on the research abilities of the students. The evaluation of the Dissertation and viva-voce will be conducted by the Department Research Committee comprising of senior-most faculty members of the Department and an External Examiner.

Mode of Evaluation: The performance of students is evaluated as follows:

	Theory	
Components	**Continuous Assessment and Evaluation (CAE)**	**Semester End Examination (SEE)**
Marks	80	20
Total Marks	100	

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping Between COs and POs		
S.No.	**Course Outcome (CO)**	**Mapped Programme Outcome (PO)**
1	Students will be able to deploy the research skills acquired throughout their course study and present a Dissertation of their chosen topic	PO1, PO2, PO3, PO4, PO6, PO7, PO8, PO9, PO10
2	Students will be able to apply critical thinking in their research topic.	PO8
3	Students will be able to apply the legal writing skills acquired during the program.	PO1, PO4, PO10

		Legal Knowledge	Analytical Skills	Problem Solving	Research Skills	Social Responsibility	Competitive Skills	Higher Education	Critical Thinking	Ethics	Communication
		1	2	3	4	5	6	7	8	9	10
MLA907	**Dissertation**	3	2	1	3		2	2	3	1	3

1=addressed to a small extent; 2= addressed significantly; 3=major part of the course

CURRICULUM & SYLLABI

LL.M.
(One-year Program)
Revised (2022-23)

(CONSTITUTIONAL & ADMINISTRATIVE LAW)
Group – B

SCHOOL OF LAW

RAFFLES
UNIVERSITY

Japanese Zone, National Highway 8, Neemrana,
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COMPARATIVE ADMINISTRATIVE LAW

MLB 201	Comparative Administrative Law	L	T	P	S	C	CH
Scheme Version: 1.0		2	0	0	0	2	30
Pre-requisites/Exposure	LL.B.: Administrative Law						
Co-requisites	NA						

COURSE OBJECTIVES

1. As a body of law, administrative law deals with the decision-making of administrative units of government that are part of a national regulatory scheme in such areas as police law, international trade, manufacturing, the environment, taxation, broadcasting, immigration, and transport.
2. The course is designed to make the students aware of the rules and regulations important for smooth operations in an administrative setup.
3. The course aims to sensitize the students about the important institutions of Lokpal and Lokayukta.

COURSE OUTCOMES

1. Students will be able to understand the concepts associated with the subject.

2. Students will be able to critically evaluate the role of different organizations and establishments involved in administrative law.

3. The students will be able to recognize the relationship between constitutional law and administrative law of other countries.

COURSE DESCRIPTION

This course is designed to make the students aware of the different administrative bodies and the decision-making of administrative units of government. This course includes structure, powers, method, and procedure followed by them in exercising their powers and the remedies available to the aggrieved person with special reference India, UK & USA. This course will involve textbook material and case studies.

TEXTBOOKS

T1 MP Jain and SN Jain, *Principles of Administrative Law* (Lexis Nexis India; Seventh edition 2011)

T2 IP Massey, *Administrative Law* (Eastern Book Company, Kolkata, 2017)

T3 CK Takwani, *Lectures On Administrative Law* (Eastern Book Company, Kolkata, 2017)

T4 Dr. J.J.R. Upadhaya, *Administrative Law* (Central Law Agency, Lucknow, 2016)

REFERENCE BOOKS

R1 S.R.Myneni, *Administrative Law* (Asia Law House, Hyderabad, 2014)

R2 Prof. Narender Kumar, *Nature and Concepts of Administrative Law* (Allahabad Law Agency, Faridabad,2017).

R3 V.D. Sebastian and Kvyalya Garikapaty, *An Introduction to Administrative Law*(Asia Law House, Hyderabad,2017)

R4 Stott, David & Felix, *Alexandra Principles of Administrative Law*, (Cavendish Publications, London, 1997).

UNIT-I

(10 Contact Hours)

- Evolution and significance of Administrative Law in various systems of governance from ancient to modern- England, U.S.A. and India.
- Concept of State- laissez fare and the welfare state – as a services provider.
- Other functions of the modern state: relief welfare, Relationship between constitutional law and Administrative Law, Droit Administratif
- Separation of Powers- Comparative study of English. U.S.A. and India.

Unit-II
(10 Contact Hours)

- Rule of Law changing dimensions, Classification of Administrative Actions.
- Natural Justice in Administrative Actions: Principles of Natural Justice and Exclusion of Natural Justice, Rule against Bias, *Audi Alteram Partem*, Writs, Administrative Discretion, Doctrine of Legitimate Expectation, Exclusion of judicial review
- Rule Making Powers of the Administration, Delegated legislation- problems, process, and control, comparative approaches, Constitutionality of delegated legislation, Requirement for the validity of delegated legislation. Conditional legislation, Sub delegation of legislative power.

Unit-III
(10 Contact Hours)

- Control Mechanism of administrative rulemaking power-Procedural Control-Consultation of affected interest, public participation in the rulemaking procedure, and publication.
- Parliamentary control- laying procedures and their effect, committees on delegated legislation judicial control, Ombudsman.

Mode of Evaluation: The performance of students is evaluated as follows:

	Theory	
Components	**Continuous Assessment and Evaluation (CAE)**	**Semester End Examination (SEE)**
Marks	40	60
Total Marks	100	

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping Between COs and Pos		
S. No.	**Course Outcome (CO)**	**Mapped Programme Outcome (PO)**
1	Students will be able to understand the concepts associated with the subject.	PO1, PO2, PO3
2	Students will be able to critically evaluate the role of different organizations establishments involved.	PO8
3	To enable the students to recognize the relationship between constitutional law and administrative law of other countries.	PO2, PO8

		Legal Knowledge	Analytical Skills	Problem Solving	Research Skills	Social Responsibility	Competitive Skills	Higher Education	Critical Thinking	Ethics	Communication
		1	2	3	4	5	6	7	8	9	10
20LBT623	**Comparative Administrative Law**	2	3	1					3		

addressed to a small extent; 2= addressed significantly; 3=major part of the course

MEDIA & INFORMATION LAWS

MLB 202	Media & Information Laws	L	T	P	S	C	CH
Scheme Version: 1.0		2	0	0	0	2	30
Pre-requisites/Exposure	LL.B.: Constitutional Law						
Co-requisites	NA						

COURSE OBJECTIVES

1. This course is designed to impart legal knowledge to the students about the fourth pillar of Indian democracy.

2. It also helps in understanding the Constitutional restrictions on Press and Media.

3. The subject provides knowledge about the importance of the Right to Information in Democracy.

COURSE OUTCOMES

1. The students will be sensitized towards various legislations related to the subject.

2. Students will be able to understand constitutional provisions governing mass media.

3. Students will recognize the significance of media and information in a global world.

COURSE DESCRIPTION

This course is designed to make the students aware of the fourth pillar of democracy. Media plays an important role in democracy. Right to information plays a significant role in shaping democracy. The objective of the study is to sensitize the role of media, various legislations which regulate press and media and to have knowledge about the concept of the Right to information.

TEXTBOOKS

- **T1** Sukanta K. Nanda, *Media Law* (Central Law Publications, Allahabad, 2014)
- **T2** S.R.Myneni, *Media Law* (Asia Law Publishers, Hyderabad, 2017)
- **T3** M. Neelamar, *Media Law and Ethics* (Prentice Hall India Learning Private Limited, Bangalore, 2009)

REFERENCE BOOKS

- **R1** Devesh Kishore and Ganga Sagar Singh, *Media Law: Its Ethics and Ethos* (Haran and Publications Pvt. Ltd., New Delhi, 2016)
- **R2** Juhi. P. Pathak, Introduction to Media Law and Ethics (Shipra Publications, Delhi, 2014)
- **R3** S.R.Myneni, Media Law along with RTI (Asia Law House, Hyderabad, 2015)

UNIT-I

(10 Contact Hours)

- Media and the role of media in social welfare
- Constitutional Restrictions on Press and Media with reference to Press CouncilAct,1978
- Broadcasting Media concerning The Cable TV Network (Regulation)Act,1995
- Broadcasting Content Complaints Council (*BCCC*) with reference to The *Prasar Bharati* (Broadcasting Corporation of India) *Act, 1990*
- Pre-censorship, Media and Censorship concerning Cinematograph Act,1952

UNIT-II

(10 Contact Hours)

- Media and Right to Privacy
- Need for Strict Social Media laws
- Media and Parliamentary Privileges
- Media and Contempt of Court
- Right to Advertisement
- Media Rights during emergency
- Media accountability
- Media Trial and judiciary

UNIT-III

(10 Contact Hours)

- Significance of Right to Information in Democracy
- Freedom of speech and expression and its expanding scope including the Right to information
- Right to Information and role of media
- Role and Protection of whistleblowers
- Ownership Pattern: Press, Film, and other electronic media
- Right to Information with special reference to Right to Information Act,2005

Mode of Evaluation: The performance of students is evaluated as follows:

	Theory	
Components	**Continuous Assessment and Evaluation (CAE)**	**Semester End Examination (SEE)**
Marks	40	60
Total Marks	100	

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping Between COs and Pos		
S.No.	**Course Outcome (CO)**	**Mapped Programme Outcome (PO)**
1	The students will be sensitized towards various legislations related to the subject.	PO1, PO2, PO5
2	Students will be able to understand constitutional provisions governing mass media.	PO2
3	Students will recognize the significance of media and information in a global world.	PO8, PO9, PO10

		Legal Knowledge	Analytical Skills	Problem Solving	Research Skills	Social Responsibility	Competitive Skills	Higher Education	Critical Thinking	Ethics	Communication
		1	2	3	4	5	6	7	8	9	10
MLB 202	**Media & Information Law**	1	3			2			1	2	1

1=addressed to a small extent; 2= addressed significantly; 3=major part of the course

FEDERALISM AND LOCAL SELF GOVERNANCE (INCLUDING PANCHAYAT ADMINISTRATION)

MLB 203	Federalism and Local Self-Governance (including Panchayat Administration)	L	T	P	S	C	CH
Scheme Version: 1.0		2	0	0	0	2	30
Pre-requisites/ Exposure	LL.B.: Constitutional Law						
Co-requisites	NA						

COURSE OBJECTIVES

1. This course is designed for students to understand the meaning and concept of local self-governance.
2. It also helps in understanding the role of panchayats and municipalities in local self-governance.
3. The subject provides the students with in-depth knowledge of the system of local self-government and its associated institutions in India.

COURSE OUTCOMES

1. Students will be able to develop research skills in exploring the advantages and disadvantages associated with local self-government.
2. Students will learn about the specific legislation related to the subject.
3. Students will be able to recognize the importance of local self-government and its role in national growth.

COURSE DESCRIPTION

This course is designed to enable the students to develop research skills in exploring the advantages and disadvantages linked with local self-government and legislation related to the subject

TEXTBOOKS

T1 Dr. Amritpal Kaur, *Lectures on Local Self Government and Panchayat Administration* (Shree Ram Law House, 2019)

T2 Gangadhar Jha, *Fragile Urban Governance- Evolution, Decline, and Empowerment of Local self-government in India* (Routledge, 2018)

T3 GR Reddy, *Patterns of Panchayati Raj in India* (Macmillan Company of India, 1977)

T4 Jaswal and Chawla, *A Commentary on Rajasthan Panchayat Act, 1994* with Allied Acts & Rules (4th ed., 2004)

T5 M.P.Jain, *Indian Constitutional Law* (Lexis Nexis, 2018)

REFERENCE BOOKS

R1 Pardeep Sachdeva, *Urban Local Government and Administration in India* (Allahabad Law House, 1993)

R2 Pardeep Sachdeva, *Local Government in India* (Pearson Education, 2011)

Bare Acts

- The Rajasthan Panchayati Raj Act, 1994
- The Rajasthan Municipalities (Amendment) Act, 2010
- The Rajasthan Rural DevelopmentAct,2007
- The Rajasthan municipalities act 2009
- Rajasthan Panchayati Raj Act, 1994

UNIT I

(10 contact hours)

- **Local Self Governance**:
  Historical Perspective, Gandhiyan Concept, Constitutional scheme of Local self - Governance, Legislative, Financial and Judicial powers of the Local Self Governance, Institutional and Judicial Control,
- **Concept of Federalism & Local Self Government**
  - The genesis of Federalism and Panchayati Raj in India
  - 73rd Amendment to the Constitution, Part IX Article 243, 243-A-243M and 11th Schedule of the Constitution
- **Rajasthan Panchayati Raj Act, 1994**
  - Constitution, Powers, Functions, and Duties of Panchayati Raj Institutions (Gram Sabha & Gram Panchayat, Panchayat Samitis and ZilaParishads

UNIT II

(10 Contact Hours)

- 74th Amendment, Part IX-A and 12th schedule of the Constitution of India Genesis and importance of Urban Local Bodies (Article243P-243ZG)
- **The Rajasthan Municipal Act,2009**
  - Definitions, Constitution municipality
  - Powers and functions
  - Notice, Offences, and prosecution
  - Bylaws and Control

UNIT III

(10 Contact Hours)

- **Rajasthan Municipalities Act,2009**
  - Definition, Functions of the Corporation
  - Municipal Authorities under the corporation
  - Revenue, Expenditure, Taxation, and borrowings
  - Public safety and suppression of nuisance
  - Powers, Procedure, Offences, and Penalties, Control
- **Rajasthan Rural Development and Panchayati Raj State and Subordinate Service Rules, 1998**
  - Rajasthan Rural Development Board
  - The Rural Development Fund
  - Power to make rules and regulations
  - Penalty

Mode of Evaluation: The performance of students is evaluated as follows:

	Theory	
Components	**Continuous Assessment and Evaluation (CAE)**	**Semester End Examination (SEE)**
Marks	40	60
Total Marks	100	

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping Between COs and POs		
S.No.	**Course Outcome (CO)**	**Mapped Programme Outcome (PO)**
1	Students will be able to develop research skills in exploring the advantages and disadvantages associated with local self government.	PO1, PO2
2	Students will learn about the specific legislation related to the subject.	PO1, PO3
3	Students will be able to recognize the importance of local self government and its role in national growth.	PO4, PO8

		Legal Knowledge	Analytical Skills	Problem Solving	Research Skills	Social Responsibility	Competitive Skills	Higher Education	Critical Thinking	Ethics	Communication
		1	2	3	4	5	6	7	8	9	10
20LBT625	**Federalism and Local Self Governance (including Panchayat Administration)**	3	2	1	1				1		

1=addressed to a small extent; 2= addressed significantly; 3=major part of the course

SECOND SEMESTER

SERVICE LAW

MLB 204	Service Law	L	T	P	S	C	CH
Scheme Version: 1.0		2	0	0	0	2	30
Pre-requisites/Exposure	LLB: Constitutional Law						
Co-requisites	NA						

COURSE OBJECTIVES

1. The objective of this subject is to study Indian Services Rules with the help of constitutional law.
2. To study principles governing civil servants under (CCA) Rules1965.
3. To study safeguards guaranteed to civil servants under the constitution of India.

COURSE OUTCOMES

1. Students will be acquainted with various kinds of rules applicable to government employees.
2. Students will be able to analyze the role played by the Constitution in the protection of public servant
3. Students will be able to apply legal provisions for the protection of employees.

COURSE DESCRIPTION

This course is designed to make the students aware of the role of legislative in making laws related to service matters, constitutional rights of public servants under Articles 14 and 16 of Constitution of India, principles governing civil servants under (CCA) Rules 1965, safeguards guaranteed to civil servants under Constitution of India. This course will involve textbook material and case studies.

TEXTBOOKS

- **T1** Narender Kumar, *Law Relating to Government* Servants & *Management of Disciplinary Proceedings* (*Service Law) (*ALA,2017)
- **T2** G B Singh, *Law of Suspension Penalties and Departmental Enquiries* (Rajindra Book Agency, 2018)
- **T3** M.R. Malick, *Service Laws in India* (Eastern Law House, 2000)

REFERENCE BOOKS

- **R1** Constitution of India, *Bare Act* (Universal Publication).
- **R2** P.V. Ramakrishna, *Guide to Departmental Problems Enquiries, Punishment and Appeal* (ALT Publications, 2011)
- **R3** Muthu Swami, *Swamy's Manual on Disciplinary Proceedings for Central Government Staff. Complete with Rules and Orders* (Swamy Publishers (P) Ltd.; Thirteenth Edition 2015)
- **R4.** S S Upadhyaya and Sachin Upadhyaya, *Law Of Disciplinary Proceedings in India* (Thomson Reuters, 2018)

UNIT-I

(10 Contact Hours)

- The constitutional right of equality (Articles 14 to 16) about service matters (including reservation in the services)
- Principles of equal pay for equal work
- Services under the Union and the States (Articles 309-311) including the applicability of Article 311 to various categories of non-permanent employees and status and rights of ad-hoc employees and daily wagers and their regularization
- Article 320: Functions of Public Service Commissions

UNIT-II

(10 Contact Hours)

- Article 323-A of the Constitution: Administrative Tribunals, their Constitution, powers, jurisdiction, and procedure under the Administrative Tribunals Act,1985
- Compulsory retirement
- Probation
- Compassionate Appointment
- Suspension and subsistence allowance with special reference to CCS (CCA) Rules 1965

UNIT-III

(10 Contact Hours)

- Principles for determination of seniority including seniority based on the date of confirmation seniority based on quota rota rule,
- Annual Confidential Report (ACR)/ Annual Performance Appraisal Report (APAR)
- Deputation
- Major and Minor Penalties,
- Conduct and procedure of disciplinary departmental enquire including charge sheet, inspection, and supply of copies of documents, Production of evidence, inquiry report, hearing if any on the question of a penalty and final competent authority (with special reference to CCS (CCA)Rules,1965).

Mode of Evaluation: The performance of students is evaluated as follows:

	Theory	
Components	**Continuous Internal ssessment (CIA)**	**Semester End Examination (SEE)**
Marks	40	60
Total Marks	100	

Relationship between the Course Outcomes (COs)and Program Outcomes (POs)

Mapping Between COs and POs		
S.No.	**Course Outcome (CO)**	**Mapped Programme Outcome (PO)**
1	Students will be acquainted with various kinds of rules applicable to government employees.	PO1, PO2, PO6
2	Students will be able to analyze the role played by Constitution in the protection of Public Servant	PO2, PO8
3	Students will be able to apply legal provisions for the protection of employees.	PO1, PO2, PO3

		Legal Knowledge	Analytical Skills	Problem Solving	Research Skills	Social Responsibility	Competitive Skills	Higher Education	Critical Thinking	Ethics	Communication
		1	2	3	4	5	6	7	8	9	10
MLB 204	**Service Law**	2	3	1			1		1		

1=addressed to a small extent; 2= addressed significantly; 3=major part of the course

HEALTH LAW

MLB 205	Health Law	L	T	P	S	C	CH
Scheme Version: 1.0		2	0	0	0	2	30
Pre-requisites/ Exposure	LL.B.: Constitutional Law						
Co-requisites	NA						

COURSE OBJECTIVES

1. This course is designed to acquaint the students with the conceptual and operational parameters of health law in India and other countries.
2. It also helps to understand them better appreciate and be able to analyze the specific types of legislatures and practices in the Health sector.
3. The subject provides a basic understanding of various Bio-ethical Issues covered under health laws.

COURSE OUTCOMES

1. Students will be able to acquire the basic knowledge of health laws in the contemporary world.
2. Students will be able to analyze the role played by the judiciary in enhancing the scope of the medical profession.
3. Students will be able to evaluate the working of various special enactments on health in India.

COURSE DESCRIPTION

The objective of this subject is to enable the students to appreciate and comprehend various health-related legislation and legal principles as they apply to the health sector. This course will involve textbook material and case studies.

TEXTBOOKS

- **T1** M.C. Gupta, *Health And Law* (Kanishka Publishers, Distributors, New Delhi, 2002).
- **T2** Dr.Rega Surya Rao & P.Aravinda, *Lectures on Law and Medicine (Health Law)* (Gogia Law Agency 2020)
- **T3** Siddhartha Mukherjee, *The Laws of Medicine* (Simon & Schuster India; UK ed., 2015)
- **T4** Dr. Anita Bakshi, *Hippocratic Oath or Hypocrisy?: Doctors at Crossroads* (SAGE Publications Pvt. Ltd; 1 edition 15 October 2018)

REFERENCE BOOKS

- **R1** Modi and K. Kannan, *A Textbook Of Medical Jurisprudence And Toxicology* (Lexis Nexis; First edition 22 April 2016)
- **R2** Hitesh J. Bhatt, *Law The Doctor Must Know* (CBS Publishers and Distributors; 1/e edition 2005)
- **R3** Dr. Lily Srivastava, *Law & Medicine* (Universal Law Publishing Co. Pvt. Ltd. 2010)
- **R4** Alasdair Maclean, *Autonomy, Informed Consent, and Medical Law: A Relational Challenge (Cambridge Law, Medicine, and Ethics)* (Cambridge University Press; Reprint edition 5 December 2013)

UNIT I
(10 Contact Hours)

- Conceptual Perspectives–
  (a) Meaning &Definitions
  (b) Historical Perspective of Health
  (c) Health as a Human Right under International Instruments
- Relevant Constitutional Provisions relating to Health & Role of Judiciary in relation to Human Right to Health

UNIT II
(10 Contact Hours)

- Medical Professionals, Patients & The Law:
  (a) Doctor-Patient Confidentiality
  (b) Informed Consent
  (c) Medical Negligence
  (d) Clinical Trials & Code of Medical Ethics; Indian Medical Council (Professional Conduct, Etiquette and Ethics) Regulations,2002
- Important Health Laws:
  (a) The Mental Healthcare Act,2017
  (b) The Cigarettes & Other Tobacco Products (Prohibition of Advertisements & Regulation of Trade & Commerce, Production, Supply & Distribution) Act 2003 and Associate Rules.
  (c) The Food Safety & Standards Act 2006 & Relevant Provisions of Chapter XIV of IPC 1860

UNIT III
(10 Contact Hours)

- Reproductive Health Law:
  (a) Reproductive Rights and the Legal Status of Unborn Person
  (b) Abortion: Medical Termination of Pregnancy Act1971
  (c) Foeticide: Pre-Conception & Pre-Natal Diagnostic Techniques (Prohibition of Sex Selection) Act1994
- Emerging Bio-ethical Issues:
  (a) Artificial Reproductive Techniques
  (b) Surrogacy
  (c) Stem Cells Research
  (d) Organ Transplantation: Transplantation of Human Organs Act1994
  (e) Euthanasia

Mode of Evaluation: The performance of students is evaluated as follows:

	Theory	
Components	**Continuous Assessment and Evaluation (CAE)**	**Semester End Examination (SEE)**
Marks	40	60
Total Marks	100	

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping Between COs and POs		
S.No.	**Course Outcome (CO)**	**Mapped Programme Outcome (PO)**
1	Students will be able to acquire the basic knowledge of health laws in the contemporary world.	PO1, PO3
2	Students will be able to analyze the role played by the judiciary in enhancing the scope of the medical profession.	PO2, PO3, PO4, PO8
3	Students will be able to evaluate the working of various special enactments on health in India.	PO2, PO3, PO4, PO9

		Legal Knowledge	Analytical Skills	Problem Solving	Research Skills	Social Responsibility	Competitive Skills	Higher Education	Critical Thinking	Ethics	Communication
		1	2	3	4	5	6	7	8	9	10
20LBT664	**HealthLaws**	1	2	3	2				1	1	

1=addressed to a small extent; 2= addressed significantly; 3=major part of the course

ELECTION LAWS

MLB 206	Election Laws	L	T	P	S	C	CH
Scheme Version: 1.0		2	0	0	0	2	30
Pre-requisites/ Exposure	LLB.: Constitutional Law						
Co-requisites	NA						

COURSE OBJECTIVES

1. To provide the students with in-depth knowledge of the constitutional provisions related to various elections in India and the role of associated institutions.
2. To learn about the laws applicable to elections in India.
3. To learn about the role of Constitutional intuitions in conducting free and fair elections in India.

COURSE OUTCOMES

1. Students will be able to develop research skills in exploring the various election laws in India.
2. Students will learn about the specific legislation related to the subject.
3. The students will be able to understand the provisions of the Representation of the People Act, 1951 as applicable to the elections in India.

COURSE DESCRIPTION

This course is designed to make the students aware of the laws of elections, the conduct of elections, delimitation of constituencies, role of the Election Commission in conducting elections.

TEXTBOOKS

- **T1** Chawla, D.D: *Elections Law and Practice* (Bahri Brothers, 2011)
- **T2** Choudhry, R.N., *Election Laws and Practice in India* (Wadhwa Book Company, 2014)
- **T3** Abhinav Prakash, *Law relating to Election*, (Universal Law Publishing, 2012)
- **T4** H.M. Seervai, *Constitutional Law of India* (Universal Law Publishing, 2015)

REFERENCE BOOKS

- **R1** V S Rama Devi (Author), S K Mendiratta, *How India Votes - Election Laws, Practice and Procedure*
- (Lexis Nexis; 4th edition 2016)
- **R2** S.K. Ghosh, *Commentaries on the Representation of the Peoples Act*, (Law Publishers (India); 3rd edition 2001)
- **R3** M.P. Jain, *Indian Constitutional Law*, (Lexis Nexis, 2018)

UNIT I

(10 Contact Hours)

- **Election and Democratic Process**
- **Constitutional Provisions regarding Elections in India**
  - Article 324- 329 of the Indian constitution
  - Superintendence, direction, and control of elections
- **Election of President and Vice-President of India**
- **Elections of Municipal Corporations, Municipal Committees, and Panchayats**

UNIT II

(10 Contact Hours)

- **The Representation of the People Act, 1950**
  - electoral process
  - Allocation of Seats
  - Delimitation of Constituencies
  - Preparation of Electoral rolls for Assembly and Parliamentary Constituencies
- **The Representation of the People Act, 1951**
  - Qualifications for members of the House of People and State Legislative
  - Assemblies
  - Disqualifications for membership of the House of People and State Legislative Assemblies
  - Notification for a general election to the House of the People and State Legislative Assembly
  - Administrative Machinery for the conduct of elections
- **The Registration of Election Rules 1960 Conduct of Election Rules 1961**

UNIT III

(10 Contact Hours)

- **Election Commission of India- a Constitutional entity**
  - Composition, Powers, and Functions of Election Commission
- **Election Petition**
  - Who can present the Election petition to Election Commission?
  - Disputes regarding election petitions
  - Trial of Election Petition
  - Withdrawal of Election Petition
- **Corrupt Practices**
  - Meaning, Definition, classification, and Consequences of corrupt practices
- **Electoral Offences**

Mode of Evaluation: The performance of students is evaluated as follows:

	Theory	
Components	**Continuous Assessment and Evaluation (CAE)**	**Semester End Examination (SEE)**
Marks	40	60
Total Marks	100	

Relationship between the Course Outcomes (COs) and Program Outcomes (POs)

Mapping Between COs and POs		
S.No.	**Course Outcome (CO)**	**Mapped Programme Outcome (PO)**
1	Students will be able to develop research skills in exploring the various election laws in India.	PO1, PO2, PO4
2	Students will learn about the specific legislation related to the subject.	PO2, PO3
3	The students will be able to understand the provisions of the Representation of the People Act, 1951 as applicable to the elections in India.	PO2, PO3

		Legal Knowledge	Analytical Skills	Problem Solving	Research Skills	Social Responsibility	Competitive Skills	Higher Education	Critical Thinking	Ethics	Communication
		1	2	3	4	5	6	7	8	9	10
MLB 206	**Election Laws**	2	3	2	1						

1=addressed to a small extent; 2= addressed significantly; 3=major part of the course

Pharmacy Council of India

New Delhi

Rules & Syllabus for the Bachelor of Pharmacy (B. Pharm) Course

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[Framed under Regulation 6, 7 & 8 of the Bachelor of Pharmacy (B. Pharm) course regulations 2014]

CHAPTER- I: REGULATIONS

1. Short Title and Commencement

These regulations shall be called as "The Revised Regulations for the B. Pharm. Degree Program (CBCS)of the Pharmacy Council of India, New Delhi". They shall come into effect from the Academic Year 2016-17. The regulations framed are subject to modifications from time to time by Pharmacy Council of India.

2. Minimum qualification for admission

2.1 First year B. Pharm:

Candidate shall have passed 10+2 examination conducted by the respective state/central government authorities recognized as equivalent to 10+2 examination by the Association of Indian Universities (AIU) with English as one of the subjects and Physics, Chemistry, Mathematics (P.C.M) and or Biology (P.C.B / P.C.M.B.) as optional subjects individually. Any other qualification approved by the Pharmacy Council of India as equivalent to any of the above examinations.

2.2. B. Pharm lateral entry (to third semester):

A pass in D. Pharm. course from an institution approved by the Pharmacy Council of India under section 12 of the Pharmacy Act.

3. Duration of the program

The course of study for B.Pharm shall extend over a period of eight semesters (four academic years) and six semesters (three academic years) for lateral entry students. The curricula and syllabi for the program shall be prescribed from time to time by Pharmacy Council of India, New Delhi.

4. Medium of instruction and examinations

Medium of instruction and examination shall be in English.

5. Working days in each semester

Each semestershall consist of not less than 100 working days. The odd semesters shall be conducted from the month of June/July to November/December and the even semesters shall be conducted from December/January to May/June in every calendar year.

6. Attendance and progress

A candidate is required to put in at least 80% attendance in individual courses considering theory and practical separately. The candidate shall complete the prescribed course satisfactorily to be eligible to appear for the respective examinations.

7. Program/Course credit structure

As per the philosophy of Credit Based Semester System, certain quantum of academic work viz. theory classes, tutorial hours, practical classes, etc. are measured in terms of credits. On satisfactory completion of the courses, a candidate earns credits. The amount of credit associated with a course is dependent upon the number of hours of instruction per week in that course. Similarly, the credit associated with any of the other academic, co/extra-curricular activities is dependent upon the quantum of work expected to be put in for each of these activities per week.

7.1. Credit assignment

7.1.1. Theory and Laboratory courses

Courses are broadly classified as Theory and Practical. Theory courses consist of lecture (L) and /or tutorial (T) hours, and Practical (P) courses consist of hours spent in the laboratory. Credits (C) for a course is dependent on the number of hours of instruction per week in that course, and is obtained by using a multiplier of one (1) for lecture and tutorial hours, and a multiplier of half (1/2) for practical (laboratory) hours. Thus, for example, a theory course having three lectures and one tutorial per week throughout the semester carries a credit of 4. Similarly, a practical having four laboratory hours per week throughout semester carries a credit of 2.

7.2. Minimum credit requirements

The minimum credit points required for award of a B. Pharm. degree is 208. These credits are divided into Theory courses, Tutorials, Practical, Practice School and Projectover the duration of eight semesters. The credits are distributed semester-wise as shown in Table IX. Courses generally progress in sequences, building competencies and their positioning indicates certain academic maturity on the part of the learners. Learners are expected to follow the semester-wise schedule of courses given in the syllabus.

The lateral entry students shall get 52 credit points transferred from their D. Pharm program. Such students shall take up additional remedial courses of 'Communication Skills' (Theory and Practical) and 'Computer Applications in Pharmacy' (Theory and Practical) equivalent to 3 and 4 credit points respectively, a total of 7 credit points to attain 59 credit points, the maximum of I and II semesters.

8. Academic work

A regular record of attendance both in Theory and Practical shall be maintained by the teaching staff of respective courses.

9. Course of study

The course of study for B. Pharm shall include Semester Wise Theory & Practical as given in Table – I to VIII. The number of hours to be devoted to each theory, tutorial and practical course in any semester shall not be less than that shown in Table – I to VIII.

Table-I: Course of study for semester I

Course code	Name of the course	No. of hours	Tutorial	Credit points
BP101T	Human Anatomy and Physiology I– Theory	3	1	4
BP102T	Pharmaceutical Analysis I – Theory	3	1	4
BP103T	Pharmaceutics I – Theory	3	1	4
BP104T	Pharmaceutical Inorganic Chemistry – Theory	3	1	4
BP105T	Communication skills – Theory *	2	-	2
BP106RBT BP106RMT	Remedial Biology/ Remedial Mathematics – Theory*	2	-	2
BP107P	Human Anatomy and Physiology – Practical	4	-	2
BP108P	Pharmaceutical Analysis I – Practical	4	-	2
BP109P	Pharmaceutics I – Practical	4	-	2
BP110P	Pharmaceutical Inorganic Chemistry – Practical	4	-	2
BP111P	Communication skills – Practical*	2	-	1
BP112RBP	Remedial Biology – Practical*	2	-	1
	Total	**32/34$/36#**	**4**	**27/29$/30#**

#Applicable ONLY for the students who have studied Mathematics / Physics / Chemistry at HSC and appearing for Remedial Biology (RB)course**.**

$Applicable ONLY for the students who have studied Physics / Chemistry / Botany / Zoology at HSC and appearing for Remedial Mathematics (RM)course**.**

* Non University Examination (NUE)

Table-II: Course of study for semester II

Course Code	Name of the course	No. of hours	Tutorial	Credit points
BP201T	Human Anatomy and Physiology II – Theory	3	1	4
BP202T	Pharmaceutical Organic Chemistry I – Theory	3	1	4
BP203T	Biochemistry – Theory	3	1	4
BP204T	Pathophysiology – Theory	3	1	4
BP205T	Computer Applications in Pharmacy – Theory *	3	-	3
BP206T	Environmental sciences – Theory *	3	-	3
BP207P	Human Anatomy and Physiology II –Practical	4	-	2
BP208P	Pharmaceutical Organic Chemistry I– Practical	4	-	2
BP209P	Biochemistry – Practical	4	-	2
BP210P	Computer Applications in Pharmacy – Practical*	2	-	1
	Total	**32**	**4**	**29**

*****Non University Examination (NUE)

Table-III: Course of study for semester III

Course code	Name of the course	No. of hours	Tutorial	Credit points
BP301T	Pharmaceutical Organic Chemistry II – Theory	3	1	4
BP302T	Physical Pharmaceutics I – Theory	3	1	4
BP303T	Pharmaceutical Microbiology – Theory	3	1	4
BP304T	Pharmaceutical Engineering – Theory	3	1	4
BP305P	Pharmaceutical Organic Chemistry II – Practical	4	-	2
BP306P	Physical Pharmaceutics I – Practical	4	-	2
BP307P	Pharmaceutical Microbiology – Practical	4	-	2
BP 308P	Pharmaceutical Engineering –Practical	4	-	2
	Total	**28**	**4**	**24**

Table-IV: Course of study for semester IV

Course code	Name of the course	No. of hours	Tutorial	Credit points
BP401T	Pharmaceutical Organic Chemistry III– Theory	3	1	4
BP402T	Medicinal Chemistry I – Theory	3	1	4
BP403T	Physical Pharmaceutics II – Theory	3	1	4
BP404T	Pharmacology I – Theory	3	1	4
BP405T	Pharmacognosy and Phytochemistry I– Theory	3	1	4
BP406P	Medicinal Chemistry I – Practical	4	-	2
BP407P	Physical Pharmaceutics II – Practical	4		2
BP408P	Pharmacology I – Practical	4	-	2
BP409P	Pharmacognosy and Phytochemistry I – Practical	4	-	2
	Total	**31**	**5**	**28**

Table-V: Course of study for semester V

Course code	Name of the course	No. of hours	Tutorial	Credit points
BP501T	Medicinal Chemistry II – Theory	3	1	4
BP502T	Industrial PharmacyI– Theory	3	1	4
BP503T	Pharmacology II – Theory	3	1	4
BP504T	Pharmacognosy and Phytochemistry II– Theory	3	1	4
BP505T	Pharmaceutical Jurisprudence – Theory	3	1	4
BP506P	Industrial PharmacyI – Practical	4	-	2
BP507P	Pharmacology II – Practical	4	-	2
BP508P	Pharmacognosy and Phytochemistry II – Practical	4	-	2
	Total	**27**	**5**	**26**

Table-VI: Course of study for semester VI

Course code	Name of the course	No. of hours	Tutorial	Credit points
BP601T	Medicinal Chemistry III – Theory	3	1	4
BP602T	Pharmacology III – Theory	3	1	4
BP603T	Herbal Drug Technology – Theory	3	1	4
BP604T	Biopharmaceutics and Pharmacokinetics – Theory	3	1	4
BP605T	Pharmaceutical Biotechnology – Theory	3	1	4
BP606T	Quality Assurance –Theory	3	1	4
BP607P	Medicinal chemistry III – Practical	4	-	2
BP608P	Pharmacology III – Practical	4	-	2
BP609P	Herbal Drug Technology – Practical	4	-	2
	Total	**30**	**6**	**30**

Table-VII: Course of study for semester VII

Course code	Name of the course	No. of hours	Tutorial	Credit points
BP701T	Instrumental Methods of Analysis – Theory	3	1	4
BP702T	Industrial PharmacyII – Theory	3	1	4
BP703T	Pharmacy Practice – Theory	3	1	4
BP704T	Novel Drug Delivery System – Theory	3	1	4
BP705P	Instrumental Methods of Analysis – Practical	4	-	2
BP706PS	Practice School*	12	-	6
	Total	**28**	**5**	**24**

***** Non University Examination (NUE)

Table-VIII: Course of study for semester VIII

Course code	Name of the course	No. of hours	Tutorial	Credit points
BP801T	Biostatistics and Research Methodology	3	1	4
BP802T	Social and Preventive Pharmacy	3	1	4
BP803ET	Pharma Marketing Management	3 + 3 = 6	1 + 1 = 2	4 + 4 = 8
BP804ET	Pharmaceutical Regulatory Science			
BP805ET	Pharmacovigilance			
BP806ET	Quality Control and Standardization of Herbals			
BP807ET	Computer Aided Drug Design			
BP808ET	Cell and Molecular Biology			
BP809ET	Cosmetic Science			
BP810ET	Experimental Pharmacology			
BP811ET	Advanced Instrumentation Techniques			
BP812ET	Dietary Supplements and Nutraceuticals			
BP813PW	Project Work	12	-	6
	Total	**24**	**4**	**22**

Table-IX: Semester wise credits distribution

Semester	Credit Points
I	**27/29$/30#**
II	29
III	26
IV	28
V	26
VI	26
VII	24
VIII	22
Extracurricular/ Co curricular activities	01*
Total credit points for the program	**209/211$/212#**

* The credit points assigned for extracurricular and or co-curricular activities shall be given by the Principals of the colleges and the same shall be submitted to the University. The criteria to acquire this credit point shall be defined by the colleges from time to time.

$Applicable ONLY for the students studied Physics / Chemistry / Botany / Zoology at HSC and appearing for Remedial Mathematics course.

#Applicable ONLY for the students studied Mathematics / Physics / Chemistry at HSC and appearing for Remedial Biology course.

10. Program Committee

1. The B. Pharm. program shall have a Program Committee constituted by the Head of the institution in consultation with all the Heads of the departments.

2. The composition of the Program Committee shall be as follows:

   A senior teacher shall be the Chairperson; One Teacher from each department handling B.Pharm courses; and four student representatives of the program (one from each academic year), nominated by the Head of the institution.

3. Duties of the Program Committee:

   i. Periodically reviewing the progress of the classes.
   ii. Discussing the problems concerning curriculum, syllabus and the conduct of classes.
   iii. Discussing with the course teachers on the nature and scope of assessment for the course and the same shall be announced to the students at the beginning of respective semesters.
   iv. Communicating its recommendation to the Head of the institution on academic matters.
   v. The Program Committee shall meet at least thrice in a semester preferably at the end of each Sessionalexam (Internal Assessment) and before the end semester exam.

11. Examinations/Assessments

The scheme for internal assessment and end semester examinations is given in Table – X.

11.1. End semester examinations

The End Semester Examinations for each theory and practical coursethrough semesters I to VIII shall beconducted by the university except for the subjects with asterix symbol (*) in table I and II for which examinations shall be conducted by the subject experts at college level and the marks/grades shall be submitted to the university.

Tables-X: Schemes for internal assessments and end semester examinations semester wise

Semester I

Course code	Name of the course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
BP101T	Human Anatomy and Physiology I– Theory	10	15	1 Hr	25	75	3 Hrs	100
BP102T	Pharmaceutical Analysis I – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP103T	Pharmaceutics I – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP104T	Pharmaceutical Inorganic Chemistry – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP105T	Communication skills – Theory *	5	10	1 Hr	15	35	1.5 Hrs	50
BP106RBT BP106RMT	Remedial Biology/ Mathematics – Theory*	5	10	1 Hr	15	35	1.5 Hrs	50
BP107P	Human Anatomy and Physiology – Practical	5	10	4 Hrs	15	35	4 Hrs	50
BP108P	Pharmaceutical Analysis I – Practical	5	10	4 Hrs	15	35	4 Hrs	50
BP109P	Pharmaceutics I – Practical	5	10	4 Hrs	15	35	4 Hrs	50
BP110P	Pharmaceutical Inorganic Chemistry – Practical	5	10	4 Hrs	15	35	4 Hrs	50
BP111P	Communication skills – Practical*	5	5	2 Hrs	10	15	2 Hrs	25
BP112RBP	Remedial Biology – Practical*	5	5	2 Hrs	10	15	2 Hrs	25
	Total	**70/75$^{\$}$/80$^{\#}$**	**115/125$^{\$}$/130$^{\#}$**	**23/24$^{\$}$/26$^{\#}$ Hrs**	**185/200$^{\$}$/210$^{\#}$**	**490/525$^{\$}$/ 540$^{\#}$**	**31.5/33$^{\$}$/ 35$^{\#}$ Hrs**	**675/725$^{\$}$/ 750$^{\#}$**

$^{\#}$Applicable ONLY for the students studied Mathematics / Physics / Chemistry at HSC and appearing for Remedial Biology (RB)course.

$^{\$}$Applicable ONLY for the students studied Physics / Chemistry / Botany / Zoology at HSC and appearing for Remedial Mathematics (RM)course.

***** Non University Examination (NUE)

Semester II

Course code	Name of the course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
BP201T	Human Anatomy and Physiology II – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP202T	Pharmaceutical Organic Chemistry I – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP203T	Biochemistry – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP204T	Pathophysiology – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP205T	Computer Applications in Pharmacy – Theory*	10	15	1 Hr	25	50	2 Hrs	75
BP206T	Environmental sciences – Theory*	10	15	1 Hr	25	50	2 Hrs	75
BP207P	Human Anatomy and Physiology II –Practical	5	10	4 Hrs	15	35	4 Hrs	50
BP208P	Pharmaceutical Organic Chemistry I– Practical	5	10	4 Hrs	15	35	4 Hrs	50
BP209P	Biochemistry – Practical	5	10	4 Hrs	15	35	4 Hrs	50
BP210P	Computer Applications in Pharmacy – Practical*	5	5	2 Hrs	10	15	2 Hrs	25
	Total	**80**	**125**	**20 Hrs**	**205**	**520**	**30 Hrs**	**725**

***** The subject experts at college level shall conduct examinations

Semester III

Course code	Name of the course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
BP301T	Pharmaceutical Organic Chemistry II – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP302T	PhysicalPharmaceuticsI –Theory	10	15	1 Hr	25	75	3 Hrs	100
BP303T	Pharmaceutical Microbiology – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP304T	Pharmaceutical Engineering – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP305P	Pharmaceutical Organic Chemistry II – Practical	5	10	4 Hr	15	35	4 Hrs	50
BP306P	Physical Pharmaceutics I – Practical	5	10	4 Hr	15	35	4 Hrs	50
BP307P	Pharmaceutical Microbiology – Practical	5	10	4 Hr	15	35	4 Hrs	50
BP308P	Pharmaceutical Engineering – Practical	5	10	4 Hr	15	35	4 Hrs	50
Total		**60**	**100**	**20**	**160**	**440**	**28Hrs**	**600**

Semester IV

Course code	Name of the course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
BP401T	Pharmaceutical Organic Chemistry III– Theory	10	15	1 Hr	25	75	3 Hrs	100
BP402T	Medicinal Chemistry I – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP403T	Physical Pharmaceutics II – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP404T	Pharmacology I – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP405T	Pharmacognosy I – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP406P	Medicinal Chemistry I – Practical	5	10	4 Hr	15	35	4 Hrs	50
BP407P	Physical Pharmaceutics II – Practical	5	10	4 Hrs	15	35	4 Hrs	50
BP408P	Pharmacology I – Practical	5	10	4 Hrs	15	35	4 Hrs	50
BP409P	Pharmacognosy I – Practical	5	10	4 Hrs	15	35	4 Hrs	50
Total		**70**	**115**	**21 Hrs**	**185**	**515**	**31 Hrs**	**700**

Semester V

Course code	Name of the course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
BP501T	Medicinal Chemistry II – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP502T	Industrial PharmacyI– Theory	10	15	1 Hr	25	75	3 Hrs	100
BP503T	Pharmacology II – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP504T	Pharmacognosy II – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP505T	Pharmaceutical Jurisprudence – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP506P	Industrial PharmacyI– Practical	5	10	4 Hr	15	35	4 Hrs	50
BP507P	Pharmacology II – Practical	5	10	4 Hr	15	35	4 Hrs	50
BP508P	Pharmacognosy II – Practical	5	10	4 Hr	15	35	4 Hrs	50
Total		**65**	**105**	**17 Hr**	**170**	**480**	**27 Hrs**	**650**

Semester VI

Course code	Name of the course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
BP601T	Medicinal Chemistry III – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP602T	Pharmacology III – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP603T	Herbal Drug Technology – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP604T	Biopharmaceutics and Pharmacokinetics – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP605T	Pharmaceutical Biotechnology– Theory	10	15	1 Hr	25	75	3 Hrs	100
BP606T	Quality Assurance– Theory	10	15	1 Hr	25	75	3 Hrs	100
BP607P	Medicinal chemistry III – Practical	5	10	4 Hrs	15	35	4 Hrs	50
BP608P	Pharmacology III – Practical	5	10	4 Hrs	15	35	4 Hrs	50
BP609P	Herbal Drug Technology – Practical	5	10	4 Hrs	15	35	4 Hrs	50
Total		**75**	**120**	**18 Hrs**	**195**	**555**	**30 Hrs**	**750**

Semester VII

Course code	Name of the course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
BP701T	Instrumental Methods of Analysis – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP702T	Industrial Pharmacy – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP703T	Pharmacy Practice – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP704T	Novel Drug Delivery System – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP705 P	Instrumental Methods of Analysis – Practical	5	10	4 Hrs	15	35	4 Hrs	50
BP706 PS	Practice School*	25	-	-	25	125	5 Hrs	150
Total		**70**	**70**	**8Hrs**	**140**	**460**	**21 Hrs**	**600**

***** The subject experts at college level shall conduct examinations

Semester VIII

Course code	Name of the course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
BP801T	Biostatistics and Research Methodology – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP802T	Social and Preventive Pharmacy – Theory	10	15	1 Hr	25	75	3 Hrs	100
BP803ET	Pharmaceutical Marketing – Theory	10 + 10 = 20	15 + 15 = 30	1 + 1 = 2 Hrs	25 + 25 = 50	75 + 75 = 150	3 + 3 = 6 Hrs	100 + 100 = 200
BP804ET	Pharmaceutical Regulatory Science – Theory							
BP805ET	Pharmacovigilance – Theory							
BP806ET	Quality Control and Standardization of Herbals – Theory							
BP807ET	Computer Aided Drug Design – Theory							
BP808ET	Cell and Molecular Biology – Theory							
BP809ET	Cosmetic Science – Theory							
BP810ET	Experimental Pharmacology – Theory							
BP811ET	Advanced Instrumentation Techniques – Theory							
BP812PW	Project Work	-	-	-	-	150	4 Hrs	150
	Total	**40**	**60**	**4 Hrs**	**100**	**450**	**16 Hrs**	**550**

11.2. Internal assessment: Continuous mode

The marks allocated for Continuous mode of Internal Assessment shall be awarded as per the scheme given below.

Table-XI:Scheme for awarding internal assessment: Continuous mode

Theory		
Criteria	**Maximum Marks**	
Attendance (Refer Table – XII)	4	2
Academic activities (Average of any 3 activities e.g. quiz, assignment, open book test, field work, group discussion and seminar)	3	1.5
Student – Teacher interaction	3	1.5
Total	**10**	**5**
Practical		
Attendance (Refer Table – XII)	2	
Based on Practical Records, Regular viva voce, etc.	3	
Total	**5**	

Table- XII: Guidelines for the allotment of marks for attendance

Percentage of Attendance	**Theory**	**Practical**
95 – 100	4	2
90 – 94	3	1.5
85 – 89	2	1
80 – 84	1	0.5
Less than 80	0	0

11.2.1. Sessional Exams

Two Sessional exams shall be conducted for each theory / practical course as per the schedule fixed by the college(s). The scheme of question paper for theory and practical Sessional examinations is given below. The average marks of two Sessional exams shall be computed for internal assessment as per the requirements given in tables – X.

Sessional exam shall be conducted for 30 marks for theory and shall be computed for 15 marks. Similarly Sessional exam for practical shall be conducted for 40 marks and shall be computed for 10 marks.

Question paper pattern for theory Sessional examinations

For subjects having University examination

I. Multiple Choice Questions (MCQs)	=	10 x 1 = 10
OR		OR
Objective Type Questions (5 x 2)	=	05 x 2 = 10
(Answer all the questions)		
I. Long Answers (Answer 1 out of 2)	=	1 x 10 = 10
II. Short Answers (Answer 2 out of 3)	=	2 x 5 = 10

Total	=	30 marks

For subjects having Non University Examination

I. Long Answers (Answer 1 out of 2)	=	1 x 10 = 10
II. Short Answers (Answer 4 out of 6)	=	4 x 5 = 20

Total	=	30 marks

Question paper pattern for practical sessional examinations

I. Synopsis	=	10
II. Experiments	=	25
III. Viva voce	=	05

Total	=	40 marks
		----------

12. Promotion and award of grades

A student shall be declared PASSand eligible for getting gradein a course of B.Pharm.program if he/she secures at least 50% marks in that particular course including internal assessment.For example, to be declared as PASS and to get grade, the student has to secure a minimum of 50 marks for the total of 100 including continuous mode of assessment and end semester theory examination and has to secure a minimum of 25 marks for the total 50 including internal assessment and end semester practical examination.

13. Carry forward of marks

In case a studentfails to secure the minimum 50% in any Theory or Practical course as specified in 12,then he/she shall reappear for the end semester examinationof that course. However his/her marks of the Internal Assessmentshallbe carried overand he/she shall be entitled for grade obtained by him/her on passing.

14. Improvement of internal assessment

A studentshall have the opportunity to improvehis/her performance only oncein the Sessional exam component of the internal assessment. The re-conduct of the Sessional exam shall be completed before the commencement of next end semester theory examinations.

15. Re-examination of end semester examinations

Reexamination ofend semester examinationshall be conducted as per the schedule given in table XIII. The exact dates of examinations shall be notified from time to time.

Table-XIII: Tentative schedule of end semester examinations

Semester	For Regular Candidates	For Failed Candidates
I, III, V and VII	November / December	May / June
II, IV, VI and VIII	May / June	November / December

Question paper pattern for end semester theory examinations

For 75 marks paper

I. Multiple Choice Questions(MCQs) = 20 x 1 = 20
OR OR
Objective Type Questions (10 x 2) = 10 x 2 = 20
(Answer all the questions)
II. Long Answers (Answer 2 out of 3) = 2 x 10 = 20
III. Short Answers (Answer 7 out of 9) = 7 x 5 = 35

Total = 75 marks

For 50 marks paper

I. Long Answers (Answer 2 out of 3) = 2 x 10 = 20
II. Short Answers (Answer 6 out of 8) = 6 x 5 = 30

Total = 50 marks

For 35 marks paper

I. Long Answers (Answer 1 out of 2) = 1 x 10 =10
II. Short Answers (Answer 5 out of 7) = 5 x 5 = 25

Total = 35 marks

Question paper pattern for end semester practical examinations

I. Synopsis = 5
II. Experiments = 25
III. Viva voce = 5

Total = 35 marks

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16. Academic Progression:

No student shall be admitted to any examination unless he/she fulfills the norms given in 6. Academic progression rules are applicable as follows:

A student shall be eligible to carry forward all the courses of I, II and III semesters till the IV semester examinations. However, he/she shall not be eligible to attend the courses of V semester until all the courses of I and II semesters are successfully completed.

A student shall be eligible to carry forward all the courses of III, IV and V semesters till the VI semester examinations. However, he/she shall not be eligible to attend the courses of VII semester until all the courses of I, II, III and IV semesters are successfully completed.

A student shall be eligible to carry forward all the courses of V, VI and VII semesters till the VIII semester examinations. However, he/she shall not be eligible to get the course completion certificate until all the courses of I, II, III, IV, V and VI semesters are successfully completed.

A student shall be eligible to get his/her CGPA upon successful completion of the courses of I to VIII semesters within the stipulated time period as per the norms specified in 26.

A lateral entry student shall be eligible to carry forward all the courses of III, IV and V semesters till the VI semester examinations. However, he/she shall not be eligible to attend the courses of VII semester until all the courses of III and IV semesters are successfully completed.

A lateral entry student shall be eligible to carry forward all the courses of V, VI and VII semesters till the VIII semester examinations. However, he/she shall not be eligible to get the course completion certificate until all the courses of III, IV, V and VI semesters are successfully completed.

A lateral entry student shall be eligible to get his/her CGPA upon successful completion of the courses of III to VIII semesters within the stipulated time period as per the norms specified in 26.

Any student who hasgiven more than 4 chances for successful completion of I / III semester courses and more than 3 chances for successful completion of II / IV semester courses shall be permitted to attend V / VII semester classes ONLY during the subsequent academic year as the case may be. In simpler terms there shall NOT be any ODD BATCH for any semester.

Note: Grade ABshould be considered as failed and treated as one head for deciding academic progression. Such rules are also applicable for those students who fail to register for examination(s) of any course in any semester.

17. Grading of performances

17.1. Letter grades and grade points allocations:

Based on the performances, each student shall be awarded a final letter grade at the end of the semester for each course.The letter grades and their corresponding grade points are given in Table – XII.

Table – XII: Letter grades and grade points equivalent to Percentage of marks and performances

Percentage of Marks Obtained	Letter Grade	Grade Point	Performance
90.00 – 100	O	10	Outstanding
80.00 – 89.99	A	9	Excellent
70.00 – 79.99	B	8	Good
60.00 – 69.99	C	7	Fair
50.00 – 59.99	D	6	Average
Less than 50	F	0	Fail
Absent	AB	0	Fail

A learner who remains absent for any end semester examination shall be assigned a letter grade of ABand a corresponding grade point of zero. He/she should reappear for the said evaluation/examination in due course.

18. The Semester grade point average (SGPA)

The performance of a student in a semester is indicated by a number called 'Semester Grade Point Average' (SGPA). The SGPA is the weighted average of the grade points obtainedin all the courses by the student during the semester. For example, if a student takes five courses(Theory/Practical) in a semester with credits C1, C2, C3, C4 and C5 and the student's grade pointsin these courses are G1, G2, G3, G4 and G5, respectively, and then students' SGPA is equal to:

$$\text{SGPA} = \frac{C_1G_1 + C_2G_2 + C_3G_3 + C_4G_4 + C_5G_5}{C_1 + C_2 + C_3 + C_4 + C_5}$$

The SGPA is calculated to two decimal points.It should be noted that, the SGPA for any semester shall take into consideration the F and ABSgrade awarded in that semester. For example if a learner has a F or ABS grade in course 4, theSGPA shall then be computed as:

$$\text{SGPA} = \frac{C_1G_1 + C_2G_2 + C_3G_3 + C_4 * \text{ZERO} + C_5G_5}{C_1 + C_2 + C_3 + C_4 + C_5}$$

19. Cumulative Grade Point Average (CGPA)

The CGPA is calculated with the SGPA of all the VIII semesters to two decimal points and is indicated in final grade report card/final transcript showing the grades of all VIII semesters and their courses. The CGPA shall reflect the failed statusin case of F grade(s),till the course(s) is/are passed. When the course(s)is/are passedby obtaining a pass grade on subsequent examination(s) theCGPA shall only reflect the new grade and not the fail grades earned earlier.The CGPA is calculated as:

$$\text{CGPA} = \frac{C_1S_1 + C_2S_2 + C_3S_3 + C_4S_4 + C_5S_5 + C_6S_6 + C_7S_7 + C_8S_8}{C_1 + C_2 + C_3 + C_4 + C_5 + C_6 + C_7 + C_8}$$

where $C_1, C_2, C_3,\ldots$ is the total number of credits for semester I,II,III,…. and $S_1,S_2, S_3,\ldots$is the SGPA of semester I,II,III,…. .

20. Declaration of class

The class shall be awarded on the basis of CGPA as follows:

First Class with Distinction	= CGPA of. 7.50 and above
First Class	= CGPA of 6.00 to 7.49
Second Class	= CGPA of 5.00 to 5.99

21. Project work

All the students shall undertake a projectunder the supervision of a teacher and submit a report. The area of the project shall directly relate any one of the elective subject opted by the student in semester VIII. The project shall be carried out in group not exceeding 5 in number. The project report shall be submitted in triplicate (typed & bound copy not less than 25 pages).

The internal and external examiner appointed by the University shall evaluate the project at the time of the Practical examinations of other semester(s). Students shall be evaluated in groups for four hours (i.e., about half an hour for a group of five students). The projects shall be evaluated as per the criteria given below.

Evaluation of Dissertation Book:

Objective(s) of the work done		15 Marks
Methodology adopted		20 Marks
Results and Discussions		20 Marks
Conclusions and Outcomes		20 Marks
	Total	**75 Marks**

Evaluation of Presentation:

Presentation of work		25 Marks
Communication skills		20 Marks
Question and answer skills		30 Marks
	Total	**75 Marks**

Explanation: The 75 marks assigned to the dissertation book shall be same for all the students in a group. However, the 75 marks assigned for presentation shall be awarded based on the performance of individual students in the given criteria.

22. Industrial training (Desirable)

Every candidate shall be required to work for at least 150 hours spread over four weeks in a Pharmaceutical Industry/Hospital. It includes Production unit, Quality Control department, Quality Assurance department, Analytical laboratory, Chemical manufacturing unit, Pharmaceutical R&D, Hospital (Clinical Pharmacy), Clinical Research Organization, Community Pharmacy, etc. After the Semester – VI and before the commencement of Semester – VII, and shall submit satisfactory report of such work and certificate duly signed by the authority of training organization to the head of the institute.

23. Practice School

In the VII semester, every candidate shall undergo practice school for a period of 150 hours evenly distributed throughout the semester. The student shall opt any one of the domains for practice school declared by the program committee from time to time.

At the end of the practice school, every student shall submit a printed report (in triplicate) on the practice school he/she attended (not more than 25 pages). Along with the exams of semester VII, the report submitted by the student, knowledge and skills acquired by the student through practice school shall be evaluated by the subject experts at college leveland grade point shall be awarded.

24. Award of Ranks

Ranks and Medals shall be awarded on the basis of final CGPA. However, candidates who fail in one or more courses during the B.Pharm program shall not be eligible for award of ranks.Moreover, the candidates should have completed the B. Pharm program in minimum prescribed number of years, (four years) for the award of Ranks.

25. Award of degree

Candidates who fulfill the requirements mentioned above shall be eligible for award of degree during the ensuing convocation.

26. Duration for completion of the program of study

The duration for the completion of the program shall be fixed as double the actual duration of the program and the students have to pass within the said period, otherwise they have to get fresh Registration.

27. Re-admission after break of study

Candidate who seeks re-admission to the program after break of study has to get the approval from the university by paying a condonation fee.

No condonation is allowed for the candidate who has more than 2 years of break up period and he/she has to rejoin the program by paying the required fees.

CHAPTER - II: SYLLABUS

Semester I

BP101T. HUMAN ANATOMY AND PHYSIOLOGY-I (Theory)

45 Hours

Scope: This subject is designed to impart fundamental knowledge on the structure and functions of the various systems of the human body. It also helps in understanding both homeostatic mechanisms. The subject provides the basic knowledge required to understand the various disciplines of pharmacy.

Objectives: Upon completion of this course the student should be able to

1. Explain the gross morphology, structure and functions of various organs of the human body.
2. Describe the various homeostatic mechanisms and their imbalances.
3. Identify the various tissues and organs of different systems of human body.
4. Perform the various experiments related to special senses and nervous system.
5. Appreciate coordinated working pattern of different organs of each system

Course Content:

Unit I **10 hours**

- **Introduction to human body**
  Definition and scope of anatomy and physiology, levels of structural organization and body systems, basic life processes, homeostasis, basic anatomical terminology.
- **Cellular level of organization**
  Structure and functions of cell, transport across cell membrane, cell division, cell junctions. General principles of cell communication, intracellular signaling pathway activation by extracellular signal molecule, Forms of intracellular signaling: a) Contact-dependent b) Paracrine c) Synaptic d) Endocrine
- **Tissue level of organization**
  Classification of tissues, structure, location and functions of epithelial, muscular and nervous and connective tissues.

Unit II **10 hours**

- **Integumentary system**
  Structure and functions of skin
- **Skeletal system**
  Divisions of skeletal system, types of bone, salient features and functions of bones of axial and appendicular skeletal system
  Organization of skeletal muscle, physiology of muscle contraction, neuromuscular junction

- **Joints**
  Structural and functional classification, types of joints movements and its articulation

Unit III **10 hours**

- **Body fluids and blood**
- Body fluids, composition and functions of blood, hemopoeisis, formation of hemoglobin, anemia, mechanisms of coagulation, blood grouping, Rh factors, transfusion, its significance and disorders of blood, Reticulo endothelial system.
- **Lymphatic system**

  Lymphatic organs and tissues, lymphatic vessels, lymph circulation and functions of lymphatic system

Unit IV **08 hours**

Peripheral nervous system:
Classification of peripheral nervous system: Structure and functions of sympathetic and parasympathetic nervous system.
Origin and functions of spinal and cranial nerves.

- **Special senses**
  Structure and functions of eye, ear, nose and tongue and their disorders.

Unit V **07 hours**

- **Cardiovascular system**
  Heart – anatomy of heart, blood circulation, blood vessels, structure and functions of artery, vein and capillaries, elements of conduction system of heart and heart beat, its regulation by autonomic nervous system, cardiac output, cardiac cycle. Regulation of blood pressure, pulse, electrocardiogram and disorders of heart.

BP107P. HUMAN ANATOMY AND PHYSIOLOGY (Practical)

4 Hours/week

Practical physiology is complimentary to the theoretical discussions in physiology. Practicals allow the verification of physiological processes discussed in theory classes through experiments on living tissue, intact animals or normal human beings. This is helpful for developing an insight on the subject**.**

1. Study of compound microscope.
2. Microscopic study of epithelial and connective tissue
3. Microscopic study of muscular and nervous tissue
4. Identification of axial bones
5. Identification of appendicular bones

6. Introduction to hemocytometry.
7. Enumeration of white blood cell (WBC) count
8. Enumeration of total red blood corpuscles (RBC) count
9. Determination of bleeding time
10. Determination of clotting time
11. Estimation of hemoglobin content
12. Determination of blood group.
13. Determination of erythrocyte sedimentation rate (ESR).
14. Determination of heart rate and pulse rate.
15. Recording of blood pressure.

Recommended Books (Latest Editions)

1. Essentials of Medical Physiology by K. Sembulingam and P. Sembulingam. Jaypee brothers medical publishers, New Delhi.
2. Anatomy and Physiology in Health and Illness by Kathleen J.W. Wilson, Churchill Livingstone, New York
3. Physiological basis of Medical Practice-Best and Tailor. Williams & Wilkins Co,Riverview,MI USA
4. Text book of Medical Physiology- Arthur C,Guyton andJohn.E. Hall. Miamisburg, OH, U.S.A.
5. Principles of Anatomy and Physiology by Tortora Grabowski. Palmetto, GA, U.S.A.

6. Textbook of Human Histology by Inderbir Singh, Jaypee brother's medical publishers, New Delhi.
7. Textbook of Practical Physiology by C.L. Ghai, Jaypee brother's medical publishers, New Delhi.
8. Practical workbook of Human Physiology by K. Srinageswari and Rajeev Sharma, Jaypee brother's medical publishers, New Delhi.

Reference Books (Latest Editions)

1. Physiological basis of Medical Practice-Best and Tailor. Williams & Wilkins Co, Riverview, MI USA
2. Text book of Medical Physiology- Arthur C, Guyton and John. E. Hall. Miamisburg, OH, U.S.A.
3. Human Physiology (vol 1 and 2) by Dr. C.C. Chatterrje ,Academic Publishers Kolkata

BP102T. PHARMACEUTICAL ANALYSIS (Theory)

45 Hours

Scope: This course deals with the fundamentals of analytical chemistry and principles of electrochemical analysis of drugs

Objectives: Upon completion of the course student shall be able to

- understand the principles of volumetric and electro chemical analysis
- carryout various volumetric and electrochemical titrations
- develop analytical skills

Course Content:

UNIT-I **10 Hours**

(a) Pharmaceutical analysis- Definition and scope

i) Different techniques of analysis

ii) Methods of expressing concentration

iii) Primary and secondary standards.

iv) Preparation and standardization of various molar and normal solutions- Oxalic acid, sodium hydroxide, hydrochloric acid, sodium thiosulphate, sulphuric acid, potassium permanganate and ceric ammonium sulphate

(b)Errors: Sources of errors, types of errors, methods of minimizing errors, accuracy, precision and significant figures

(c)Pharmacopoeia, Sources of impurities in medicinal agents,limit tests.

UNIT-II **10 Hours**

- **Acid base titration**: Theories of acid base indicators, classification of acid base titrations and theory involved in titrations of strong, weak, and very weak acids and bases, neutralization curves
- **Non aqueous titration**: Solvents, acidimetry and alkalimetry titration and estimation of Sodium benzoate and Ephedrine HCl

UNIT-III **10 Hours**

- **Precipitation titrations**: Mohr's method, Volhard's, Modified Volhard's, Fajans method, estimation of sodium chloride.
- **Complexometric titration**: Classification, metal ion indicators, masking and demasking reagents, estimation of Magnesium sulphate, and calcium gluconate.
- **Gravimetry**: Principle and steps involved in gravimetric analysis. Purity of the precipitate: co-precipitation and post precipitation, Estimation of barium sulphate.

- Basic Principles,methods and application of diazotisation titration.

UNIT-IV **08 Hours**

Redox titrations

(a) Concepts of oxidation and reduction

(b) Types of redox titrations (Principles and applications)

Cerimetry, Iodimetry, Iodometry, Bromatometry, Dichrometry, Titration with potassium iodate

UNIT-V **07 Hours**

- **Electrochemical methods of analysis**
  - **Conductometry**- Introduction, Conductivity cell, Conductometric titrations, applications.
  - **Potentiometry** - Electrochemical cell, construction and working of reference (Standard hydrogen, silver chloride electrode and calomel electrode) and indicator electrodes (metal electrodes and glass electrode), methods to determine end point of potentiometric titration and applications.
  - **Polarography** - Principle, Ilkovic equation, construction and working of dropping mercury electrode and rotating platinum electrode, applications

BP108P. PHARMACEUTICAL ANALYSIS (Practical)

4 Hours / Week

I **Limit Test of the following**

(1) Chloride
(2) Sulphate
(3) Iron
(4) Arsenic

II **Preparation and standardization of**

(1) Sodium hydroxide
(2) Sulphuric acid
(3) Sodium thiosulfate
(4) Potassium permanganate
(5) Ceric ammonium sulphate

III **Assay of the following compounds along with Standardization of Titrant**

(1) Ammonium chloride by acid base titration
(2) Ferrous sulphate by Cerimetry
(3) Copper sulphate by Iodometry
(4) Calcium gluconate by complexometry
(5) Hydrogen peroxide by Permanganometry
(6) Sodium benzoate by non-aqueous titration
(7) Sodium Chloride by precipitation titration

IV **Determination of Normality by electro-analytical methods**

(1) Conductometric titration of strong acid against strong base
(2) Conductometric titration of strong acid and weak acid against strong base
(3) Potentiometric titration of strong acid against strong base

Recommended Books: (Latest Editions)

1. A.H. Beckett & J.B. Stenlake's, Practical Pharmaceutical Chemistry Vol I & II, Stahlone Press of University of London
2. A.I. Vogel, Text Book of Quantitative Inorganic analysis
3. P. Gundu Rao, Inorganic Pharmaceutical Chemistry
4. Bentley and Driver's Textbook of Pharmaceutical Chemistry
5. John H. Kennedy, Analytical chemistry principles
6. Indian Pharmacopoeia.

BP103T. PHARMACEUTICS- I (Theory)

45 Hours

Scope: This course is designed to impart a fundamental knowledge on the preparatory pharmacy with arts and science of preparing the different conventional dosage forms.

Objectives: Upon completion of this course the student should be able to:

- Know the history of profession of pharmacy
- Understand the basics of different dosage forms, pharmaceutical incompatibilities and pharmaceutical calculations
- Understand the professional way of handling the prescription
- Preparation of various conventional dosage forms

Course Content:

UNIT – I **10 Hours**

- **Historical background and development of profession of pharmacy**: History of profession of Pharmacy in India in relation to pharmacy education, industry and organization, Pharmacy as a career, Pharmacopoeias: Introduction to IP, BP, USP and Extra Pharmacopoeia.
- **Dosage forms:** Introduction to dosage forms, classification and definitions
- **Prescription:** Definition, Parts of prescription, handling of Prescription and Errors in prescription.
- **Posology:** Definition, Factors affecting posology. Pediatric dose calculations based on age, body weight and body surface area.

UNIT – II **10 Hours**

- **Pharmaceutical calculations**: Weights and measures – Imperial & Metric system, Calculations involving percentage solutions, alligation, proof spirit and isotonic solutions based on freezing point and molecular weight.

- **Powders:** Definition, classification, advantages and disadvantages,Simple & compound powders – official preparations, dusting powders, effervescent, efflorescent and hygroscopic powders, eutectic mixtures. Geometric dilutions.

- **Liquid dosage forms:** Advantages and disadvantages of liquid dosage forms. Excipients used in formulation of liquid dosage forms. Solubility enhancement techniques

UNIT – III **08 Hours**

- **Monophasic liquids:** Definitions and preparations of Gargles, Mouthwashes, Throat Paint, Eardrops, Nasal drops, Enemas, Syrups, Elixirs, Liniments and Lotions.
- **Biphasic liquids:**
- **Suspensions:** Definition, advantages and disadvantages, classifications, Preparation of suspensions; Flocculated and Deflocculated suspension & stability problems and methods to overcome.
- **Emulsions:** Definition, classification, emulsifying agent, test for the identification of type ofEmulsion, Methods of preparation & stability problems and methods to overcome.

UNIT – IV **08 Hours**

- **Suppositories**: Definition, types, advantages and disadvantages, types of bases, methods of preparations. Displacement value & its calculations, evaluation of suppositories.
- **Pharmaceutical incompatibilities**: Definition, classification, physical, chemical and therapeutic incompatibilities with examples.

UNIV – V **07 Hours**

- **Semisolid dosage forms:** Definitions, classification, mechanisms and factors influencing dermal penetration of drugs. Preparation of ointments, pastes, creams and gels. Excipients used in semi solid dosage forms. Evaluation of semi solid dosages forms

BP109P. PHARMACEUTICSI (Practical)

3 Hours / week

1 . Syrups

a) Syrup IP'66

b) Compound syrup of Ferrous Phosphate BPC'68

2. Elixirs a) Piperazine citrate elixir

b) Paracetamol pediatric elixir

3.Linctus a) Terpin Hydrate Linctus IP'66

b) Iodine Throat Paint (Mandles Paint)

4. Solutions

a) Strong solution of ammonium acetate

b) Cresol with soap solution

c) Lugol's solution

5. Suspensions

a) Calamine lotion

b) Magnesium Hydroxide mixture

c) Aluminimum Hydroxide gel

6. Emulsions a) Turpentine Liniment

b) Liquid paraffin emulsion

7. Powders and Granules

a) ORS powder (WHO)

b) Effervescent granules

c)Dusting powder

d)Divded powders

8. Suppositories

a) Glycero gelatin suppository

b) Coca butter suppository

c) Zinc Oxide suppository

8. Semisolids

a) Sulphur ointment

b) Non staining-iodine ointment with methyl salicylate

c) Carbopal gel

9. Gargles and Mouthwashes

a) Iodine gargle

b) Chlorhexidine mouthwash

Recommended Books: (Latest Editions)

1. H.C. Ansel et al., Pharmaceutical Dosage Form and Drug Delivery System, Lippincott Williams and Walkins, New Delhi.
2. Carter S.J., Cooper and Gunn's-Dispensing for Pharmaceutical Students, CBS publishers, New Delhi.
3. M.E. Aulton, Pharmaceutics, The Science& Dosage Form Design, Churchill Livingstone, Edinburgh.
4. Indian pharmacopoeia.
5. British pharmacopoeia.
6. Lachmann. Theory and Practice of Industrial Pharmacy,Lea& Febiger Publisher, The University of Michigan.
7. Alfonso R. Gennaro Remington. The Science and Practice of Pharmacy, Lippincott Williams, New Delhi.
8. Carter S.J., Cooper and Gunn's. Tutorial Pharmacy, CBS Publications, New Delhi.
9. E.A. Rawlins, Bentley's Text Book of Pharmaceutics, English Language Book Society, Elsevier Health Sciences, USA.
10. Isaac Ghebre Sellassie: Pharmaceutical Pelletization Technology, Marcel Dekker, INC, New York.
11. Dilip M. Parikh: Handbook of Pharmaceutical Granulation Technology, Marcel Dekker, INC, New York.
12. Francoise Nieloud and Gilberte Marti-Mestres: Pharmaceutical Emulsions and Suspensions, Marcel Dekker, INC, New York.

BP104T. PHARMACEUTICAL INORGANIC CHEMISTRY (Theory)

45 Hours

Scope: This subject deals with the monographs of inorganic drugs and pharmaceuticals.

Objectives: Upon completion of course student shall be able to

- know the sources of impurities and methods to determine the impurities in inorganic drugs and pharmaceuticals
- understand the medicinal and pharmaceutical importance of inorganic compounds

Course Content:

UNIT I **10 Hours**

- **Impurities in pharmaceutical substances:** History of Pharmacopoeia, Sources and types of impurities, principle involved in the limit test for Chloride, Sulphate, Iron, Arsenic, Lead and Heavy metals, modified limit test for Chloride and Sulphate

  General methods of preparation, assay for the compounds superscripted with **asterisk (*),** properties and medicinal uses of inorganic compounds belonging to the following classes

UNIT II **10 Hours**

- **Acids, Bases and Buffers:** Buffer equations and buffer capacity in general, buffers in pharmaceutical systems, preparation, stability, buffered isotonic solutions, measurements of tonicity, calculations and methods of adjusting isotonicity.
- **Major extra and intracellular electrolytes**: Functions of major physiological ions, Electrolytes used in the replacement therapy: Sodium chloride*, Potassium chloride, Calcium gluconate* and Oral Rehydration Salt (ORS), Physiological acid base balance.
- **Dental products**: Dentifrices, role of fluoride in the treatment of dental caries, Desensitizing agents, Calcium carbonate, Sodium fluoride, and Zinc eugenol cement.

UNIT III **10 Hours**

- **Gastrointestinal agents**

  Acidifiers: Ammonium chloride* and Dil. HCl

  Antacid: Ideal properties of antacids, combinations of antacids, Sodium

Bicarbonate*, Aluminum hydroxide gel, Magnesium hydroxide mixture

Cathartics: Magnesium sulphate, Sodium orthophosphate, Kaolin and Bentonite

Antimicrobials: Mechanism, classification, Potassium permanganate, Boric acid, Hydrogen peroxide*, Chlorinated lime*, Iodine and its preparations

UNIT IV **08 Hours**

- **Miscellaneous compounds**

  Expectorants: Potassium iodide, Ammonium chloride*.

  Emetics: Copper sulphate*, Sodium potassium tartarate

  Haematinics: Ferrous sulphate*, Ferrous gluconate

  Poison and Antidote: Sodium thiosulphate*, Activated charcoal, Sodium nitrite333

  Astringents: Zinc Sulphate, Potash Alum

UNIT V **07 Hours**

- **Radiopharmaceuticals**: Radio activity, Measurement of radioactivity, Properties of α, β, γ radiations, Half life, radio isotopes and study of radio isotopes - Sodium iodide I^{131}, Storage conditions, precautions & pharmaceutical application of radioactive substances.

BP110P. PHARMACEUTICAL INORGANIC CHEMISTRY (Practical)

4 Hours / Week

I **Limit tests for following ions**

Limit test for Chlorides and Sulphates
Modified limit test for Chlorides and Sulphates
Limit test for Iron
Limit test for Heavy metals
Limit test for Lead
Limit test for Arsenic

II **Identification test**

Magnesium hydroxide
Ferrous sulphate
Sodium bicarbonate
Calcium gluconate
Copper sulphate

III **Test for purity**

Swelling power of Bentonite
Neutralizing capacity of aluminum hydroxide gel
Determination of potassium iodate and iodine in potassium Iodide

IV **Preparation of inorganic pharmaceuticals**

Boric acid
Potash alum
Ferrous sulphate

Recommended Books (Latest Editions)

1. A.H. Beckett & J.B. Stenlake's, Practical Pharmaceutical Chemistry Vol I & II, Stahlone Press of University of London, 4th edition.
2. A.I. Vogel, Text Book of Quantitative Inorganic analysis
3. P. Gundu Rao, Inorganic Pharmaceutical Chemistry, 3rd Edition
4. M.L Schroff, Inorganic Pharmaceutical Chemistry
5. Bentley and Driver's Textbook of Pharmaceutical Chemistry
6. Anand & Chatwal, Inorganic Pharmaceutical Chemistry
7. Indian Pharmacopoeia

BP105T.COMMUNICATION SKILLS (Theory)

30 Hours

Scope: This course will prepare the young pharmacy student to interact effectively with doctors, nurses, dentists, physiotherapists and other health workers. At the end of this course the student will get the soft skills set to work cohesively with the team as a team player and will add value to the pharmaceutical business.

Objectives:

Upon completion of the course the student shall be able to

1. Understand the behavioral needs for a Pharmacist to function effectively in the areas of pharmaceutical operation
2. Communicate effectively (Verbal and Non Verbal)
3. Effectively manage the team as a team player
4. Develop interview skills
5. Develop Leadership qualities and essentials

Course content:

UNIT – I **07 Hours**

- **Communication Skills:** Introduction, Definition, The Importance of Communication, The Communication Process – Source, Message, Encoding, Channel, Decoding, Receiver, Feedback, Context

- **Barriers to communication:** Physiological Barriers, Physical Barriers, Cultural Barriers, Language Barriers, Gender Barriers, Interpersonal Barriers, Psychological Barriers, Emotional barriers

- **Perspectives in Communication:** Introduction, Visual Perception, Language, Other factors affecting our perspective - Past Experiences, Prejudices, Feelings, Environment

UNIT – II **07 Hours**

- **Elements of Communication:** Introduction, Face to Face Communication - Tone of Voice, Body Language (Non-verbal communication), Verbal Communication, Physical Communication

- **Communication Styles:** Introduction, The Communication Styles Matrix with example for each -Direct Communication Style, Spirited Communication Style, Systematic Communication Style, Considerate Communication Style

UNIT – III **07 Hours**

- **Basic Listening Skills:** Introduction, Self-Awareness, Active Listening, Becoming an Active Listener, Listening in Difficult Situations
- **Effective Written Communication:** Introduction, When and When Not to Use Written Communication - Complexity of the Topic, Amount of Discussion' Required, Shades of Meaning, Formal Communication
- **Writing Effectively:** Subject Lines, Put the Main Point First, Know Your Audience, Organization of the Message

UNIT – IV **05 Hours**

- **Interview Skills:** Purpose of an interview, Do's and Dont's of an interview
- **Giving Presentations:** Dealing with Fears, Planning your Presentation, Structuring Your Presentation, Delivering Your Presentation, Techniques of Delivery

UNIT – V **04 Hours**

- **Group Discussion:** Introduction, Communication skills in group discussion, Do's and Dont's of group discussion

BP111P.COMMUNICATION SKILLS (Practical)

2 Hours / week

Thefollowing learning modules are to be conducted using wordsworth® English language lab software

Basic communication covering the following topics

Meeting People

Asking Questions

Making Friends

What did you do?

Do's and Dont's

Pronunciations covering the following topics

Pronunciation (Consonant Sounds)

Pronunciation and Nouns

Pronunciation (Vowel Sounds)

Advanced Learning

Listening Comprehension / Direct and Indirect Speech

Figures of Speech

Effective Communication

Writing Skills

Effective Writing

Interview Handling Skills

E-Mail etiquette

Presentation Skills

Recommended Books: (Latest Edition)

1. Basic communication skills for Technology, Andreja. J. Ruther Ford, 2nd Edition, Pearson Education, 2011
2. Communication skills, Sanjay Kumar, Pushpalata, 1stEdition, Oxford Press, 2011
3. Organizational Behaviour, Stephen .P. Robbins, 1stEdition, Pearson, 2013
4. Brilliant- Communication skills, Gill Hasson, 1stEdition, Pearson Life, 2011
5. The Ace of Soft Skills: Attitude, Communication and Etiquette for success, Gopala Swamy Ramesh, 5thEdition, Pearson, 2013
6. Developing your influencing skills, Deborah Dalley, Lois Burton, Margaret, Green hall, 1st Edition Universe of Learning LTD, 2010
7. Communication skills for professionals, Konar nira, 2ndEdition, New arrivals – PHI, 2011
8. Personality development and soft skills, Barun K Mitra, 1stEdition, Oxford Press, 2011
9. Soft skill for everyone, Butter Field, 1st Edition, Cengage Learning india pvt.ltd, 2011
10. Soft skills and professional communication, Francis Peters SJ, 1stEdition, Mc Graw Hill Education, 2011
11. Effective communication, John Adair, 4thEdition, Pan Mac Millan,2009
12. Bringing out the best in people, Aubrey Daniels, 2ndEdition, Mc Graw Hill, 1999

BP 106RBT.REMEDIAL BIOLOGY (Theory)

30 Hours

Scope: To learn and understand the components of living world, structure and functional system of plant and animal kingdom.

Objectives: Upon completion of the course, the student shall be able to

- know the classification and salient features of five kingdoms of life
- understand the basic components of anatomy & physiology of plant
- know understand the basic components of anatomy & physiology animal with special reference to human

UNIT I **07 Hours**

Living world:

- Definition and characters of living organisms
- Diversity in the living world
- Binomial nomenclature
- Five kingdoms of life and basis of classification. Salient features of Monera, Potista, Fungi, Animalia and Plantae, Virus,

Morphology of Flowering plants

- Morphology of different parts of flowering plants – Root, stem, inflorescence, flower, leaf, fruit, seed.
- General Anatomy of Root, stem, leaf of monocotyledons & Dicotylidones.

UNIT II **07 Hours**

Body fluids and circulation

- Composition of blood, blood groups, coagulation of blood
- Composition and functions of lymph
- Human circulatory system
- Structure of human heart and blood vessels
- Cardiac cycle, cardiac output and ECG

Digestion and Absorption

- Human alimentary canal and digestive glands
- Role of digestive enzymes
- Digestion, absorption and assimilation of digested food

Breathing and respiration

- Human respiratory system
- Mechanism of breathing and its regulation
- Exchange of gases, transport of gases and regulation of respiration
- Respiratory volumes

UNIT III **07 Hours**

Excretory products and their elimination

- Modes of excretion
- Human excretory system- structure and function
- Urine formation
- Rennin angiotensin system

Neural control and coordination

- Definition and classification of nervous system
- Structure of a neuron
- Generation and conduction of nerve impulse
- Structure of brain and spinal cord
- Functions of cerebrum, cerebellum, hypothalamus and medulla oblongata

Chemical coordination and regulation

- Endocrine glands and their secretions
- Functions of hormones secreted by endocrine glands

Human reproduction

- Parts of female reproductive system
- Parts of male reproductive system
- Spermatogenesis and Oogenesis
- Menstrual cycle

UNIT IV **05 Hours**

Plants and mineral nutrition:

- Essential mineral, macro and micronutrients
- Nitrogen metabolism, Nitrogen cycle, biological nitrogen fixation

Photosynthesis

- Autotrophic nutrition, photosynthesis, Photosynthetic pigments, Factors affecting photosynthesis.

UNIT V **04 Hours**

Plant respiration: Respiration, glycolysis, fermentation (anaerobic).

Plant growth and development

- Phases and rate of plant growth, Condition of growth,Introduction to plant growth regulators

Cell - The unit of life

- Structure and functions of cell and cell organelles.Cell division

Tissues

- Definition, types of tissues, location and functions.

Text Books

a. Text book of Biology by S. B. Gokhale
b. A Text book of Biology by Dr. Thulajappa and Dr. Seetaram.

Reference Books

a. A Text book of Biology by B.V. Sreenivasa Naidu
b. A Text book of Biology by Naidu and Murthy
c. Botany for Degree students By A.C.Dutta.
d.Outlines of Zoology by M. Ekambaranatha ayyer and T. N. Ananthakrishnan.
e. A manual for pharmaceutical biology practical by S.B. Gokhale and C. K. Kokate

BP112RBP.REMEDIAL BIOLOGY (Practical)

30 Hours

1. Introduction to experiments in biology
   a) Study of Microscope
   b) Section cutting techniques
   c) Mounting and staining
   d) Permanent slide preparation
2. Study of cell and its inclusions
3. Study of Stem, Root, Leaf, seed, fruit, flower and their modifications
4. Detailed study of frog by using computer models
5. Microscopic study and identification of tissues pertinent to Stem, Root Leaf, seed, fruit and flower
6. Identification of bones
7. Determination of blood group
8. Determination of blood pressure
9. Determination of tidal volume

Reference Books

1. Practical human anatomy and physiology. by S.R.Kale and R.R.Kale.
2. A Manual of pharmaceutical biology practical by S.B.Gokhale, C.K.Kokate and S.P.Shriwastava.
3. Biology practical manual according to National core curriculum .Biology forum of Karnataka. Prof .M.J.H.Shafi

BP 106RMT.REMEDIAL MATHEMATICS (Theory)

30 Hours

Scope: This is an introductory course in mathematics. This subject deals with the introduction to Partial fraction, Logarithm, matrices and Determinant, Analytical geometry, Calculus, differential equation and Laplace transform.

Objectives: Upon completion of the course the student shall be able to:-

1. Know the theory and their application in Pharmacy
2. Solve the different types of problems by applying theory
3. Appreciate the important application of mathematics in Pharmacy

Course Content:

UNIT – I **06 Hours**

- **Partial fraction**

Introduction, Polynomial, Rational fractions, Proper and Improper fractions, Partial fraction , Resolving into Partial fraction, Application of Partial Fraction in Chemical Kinetics and Pharmacokinetics

- **Logarithms**

Introduction, Definition, Theorems/Properties of logarithms, Common logarithms, Characteristic and Mantissa, worked examples, application of logarithm to solve pharmaceutical problems.

- **Function***:*

Real Valued function, Classification of real valued functions,

- **Limits and continuity** :

Introduction , Limit of a function, Definition of limit of a function ($\in$ - δ definition) , $\lim_{x\to a}\frac{x^n - a^n}{x-a} = na^{n-1}$, $\lim_{\theta\to 0}\frac{\sin\theta}{\theta} = 1,$

UNIT –II **06 Hours**

- **Matrices and Determinant:**

Introduction matrices, Types of matrices, Operation on matrices, Transpose of a matrix, Matrix Multiplication, Determinants, Properties of determinants , Product of determinants, Minors and co-Factors, Adjoint or adjugate of a square matrix , Singular and non-singular matrices, Inverse of a matrix, Solution of system of linear of equations using matrix method, Cramer's rule, Characteristic equation and roots of a square matrix, Cayley–Hamilton theorem,Applicationof Matrices in solving Pharmacokinetic equations

UNIT – III **06 Hours**

- **Calculus**

Differentiation : Introductions, Derivative of a function, Derivative of a constant, Derivative of a product of a constant and a function , Derivative of the sum or difference of two functions, Derivative of the product of two functions (product formula), Derivative of the quotient of two functions (Quotient formula) – **Without Proof**, Derivative of x^n *w.r.t*x,where *n* is any rational number, Derivative of e^x,, Derivative of $\log_e x$, Derivative of a^x,Derivative of trigonometric functions from first principles **(without Proof)**, Successive Differentiation, Conditions for a function to be a maximum or a minimum at a point. Application

UNIT – IV **06 Hours**

- **Analytical Geometry**

Introduction: Signs of the Coordinates, Distance formula,

Straight Line : Slope or gradient of a straight line, Conditions for parallelism and perpendicularity of two lines, Slope of a line joining two points, Slope – intercept form of a straight line

Integration:

Introduction, Definition, Standard formulae, Rules of integration , Method of substitution, Method of Partial fractions, Integration by parts, definite integrals, application

UNIT-V **06 Hours**

- **Differential Equations** : Some basic definitions, Order and degree, Equations in separable form , Homogeneous equations, Linear Differential equations, Exact equations, **Application in solving Pharmacokinetic equations**
- **Laplace Transform** : Introduction, Definition, Properties of Laplace transform, Laplace Transforms of elementary functions, Inverse Laplace transforms, Laplace transform of derivatives, Application to solve Linear differential equations, **Application in solving Chemical kinetics and Pharmacokinetics equations**

Recommended Books (Latest Edition)

1. Differential Calculus by Shanthinarayan
2. Pharmaceutical Mathematics with application to Pharmacy by Panchaksharappa Gowda D.H.
3. Integral Calculus by Shanthinarayan
4. Higher Engineering Mathematics by Dr.B.S.Grewal

Semester II

BP 201T. HUMAN ANATOMY AND PHYSIOLOGY-II (Theory)

45 Hours

Scope: This subject is designed to impart fundamental knowledge on the structure and functions of the various systems of the human body. It also helps in understanding both homeostatic mechanisms. The subject provides the basic knowledge required to understand the various disciplines of pharmacy.

Objectives: Upon completion of this course the student should be able to:

1. Explain the gross morphology, structure and functions of various organs of the human body.
2. Describe the various homeostatic mechanisms and their imbalances.
3. Identify the various tissues and organs of different systems of human body.
4. Perform the hematological tests like blood cell counts, haemoglobin estimation, bleeding/clotting time etc and also record blood pressure, heart rate, pulse and respiratory volume.
5. Appreciate coordinated working pattern of different organs of each system
6. Appreciate the interlinked mechanisms in the maintenance of normal functioning (homeostasis) of human body.

Course Content:

Unit I **10 hours**

- **Nervous system**

Organization of nervous system, neuron, neuroglia, classification and properties of nerve fibre, electrophysiology, action potential, nerve impulse, receptors, synapse, neurotransmitters.

Central nervous system: Meninges, ventricles of brain and cerebrospinal fluid.structure and functions of brain (cerebrum, brain stem, cerebellum), spinal cord (gross structure, functions of afferent and efferent nerve tracts,reflex activity)

Unit II **06 hours**

- **Digestive system**

Anatomy of GI Tract with special reference to anatomy and functions of stomach, (Acid production in the stomach, regulation of acid production through parasympathetic nervous system, pepsin role in protein digestion) small intestine

and large intestine, anatomy and functions of salivary glands, pancreas and liver, movements of GIT, digestion and absorption of nutrients and disorders of GIT.

- **Energetics**

  Formation and role of ATP, Creatinine Phosphate and BMR.

Unit III

- **Respiratory system** **10 hours**

  Anatomy of respiratory system with special reference to anatomy of lungs, mechanism of respiration, regulation of respiration

  Lung Volumes and capacities transport of respiratory gases, artificial respiration, and resuscitation methods.

- **Urinary system**
  Anatomy of urinary tract with special reference to anatomy of kidney and nephrons, functions of kidney and urinary tract, physiology of urine formation, micturition reflex and role of kidneys in acid base balance, role of RAS in kidney and disorders of kidney.

Unit IV **10 hours**

- **Endocrine system**
  Classification of hormones, mechanism of hormone action, structure and functions of pituitary gland, thyroid gland, parathyroid gland, adrenal
  gland, pancreas, pineal gland, thymus and their disorders.

Unit V **09 hours**

- **Reproductive system**

  Anatomy of male and female reproductive system, Functions of male and female reproductive system, sex hormones, physiology of menstruation, fertilization, spermatogenesis, oogenesis, pregnancy and parturition

- **Introduction to genetics**

  Chromosomes, genes and DNA, protein synthesis, genetic pattern of inheritance

BP 207 P. HUMAN ANATOMY AND PHYSIOLOGY (Practical)

4 Hours/week

Practical physiology is complimentary to the theoretical discussions in physiology. Practicals allow the verification of physiological processes discussed in theory classes through experiments on living tissue, intact animals or normal human beings. This is helpful for developing an insight on the subject**.**

1. To study the integumentary and special senses using specimen, models, etc.,
2. To study the nervous system using specimen, models, etc.,
3. To study the endocrine system using specimen, models, etc
4. To demonstrate the general neurological examination
5. To demonstrate the function of olfactory nerve
6. To examine the different types of taste.
7. To demonstrate the visual acuity
8. To demonstrate the reflex activity
9. Recording of body temperature
10. To demonstrate positive and negative feedback mechanism.
11. Determination of tidal volume and vital capacity.
12. Study of digestive, respiratory, cardiovascular systems, urinary and reproductive systems with the help of models, charts and specimens.
13. Recording of basal mass index .
14. Study of family planning devices and pregnancy diagnosis test.
15. Demonstration of total blood count by cell analyser
16. Permanent slides of vital organs and gonads.

Recommended Books (Latest Editions)

1. Essentials of Medical Physiology by K. Sembulingam and P. Sembulingam. Jaypee brothers medical publishers, New Delhi.
2. Anatomy and Physiology in Health and Illness by Kathleen J.W. Wilson, Churchill Livingstone, New York
3. Physiological basis of Medical Practice-Best and Tailor. Williams & Wilkins Co,Riverview,MI USA

4. Text book of Medical Physiology- Arthur C,Guyton andJohn.E. Hall. Miamisburg, OH, U.S.A.
5. Principles of Anatomy and Physiology by Tortora Grabowski. Palmetto, GA, U.S.A.
6. Textbook of Human Histology by Inderbir Singh, Jaypee brothers medical publishers, New Delhi.
7. Textbook of Practical Physiology by C.L. Ghai, Jaypee brothers medical publishers, New Delhi.
8. Practical workbook of Human Physiology by K. Srinageswari and Rajeev Sharma, Jaypee brother's medical publishers, New Delhi.

Reference Books:

1. Physiological basis of Medical Practice-Best and Tailor. Williams & Wilkins Co, Riverview, MI USA
2. Text book of Medical Physiology- Arthur C, Guyton and John. E. Hall. Miamisburg, OH, U.S.A.
3. Human Physiology (vol 1 and 2) by Dr. C.C. Chatterrje ,Academic Publishers Kolkata

BP202T. PHARMACEUTICAL ORGANIC CHEMISTRY –I (Theory)

45 Hours

Scope: This subject deals with classification and nomenclature of simple organic compounds, structural isomerism, intermediates forming in reactions, important physical properties, reactions and methods of preparation of these compounds. The syllabus also emphasizes on mechanisms and orientation of reactions.

Objectives: Upon completion of the course the student shall be able to

1. write the structure, name and the type of isomerism of the organic compound
2. write the reaction, name the reaction and orientation of reactions
3. account for reactivity/stability of compounds,
4. identify/confirm the identification of organic compound

Course Content:

General methods of preparation and reactions of compounds superscripted with asterisk (*) to be explained

To emphasize on definition, types, classification, principles/mechanisms, applications, examples and differences

UNIT-I **07 Hours**

- **Classification, nomenclature and isomerism**

  Classification of Organic Compounds

  Common and IUPAC systems of nomenclature of organic compounds

  (up to 10 Carbons open chain and carbocyclic compounds)

Structural isomerisms in organic compounds

UNIT-II10 Hours

- **Alkanes*, Alkenes* and Conjugated dienes***

  SP^3 hybridization in alkanes, Halogenation of alkanes, uses of paraffins.

  Stabilities of alkenes, SP^2 hybridization in alkenes

  E_1 and E_2 reactions – kinetics, order of reactivity of alkyl halides, rearrangement of carbocations, Saytzeffs orientation and evidences. E_1 verses E_2 reactions, Factors affecting E_1 and E_2 reactions. Ozonolysis, electrophilic addition reactions of alkenes, Markownikoff's orientation, free radical addition reactions of alkenes, Anti Markownikoff's orientation.

  Stability of conjugated dienes, Diel-Alder, electrophilic addition, free radical addition reactions of conjugated dienes, allylic rearrangement

UNIT-III10 Hours

- **Alkyl halides***

  SN_1 and SN_2 reactions - kinetics, order of reactivity of alkyl halides, stereochemistry and rearrangement of carbocations.

  SN_1 versus SN_2 reactions, Factors affecting SN_1 and SN_2 reactions

  Structure and uses of ethylchloride, Chloroform, trichloroethylene, tetrachloroethylene, dichloromethane, tetrachloromethane and iodoform.

- **Alcohols*-** Qualitative tests, Structure and uses of Ethyl alcohol, Methyl alcohol, chlorobutanol, Cetosteryl alcohol, Benzyl alcohol, Glycerol, Propylene glycol

UNIT-IV10 Hours

- **Carbonyl compounds* (Aldehydes and ketones)**

  Nucleophilic addition, Electromeric effect, aldol condensation, Crossed Aldol condensation, Cannizzaro reaction, Crossed Cannizzaro reaction, Benzoin condensation, Perkin condensation, qualitative tests, Structure and uses of Formaldehyde, Paraldehyde, Acetone, Chloral hydrate, Hexamine, Benzaldehyde, Vanilin, Cinnamaldehyde.

UNIT-V **08 Hours**

- **Carboxylic acids***

  Acidity of carboxylic acids, effect of substituents on acidity, inductive effect and qualitative tests for carboxylic acids ,amide and ester

  Structure and Uses of Acetic acid, Lactic acid, Tartaric acid, Citric acid, Succinic acid. Oxalic acid, Salicylic acid, Benzoic acid, Benzyl benzoate, Dimethyl phthalate, Methyl salicylate and Acetyl salicylic acid

- **Aliphatic amines* -** Basicity, effect of substituent on Basicity. Qualitative test, Structure and uses of Ethanolamine, Ethylenediamine, Amphetamine

BP208P. PHARMACEUTICAL ORGANIC CHEMISTRY -I (Practical)

4 Hours / week

1. Systematic qualitative analysis of unknown organic compounds like
    1. Preliminary test: Color, odour, aliphatic/aromatic compounds, saturation and unsaturation, etc.
    2. Detection of elements like Nitrogen, Sulphur and Halogen by Lassaigne's test
    3. Solubility test
    4. Functional group test like Phenols, Amides/ Urea, Carbohydrates, Amines, Carboxylic acids, Aldehydes and Ketones, Alcohols, Esters, Aromatic and Halogenated Hydrocarbons, Nitro compounds and Anilides.
    5. Melting point/Boiling point of organic compounds
    6. Identification of the unknown compound from the literature using melting point/ boiling point.
    7. Preparation of the derivatives and confirmation of the unknown compound by melting point/ boiling point.
    8. Minimum 5 unknown organic compounds to be analysed systematically.
2. Preparation of suitable solid derivatives from organic compounds
3. Construction of molecular models

Recommended Books (Latest Editions)

1. Organic Chemistry by Morrison and Boyd
2. Organic Chemistry by I.L. Finar , Volume-I
3. Textbook of Organic Chemistry by B.S. Bahl & Arun Bahl.
4. Organic Chemistry by P.L.Soni
5. Practical Organic Chemistry by Mann and Saunders.
6. Vogel's text book of Practical Organic Chemistry
7. Advanced Practical organic chemistry by N.K.Vishnoi.
8. Introduction to Organic Laboratory techniques by Pavia, Lampman and Kriz.
9. Reaction and reaction mechanism by Ahluwaliah/Chatwal.

BP203 T. BIOCHEMISTRY (Theory)

45 Hours

Scope: Biochemistry deals with complete understanding of the molecular levels of the chemical process associated with living cells. The scope of the subject is providing biochemical facts and the principles to understand metabolism of nutrient molecules in physiological and pathological conditions. It is also emphasizing on genetic organization of mammalian genome and hetero & autocatalytic functions of DNA.

Objectives: Upon completion of course student shell able to

1. Understand the catalytic role of enzymes, importance of enzyme inhibitors in design of new drugs, therapeutic and diagnostic applications of enzymes.
2. Understand the metabolism of nutrient molecules in physiological and pathological conditions.
3. Understand the genetic organization of mammalian genome and functions of DNA in the synthesis of RNAs and proteins.

Course Content:

UNIT I **08 Hours**

- **Biomolecules**

  Introduction, classification, chemical nature and biological role of carbohydrate, lipids, nucleic acids, amino acids and proteins.

- **Bioenergetics**

  Concept of free energy, endergonic and exergonic reaction, Relationship between free energy, enthalpy and entropy; Redox potential.

  Energy rich compounds; classification; biological significances of ATP and cyclic AMP

UNIT II **10 Hours**

- **Carbohydrate metabolism**

  Glycolysis – Pathway, energetics and significance

  Citric acid cycle- Pathway, energetics and significance

  HMP shunt and its significance; Glucose-6-Phosphate dehydrogenase (G6PD) deficiency

  Glycogen metabolism Pathways and glycogen storage diseases (GSD)

  Gluconeogenesis- Pathway and its significance

  Hormonal regulation of blood glucose level and Diabetes mellitus

- **Biological oxidation**

  Electron transport chain (ETC) and its mechanism.

Oxidative phosphorylation & its mechanism and substrate level phosphorylation

Inhibitors ETC and oxidative phosphorylation/Uncouplers

UNIT III **10 Hours**

- **Lipid metabolism**

  β-Oxidation of saturated fatty acid (Palmitic acid)

Formation and utilization of ketone bodies; ketoacidosis

De novo synthesis of fatty acids (Palmitic acid)

Biological significance of cholesterol and conversion of cholesterol into bile acids, steroid hormone and vitamin D

Disorders of lipid metabolism: Hypercholesterolemia, atherosclerosis, fatty liver and obesity.

- **Amino acid metabolism**

  General reactions of amino acid metabolism: Transamination, deamination & decarboxylation, urea cycle and its disorders

  Catabolism of phenylalanine and tyrosine and their metabolic disorders (Phenyketonuria, Albinism, alkeptonuria, tyrosinemia)

  Synthesis and significance of biological substances; 5-HT, melatonin, dopamine, noradrenaline, adrenaline

  Catabolism of heme; hyperbilirubinemia and jaundice

UNIT IV **10 Hours**

- **Nucleic acid metabolism and genetic information transfer**

  Biosynthesis of purine and pyrimidine nucleotides

  Catabolism of purine nucleotides and Hyperuricemia and Gout disease

  Organization of mammalian genome

  Structure of DNA and RNA and their functions

  DNA replication (semi conservative model)

  Transcription or RNA synthesis

  Genetic code, Translation or Protein synthesis and inhibitors

UNIT V **07 Hours**

- **Enzymes**

  Introduction, properties, nomenclature and IUB classification of enzymes

  Enzyme kinetics (Michaelis plot, Line Weaver Burke plot)

  Enzyme inhibitors with examples

  Regulation of enzymes: enzyme induction and repression, allosteric enzymes regulation

  Therapeutic and diagnostic applications of enzymes and isoenzymes

  Coenzymes –Structure and biochemical functions

BP 209 P. BIOCHEMISTRY (Practical)

4 Hours / Week

1. Qualitative analysis of carbohydrates (Glucose, Fructose, Lactose, Maltose, Sucrose and starch)
2. Identification tests for Proteins (albumin and Casein)
3. Quantitative analysis of reducing sugars (DNSA method) and Proteins (Biuret method)
4. Qualitative analysis of urine for abnormal constituents
5. Determination of blood creatinine
6. Determination of blood sugar
7. Determination of serum total cholesterol
8. Preparation of buffer solution and measurement of pH
9. Study of enzymatic hydrolysis of starch
10. Determination of Salivary amylase activity
11. Study the effect of Temperature on Salivary amylase activity.
12. Study the effect of substrate concentration on salivary amylase activity.

Recommended Books (Latest Editions)

1. Principles of Biochemistry by Lehninger.
2. Harper's Biochemistry by Robert K. Murry, Daryl K. Granner and Victor W. Rodwell.
3. Biochemistry by Stryer.
4. Biochemistry by D. Satyanarayan and U.Chakrapani
5. Textbook of Biochemistry by Rama Rao.
6. Textbook of Biochemistry by Deb.
7. Outlines of Biochemistry by Conn and Stumpf
8. Practical Biochemistry by R.C. Gupta and S. Bhargavan.
9. Introduction of Practical Biochemistry by David T. Plummer. (3rd Edition)
10. Practical Biochemistry for Medical students by Rajagopal and Ramakrishna.
11. Practical Biochemistry by Harold Varley.

BP 204T.PATHOPHYSIOLOGY (THEORY)

45Hours

Scope: Pathophysiology is the study of causes of diseases and reactions of the body to such disease producing causes.This course is designed to impart a thorough knowledge of the relevant aspects of pathology of various conditions with reference to its pharmacological applications, and understanding of basic pathophysiological mechanisms. Hence it will not only help to study the syllabus of pathology, but also to get baseline knowledge required to practice medicine safely, confidently, rationally and effectively.

Objectives: Upon completion of the subject student shall be able to –

1. Describe the etiology and pathogenesis of the selected disease states;
2. Name the signs and symptoms of the diseases; and
3. Mention the complications of the diseases.

Course content:

Unit I **10Hours**

- **Basic principles of Cell injury and Adaptation:**
  Introduction, definitions, Homeostasis, Components and Types of Feedback systems, Causes of cellular injury**,**Pathogenesis (Cell membrane damage, Mitochondrial damage, Ribosome damage, Nuclear damage)**,**Morphology of cell injury – Adaptive changes (Atrophy, Hypertrophy, hyperplasia, Metaplasia, Dysplasia)**,**Cell swelling, Intra cellular accumulation, Calcification, Enzyme leakage and Cell Death Acidosis &Alkalosis,Electrolyte imbalance

- **Basic mechanism involved in the process of inflammation and repair:**
  Introduction, Clinical signs of inflammation, Different types of Inflammation,Mechanism of Inflammation – Alteration in vascular permeability and blood flow, migration of WBC's,Mediators of inflammation,Basic principles of wound healing in the skin,Pathophysiology of Atherosclerosis

Unit II **10Hours**

- **Cardiovascular System:**
  Hypertension, congestive heart failure, ischemic heart disease (angina,myocardial infarction, atherosclerosis and arteriosclerosis)
- **Respiratory system:**Asthma, Chronic obstructive airways diseases.
- **Renal system:**Acute and chronic renal failure .

Unit II **10Hours**

- **Haematological Diseases:**
  Iron deficiency, megaloblastic anemia (Vit B12 and folic acid), sickle cell anemia, thalasemia, hereditary acquired anemia, hemophilia
- **Endocrine system:** Diabetes, thyroid diseases, disorders of sex hormones
- **Nervous system:** Epilepsy, Parkinson's disease, stroke, psychiatric disorders: depression, schizophrenia and Alzheimer's disease.
- **Gastrointestinal system:** Peptic Ulcer
-

Unit IV **8 Hours**

- Inflammatory bowel diseases, jaundice, hepatitis (A,B,C,D,E,F) alcoholic liver disease.
- **Disease of bones and joints:** Rheumatoid arthritis, osteoporosis and gout
- **Principles of cancer:** classification, etiology and pathogenesis of cancer
- **Diseases of bones and joints:**Rheumatoid Arthritis, Osteoporosis,Gout

- **Principles of Cancer:** Classification, etiology and pathogenesis of Cancer

Unit V **7 Hours**

- **Infectious diseases:**Meningitis,Typhoid, Leprosy, Tuberculosis

Urinary tract infections

- **Sexually transmitted diseases:**AIDS, Syphilis, Gonorrhea

Recommended Books (Latest Editions)

1. Vinay Kumar, Abul K. Abas, Jon C. Aster; Robbins &Cotran Pathologic Basis of Disease; South Asia edition; India; Elsevier; 2014.
2. Harsh Mohan; Text book of Pathology; 6th edition; India; Jaypee Publications; 2010.
3. Laurence B, Bruce C, Bjorn K. ; Goodman Gilman's The Pharmacological Basis of Therapeutics; 12th edition; New York; McGraw-Hill; 2011.
4. Best, Charles Herbert 1899-1978; Taylor, Norman Burke 1885-1972; West, John B (John Burnard); Best and Taylor's Physiological basis of medical practice; 12th ed; united states;
5. William and Wilkins, Baltimore;1991 [1990 printing].
6. Nicki R. Colledge, Brian R. Walker, Stuart H. Ralston;Davidson's Principles and Practice of Medicine; 21st edition; London; ELBS/Churchill Livingstone; 2010.
7. Guyton A, John .E Hall; Textbook of Medical Physiology; 12th edition; WB Saunders Company; 2010.
8. Joseph DiPiro, Robert L. Talbert, Gary Yee, Barbara Wells, L. Michael Posey; Pharmacotherapy: A Pathophysiological Approach; 9th edition; London; McGraw-Hill Medical; 2014.
9. V. Kumar, R. S. Cotran and S. L. Robbins; Basic Pathology; 6th edition; Philadelphia; WB Saunders Company; 1997.
10. Roger Walker, Clive Edwards; Clinical Pharmacy and Therapeutics; 3rd edition; London; Churchill Livingstone publication; 2003.

Recommended Journals

1. The Journal of Pathology. ISSN: 1096-9896 (Online)
2. The American Journal of Pathology. ISSN: 0002-9440
3. Pathology. 1465-3931 (Online)
4. International Journal of Physiology, Pathophysiology and Pharmacology. ISSN: 1944-8171 (Online)
5. Indian Journal of Pathology and Microbiology. ISSN-0377-4929.

BP205 T. COMPUTER APPLICATIONS IN PHARMACY (Theory)

30 Hrs (2 Hrs/Week)

Scope: This subject deals with the introduction Database, Database Management system, computer application in clinical studies and use of databases.

Objectives: Upon completion of the course the student shall be able to

1. know the various types of application of computers in pharmacy
2. know the various types of databases
3. know the various applications of databases in pharmacy

Course content:

UNIT – I **06 hours**

Number system: Binary number system, Decimal number system, Octal number system, Hexadecimal number systems, conversion decimal to binary, binary to decimal, octal to binary etc, binary addition, binary subtraction – One's complement ,Two's complement method, binary multiplication, binary division

Concept of I nformation Systems and Software : Information gathering, requirement and feasibility analysis, data flow diagrams, process specifications, input/output design, process life cycle, planning and managing the project

UNIT –II **06 hours**

Web technologies:Introduction to HTML, XML,CSS and Programming languages, introduction to web servers and Server Products

Introduction to databases, MYSQL, MS ACCESS, Pharmacy Drug database

UNIT – III **06 hours**

Application of computers in Pharmacy – Drug information storage and retrieval, Pharmacokinetics, Mathematical model in Drug design, Hospital and Clinical Pharmacy, Electronic Prescribing and discharge (EP) systems, barcode medicine identification and automated dispensing of drugs, mobile technology and adherence monitoring

Diagnostic System, Lab-diagnostic System, Patient Monitoring System, Pharma Information System

UNIT – IV **06 hours**

Bioinformatics: Introduction, Objective of Bioinformatics, Bioinformatics Databases, Concept of Bioinformatics, Impact of Bioinformatics in Vaccine Discovery

UNIT-V **06 hours**

Computers as data analysis in Preclinical development:
Chromatographic dada analysis(CDS), Laboratory Information management System (LIMS) and Text Information Management System(TIMS)

BP210P. COMPUTER APPLICATIONS IN PHARMACY (Practical)

1. Design a questionnaire using a word processing package to gather information about a particular disease.
2. Create a HTML web page to show personal information.
3 Retrieve the information of a drug and its adverse effects using online tools
4 Creating mailing labels Using Label Wizard , generating label in MS WORD
5 Create a database in MS Access to store the patient information with the required fields Using access
6. Design a form in MS Access to view, add, delete and modify the patient record in the database
7. Generating report and printing the report from patient database
8. Creating invoice table using – MS Access
9. Drug information storage and retrieval using MS Access
10. Creating and working with queries in MS Access
11. Exporting Tables, Queries, Forms and Reports to web pages
12. Exporting Tables, Queries, Forms and Reports to XML pages

Recommended books (Latest edition):

1. Computer Application in Pharmacy – William E.Fassett –Lea and Febiger, 600 South Washington Square, USA, (215) 922-1330.
2. Computer Application in Pharmaceutical Research and Development –Sean Ekins – Wiley-Interscience, A John Willey and Sons, INC., Publication, USA
3. Bioinformatics (Concept, Skills and Applications) – S.C.Rastogi-CBS Publishers and Distributors, 4596/1- A, 11 Darya Gani, New Delhi – 110 002(INDIA)
4. Microsoft office Access - 2003, Application Development Using VBA, SQL Server, DAP and Infopath – Cary N.Prague – Wiley Dreamtech India (P) Ltd., 4435/7, Ansari Road, Daryagani, New Delhi - 110002

BP 206 T. ENVIRONMENTAL SCIENCES (Theory)

30 hours

Scope: Environmental Sciences is the scientific study of the environmental system and the status of its inherent or induced changes on organisms. It includes not only the study of physical and biological characters of the environment but also the social and cultural factors and the impact of man on environment.

Objectives: Upon completion of the course the student shall be able to**:**

1. Create the awareness about environmental problems among learners.
2. Impart basic knowledge about the environment and its allied problems.
3. Develop an attitude of concern for the environment.
4. Motivate learner to participate in environment protection and environment improvement.
5. Acquire skills to help the concerned individuals in identifying and solving environmental problems.
6. Strive to attain harmony with Nature.

Course content:

Unit-I **10hours**

The Multidisciplinary nature of environmental studies

Natural Resources

Renewable and non-renewable resources:

Natural resources and associated problems

a) Forest resources; b) Water resources; c) Mineral resources; d) Food resources; e) Energy resources; f) Land resources: Role of an individual in conservation of natural resources.

Unit-II **10hours**

Ecosystems

- Concept of an ecosystem.
- Structure and function of an ecosystem.
- Introduction, types, characteristic features, structure and function of the ecosystems: Forest ecosystem; Grassland ecosystem; Desert ecosystem; Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)

Unit- III **10hours**

Environmental Pollution: Air pollution; Water pollution; Soil pollution

Recommended Books (Latest edition):

1. Y.K. Sing, Environmental Science, New Age International Pvt, Publishers, Bangalore
2. Agarwal, K.C. 2001 Environmental Biology, Nidi Publ. Ltd. Bikaner.
3. Bharucha Erach, The Biodiversity of India, Mapin Pu blishing Pvt. Ltd., Ahmedabad – 380 013, India,
4. Brunner R.C., 1989, Hazardous Waste Incineration, McGraw Hill Inc. 480p
5. Clark R.S., Marine Pollution, Clanderson Press Oxford
6. Cunningham, W.P. Cooper, T.H. Gorhani, E & Hepworth, M.T. 2001, Environmental Encyclopedia, Jaico Publ. House, Mumbai, 1196p
7. De A.K., Environmental Chemistry, Wiley Eastern Ltd.
8. Down of Earth, Centre for Science and Environment

SEMESTER III

BP301T. PHARMACEUTICAL ORGANIC CHEMISTRY –II (Theory)

45 Hours

Scope: This subject deals with general methods of preparation and reactions of some organic compounds. Reactivity of organic compounds are also studied here. The syllabus emphasizes on mechanisms and orientation of reactions. Chemistry of fats and oils are also included in the syllabus.

Objectives: Upon completion of the course the student shall be able to

1. write the structure, name and the type of isomerism of the organic compound
2. write the reaction, name the reaction and orientation of reactions
3. account for reactivity/stability of compounds,
4. prepare organic compounds

Course Content:

General methods of preparation and reactions of compounds superscripted with asterisk (*) to be explained

To emphasize on definition, types, classification, principles/mechanisms, applications, examples and differences

UNIT I **10 Hours**

- **Benzene and its derivatives**
  - **A.** Analytical, synthetic and other evidences in the derivation of structure of benzene, Orbital picture, resonance in benzene, aromatic characters, Huckel's rule
  - **B.** Reactions of benzene - nitration, sulphonation, halogenation- reactivity, Friedelcrafts alkylation- reactivity, limitations, Friedelcrafts acylation.
  - **C.** Substituents, effect of substituents on reactivity and orientation of mono substituted benzene compounds towards electrophilic substitution reaction
  - **D.** Structure and uses of DDT, Saccharin, BHC and Chloramine

UNIT II **10 Hours**

- **Phenols*** - Acidity of phenols, effect of substituents on acidity, qualitative tests, Structure and uses of phenol, cresols, resorcinol, naphthols
- **Aromatic Amines* -** Basicity of amines, effect of substituents on basicity, and synthetic uses of aryl diazonium salts
- **Aromatic Acids* –**Acidity, effect of substituents on acidity and important reactions of benzoic acid.

UNIT III

10 Hours

- **Fats and Oils**

a. Fatty acids – reactions.

b. Hydrolysis, Hydrogenation, Saponification and Rancidity of oils, Drying oils.

c. Analytical constants – Acid value, Saponification value, Ester value, Iodine value, Acetyl value, Reichert Meissl (RM) value – significance and principle involved in their determination.

UNIT IV **08 Hours**

- **Polynuclear hydrocarbons:**

a. Synthesis, reactions

b. Structure and medicinal uses of Naphthalene, Phenanthrene, Anthracene, Diphenylmethane, Triphenylmethane and their derivatives

UNIT V **07 Hours**

- **Cyclo alkanes***

Stabilities – Baeyer's strain theory, limitation of Baeyer's strain theory, Coulson and Moffitt's modification, Sachse Mohr's theory (Theory of strainless rings), reactions of cyclopropane and cyclobutane only

BP305P. PHARMACEUTICAL ORGANIC CHEMISTRY -II (Practical)

4 Hrs/week

I Experiments involving laboratory techniques

- Recrystallization
- Steam distillation

II Determination of following oil values (including standardization of reagents)

- Acid value
- Saponification value
- Iodine value

III **Preparation of compounds**

- Benzanilide/Phenyl benzoate/Acetanilide from Aniline/ Phenol /Aniline by acylation reaction.
- 2,4,6-Tribromo aniline/Para bromo acetanilide from Aniline/
- Acetanilide by halogenation (Bromination) reaction.
- 5-Nitro salicylic acid/Meta di nitro benzene from Salicylic acid / Nitro benzene by nitration reaction.
- Benzoic acid from Benzyl chloride by oxidation reaction.
- Benzoic acid/ Salicylic acid from alkyl benzoate/ alkyl salicylate by hydrolysis reaction.
- 1-Phenyl azo-2-napthol from Aniline by diazotization and coupling reactions.
- Benzil from Benzoin by oxidation reaction.
- Dibenzal acetone from Benzaldehyde by Claison Schmidt reaction
- Cinnammic acid from Benzaldehyde by Perkin reaction
- *P*-Iodo benzoic acid from *P*-amino benzoic acid

Recommended Books (Latest Editions)

1. Organic Chemistry by Morrison and Boyd
2. Organic Chemistry by I.L. Finar , Volume-I
3. Textbook of Organic Chemistry by B.S. Bahl & Arun Bahl.
4. Organic Chemistry by P.L.Soni
5. Practical Organic Chemistry by Mann and Saunders.
6. Vogel's text book of Practical Organic Chemistry
7. Advanced Practical organic chemistry by N.K.Vishnoi.

8. Introduction to Organic Laboratory techniques by Pavia, Lampman and Kriz.

BP302T. PHYSICAL PHARMACEUTICS-I (Theory)

45Hours

Scope: The course deals with the various physica and physicochemical properties, and principles involved in dosage forms/formulations. Theory and practical components of the subject help the student to get a better insight into various areas of formulation research and development, and stability studies of pharmaceutical dosage forms.

Objectives: Upon the completion of the course student shall be able to

1. Understand various physicochemical properties of drug molecules in the designing the dosage forms
2. Know the principles of chemical kinetics & to use them for stability testing nad determination of expiry date of formulations
3. Demonstrate use of physicochemical properties in the formulation development and evaluation of dosage forms.

Course Content:

UNIT-I **10 Hours**

Solubility of drugs: Solubility expressions, mechanisms of solute solvent interactions, ideal solubility parameters, solvation & association, quantitative approach to the factors influencing solubility of drugs, diffusion principles in biological systems. Solubility of gas in liquids, solubility of liquids in liquids, (Binary solutions, ideal solutions) Raoult's law, real solutions. Partially miscible liquids, Critical solution temperature and applications. Distribution law, its limitations and applications

UNIT-II **10Hours**

States of Matter and properties of matter: State of matter, changes in the state of matter, latent heats, vapour pressure, sublimation critical point, eutectic mixtures, gases, aerosols – inhalers, relative humidity, liquid complexes, liquid crystals, glassy states, solid-crystalline, amorphous & polymorphism.

Physicochemical properties of drug molecules: Refractive index, optical rotation, dielectric constant, dipole moment, dissociation constant, determinations and applications

UNIT-III **08 Hours**

Surface and interfacial phenomenon: Liquid interface, surface & interfacial tensions,

surface free energy, measurement of surface & interfacial tensions, spreading coefficient, adsorption at liquid interfaces, surface active agents, HLB Scale, solubilisation, detergency, adsorption at solid interface.

UNIT-IV **08Hours**

Complexation and protein binding: Introduction, Classification of Complexation, Applications, methods of analysis, protein binding, Complexation and drug action, crystalline structures of complexes and thermodynamic treatment of stability constants.

UNIT-V **07 Hours**

pH, buffers and Isotonic solutions: Sorensen's pH scale, pH determination (electrometric and calorimetric), applications of buffers, buffer equation, buffer capacity, buffers in pharmaceutical and biological systems, buffered isotonic solutions.

BP306P. PHYSICAL PHARMACEUTICS – I (Practical)

4 Hrs/week

1. Determination the solubility of drug at room temperature
2. Determination of pKa value by Half Neutralization/ Henderson Hasselbalch equation.
3. Determination of Partition co- efficient of benzoic acid in benzene and water
4. Determination of Partition co- efficient of Iodine in CCl_4 and water
5. Determination of % composition of NaCl in a solution using phenol-water system by CST method
6. Determination of surface tension of given liquids by drop count and drop weight method
7. Determination of HLB number of a surfactant by saponification method
8. Determination of Freundlich and Langmuir constants using activated char coal
9. Determination of critical micellar concentration of surfactants
10. Determination of stability constant and donor acceptor ratio of PABA-Caffeine complex by solubility method
11. Determination of stability constant and donor acceptor ratio of Cupric-Glycine complex by pH titration method

Recommended Books: (Latest Editions)

1. Physical Pharmacy by Alfred Martin
2. Experimental Pharmaceutics by Eugene, Parott.
3. Tutorial Pharmacy by Cooper and Gunn.
4. Stocklosam J. Pharmaceutical Calculations, Lea &Febiger, Philadelphia.
5. Liberman H.A, Lachman C., Pharmaceutical Dosage forms, Tablets, Volume-1 to 3, MarcelDekkar Inc.
6. Liberman H.A, Lachman C, Pharmaceutical Dosage forms. Disperse systems, volume 1, 2, 3. Marcel Dekkar Inc.
7. Physical Pharmaceutics by Ramasamy C and ManavalanR.
8. Laboratory Manual of Physical Pharmaceutics, C.V.S. Subramanyam, J. Thimma settee
9. Physical Pharmaceutics by C.V.S. Subramanyam
10. Test book of Physical Phramacy, by Gaurav Jain & Roop K. Khar

BP 303 T. PHARMACEUTICAL MICROBIOLOGY (Theory)

45Hours

Scope:

- Study of all categories of microorganisims especially for the production of alchol antibiotics, vaccines, vitamins enzymes etc..

Objectives: Upon completion of the subject student shall be able to;

1. Understand methods of identification, cultivation and preservation of various microorganisms
2. To understand the importance and implementation of sterlization in pharmaceutical processing and industry
3. Learn sterility testing of pharmaceutical products.
4. Carried out microbiological standardization of Pharmaceuticals.
5. Understand the cell culture technology and its applications in pharmaceutical industries.

Course content:

Unit I **10 Hours**

Introduction, history of microbiology, its branches, scope and its importance.
Introduction to Prokaryotes and Eukaryotes
Study of ultra-structure and morphological classification of bacteria, nutritional requirements, raw materials used for culture media and physical parameters for growth, growth curve, isolation and preservation methods for pure cultures, cultivation of anaerobes, quantitative measurement of bacterial growth (total & viable count).
Study of different types of phase constrast microscopy, dark field microscopy and electron microscopy.

Unit II **10 Hours**

Identification of bacteria using staining techniques (simple, Gram's &Acid fast staining) and biochemical tests (IMViC).

Study of principle, procedure, merits, demerits and applications of physical, chemical gaseous,radiation and mechanical method of sterilization.

Evaluation of the efficiency of sterilization methods.

Equipments employed in large scale sterilization.

Sterility indicators.

Unit III **10 Hours**

Study of morphology, classification, reproduction/replication and cultivation of Fungi and Viruses.

Classification and mode of action of disinfectants

Factors influencing disinfection, antiseptics and their evaluation. For bacteriostatic and bactericidal actions

Evaluation of bactericidal & Bacteriostatic.

Sterility testing of products (solids, liquids, ophthalmic and other sterile products) according to IP, BP and USP.

Unit IV **08 Hours**

Designing of aseptic area, laminar flow equipments; study of different sources of contamination in an aseptic area and methods of prevention, clean area classification.
Principles and methods of different microbiological assay. Methods for standardization of antibiotics, vitamins and amino acids.
Assessment of a new antibiotic.

Unit V **07Hours**

Types of spoilage, factors affecting the microbial spoilage of pharmaceutical products, sources and types of microbial contaminants, assessment of microbial contamination and spoilage.

Preservation of pharmaceutical products using antimicrobial agents, evaluation of microbial stability of formulations.

Growth of animal cells in culture, general procedure for cell culture, Primary, established and transformed cell cultures.

Application of cell cultures in pharmaceutical industry and research.

BP 307P.PHARMACEUTICAL MICROBIOLOGY (Practical)

4 Hrs/week

1. Introduction and study of different equipments and processing, e.g., B.O.D. incubator, laminar flow, aseptic hood, autoclave, hot air sterilizer, deep freezer, refrigerator, microscopes used in experimental microbiology.
2. Sterilization of glassware, preparation and sterilization of media.
3. Sub culturing of bacteria and fungus. Nutrient stabs and slants preparations.
4. Staining methods- Simple, Grams staining and acid fast staining (Demonstration with practical).
5. Isolation of pure culture of micro-organisms by multiple streak plate technique and other techniques.
6. Microbiological assay of antibiotics by cup plate method and other methods
7. Motility determination by Hanging drop method.
8. Sterility testing of pharmaceuticals.
9. Bacteriological analysis of water
10. Biochemical test.

Recommended Books (Latest edition)

1. W.B. Hugo and A.D. Russel: Pharmaceutical Microbiology, Blackwell Scientific publications, Oxford London.
2. Prescott and Dunn., Industrial Microbiology, 4th edition, CBS Publishers & Distributors, Delhi.
3. Pelczar, Chan Kreig, Microbiology, Tata McGraw Hill edn.
4. Malcolm Harris, Balliere Tindall and Cox: Pharmaceutical Microbiology.
5. Rose: Industrial Microbiology.
6. Probisher, Hinsdill et al: Fundamentals of Microbiology, 9th ed. Japan
7. Cooper and Gunn's: Tutorial Pharmacy, CBS Publisher and Distribution.
8. Peppler: Microbial Technology.
9. I.P., B.P., U.S.P.- latest editions.
10. Ananthnarayan : Text Book of Microbiology, Orient-Longman, Chennai
11. Edward: Fundamentals of Microbiology.
12. N.K.Jain: Pharmaceutical Microbiology, Vallabh Prakashan, Delhi
13. Bergeys manual of systematic bacteriology, Williams and Wilkins- A Waverly company

BP 304 T. PHARMACEUTICAL ENGINEERING (Theory)

45 Hours

Scope: This course is designed to impart a fundamental knowledge on the art and science of various unit operations used in pharmaceutical industry.

Objectives: Upon completion of the course student shall be able:

1. To know various unit operations used in Pharmaceutical industries.
2. To understand the material handling techniques.
3. To perform various processes involved in pharmaceutical manufacturing process.
4. To carry out various test to prevent environmental pollution.
5. To appreciate and comprehend significance of plant lay out design for optimum use of resources.
6. To appreciate the various preventive methods used for corrosion control in Pharmaceutical industries.

Course content:

UNIT-I **10 Hours**

- **Flow of fluids:** Types of manometers, Reynolds number and its significance, Bernoulli's theorem and its applications, Energy losses, Orifice meter, Venturimeter, Pitot tube and Rotometer.
- **Size Reduction:** Objectives, Mechanisms & Laws governing size reduction, factors affecting size reduction, principles, construction, working, uses, merits and demerits of Hammer mill, ball mill, fluid energy mill, Edge runner mill & end runner mill.
- **Size Separation:** Objectives, applications & mechanism of size separation, official standards of powders, sieves, size separation Principles, construction, working, uses, merits and demerits of Sieve shaker, cyclone separator, Air separator, Bag filter & elutriation tank.

UNIT-II **10 Hours**

- **Heat Transfer:** Objectives, applications & Heat transfer mechanisms. Fourier's law, Heat transfer by conduction, convection & radiation. Heat interchangers & heat exchangers.

- **Evaporation:** Objectives, applications and factors influencing evaporation, differences between evaporation and other heat process. principles, construction, working, uses, merits and demerits of Steam jacketed kettle, horizontal tube evaporator, climbing film evaporator, forced circulation evaporator, multiple effect evaporator& Economy of multiple effect evaporator.

- **Distillation:** Basic Principles and methodology of simple distillation,flash distillation, fractional distillation, distillation under reduced pressure, steam distillation & molecular distillation

UNIT- III **08 Hours**

- **Drying:** Objectives, applications & mechanism of drying process, measurements & applications of Equilibrium Moisture content, rate of drying curve. principles, construction, working, uses, merits and demerits of Tray dryer, drum dryer spray dryer, fluidized bed dryer, vacuum dryer, freeze dryer.

- **Mixing:** Objectives, applications & factors affecting mixing, Difference between solid and liquid mixing, mechanism of solid mixing, liquids mixing and semisolids mixing. Principles, Construction, Working, uses, Merits and Demerits of Double cone blender, twin shell blender, ribbon blender, Sigma blade mixer, planetary mixers, Propellers, Turbines, Paddles & Silverson Emulsifier,

UNIT-IV **08 Hours**

- **Filtration:** Objectives, applications, Theories & Factors influencing filtration, filter aids, filter medias. Principle, Construction, Working, Uses, Merits and demerits of plate & frame filter, filter leaf, rotary drum filter, Meta filter & Cartridge filter, membrane filters and Seidtz filter.
- **Centrifugation:** Objectives, principle & applications of Centrifugation, principles, construction, working, uses, merits and demerits of Perforated basket centrifuge, Non-perforated basket centrifuge, semi continuous centrifuge & super centrifuge.

UNIT- V **07 Hours**

- **Materials of pharmaceutical plant construction, Corrosion and its prevention:** Factors affecting during materials selected for Pharmaceutical plant construction, Theories of corrosion, types of corrosion and there prevention. Ferrous and nonferrous metals, inorganic and organic non metals, basic of material handling systems.

Recommended Books: (Latest Editions)

1. Introduction to chemical engineering – Walter L Badger & Julius Banchero, Latest edition.
2. Solid phase extraction, Principles, techniques and applications by Nigel J.K. Simpson- Latest edition.
3. Unit operation of chemical engineering – Mcabe Smith, Latest edition.
4. Pharmaceutical engineering principles and practices – C.V.S Subrahmanyam et al., Latest edition.
5. Remington practice of pharmacy- Martin, Latest edition.
6. Theory and practice of industrial pharmacy by Lachmann., Latest edition.
7. Physical pharmaceutics- C.V.S Subrahmanyam et al., Latest edition.
8. Cooper and Gunn's Tutorial pharmacy, S.J. Carter, Latest edition.

BP308P - PHARMACEUTICAL ENGINEERING (Practical)

4 Hours/week

I. Determination of radiation constant of brass, iron, unpainted and painted glass.
II. Steam distillation – To calculate the efficiency of steam distillation.
III. To determine the overall heat transfer coefficient by heat exchanger.
IV. Construction of drying curves (for calcium carbonate and starch).
V. Determination of moisture content and loss on drying.
VI. Determination of humidity of air – i) From wet and dry bulb temperatures –use of Dew point method.
VII. Description of Construction working and application of Pharmaceutical Machinery such as rotary tablet machine, fluidized bed coater, fluid energy mill, de humidifier.
VIII. Size analysis by sieving – To evaluate size distribution of tablet granulations – Construction of various size frequency curves including arithmetic andlogarithmic probability plots.
IX. Size reduction: To verify the laws of size reduction using ball mill and determining Kicks, Rittinger's, Bond's coefficients, power requirement and critical speed of Ball Mill.
X. Demonstration of colloid mill, planetary mixer, fluidized bed dryer, freeze dryer and such othermajor equipment.
XI. Factors affecting Rate of Filtration and Evaporation (Surface area, Concentration and Thickness/ viscosity
XII. To study the effect of time on the Rate of Crystallization.
XIII. To calculate the uniformity Index for given sample by using Double Cone Blender.

SEMESTER IV

BP401T. PHARMACEUTICAL ORGANIC CHEMISTRY –III (Theory)

45 Hours

Scope: This subject imparts knowledge on stereo-chemical aspects of organic compounds and organic reactions, important named reactions, chemistry of important hetero cyclic compounds. It also emphasizes on medicinal and other uses of organic compounds.

Objectives: At the end of the course, the student shall be able to

1. understand the methods of preparation and properties of organic compounds
2. explain the stereo chemical aspects of organic compounds and stereo chemical reactions
3. know the medicinal uses and other applications of organic compounds

Course Content:

Note: To emphasize on definition, types, mechanisms, examples, uses/applications

UNIT-I **10 Hours**

Stereo isomerism

Optical isomerism –

Optical activity, enantiomerism, diastereoisomerism, meso compounds

Elements of symmetry, chiral and achiral molecules

DL system of nomenclature of optical isomers, sequence rules, RS system of nomenclature of optical isomers

Reactions of chiral molecules

Racemic modification and resolution of racemic mixture.

Asymmetric synthesis: partial and absolute

UNIT-II **10 Hours**

Geometrical isomerism

Nomenclature of geometrical isomers (Cis Trans, EZ, Syn Anti systems)

Methods of determination of configuration of geometrical isomers.

Conformational isomerism in Ethane, n-Butane and Cyclohexane.

Stereo isomerism in biphenyl compounds (Atropisomerism) and conditions for optical activity.

Stereospecific and stereoselective reactions

UNIT-III **10 Hours**

Heterocyclic compounds:

Nomenclature and classification

Synthesis, reactions and medicinal uses of following compounds/derivatives

Pyrrole, Furan, and Thiophene

Relative aromaticity and reactivity of Pyrrole, Furan and Thiophene

UNIT-IV **8 Hours**

Synthesis, reactions and medicinal uses of following compounds/derivatives

Pyrazole, Imidazole, Oxazole and Thiazole.

Pyridine, Quinoline, Isoquinoline, Acridine and Indole. Basicity of pyridine

Synthesis and medicinal uses of Pyrimidine, Purine, azepines and their derivatives

UNIT-V **07 Hours**

Reactions of synthetic importance

Metal hydride reduction ($NaBH_4$ and $LiAlH_4$), Clemmensen reduction, Birch reduction, Wolff Kishner reduction.

Oppenauer-oxidation and Dakin reaction.

Beckmanns rearrangement and Schmidt rearrangement.

Claisen-Schmidt condensation

Recommended Books (Latest Editions)

1. Organic chemistry by I.L. Finar, Volume-I & II.
2. A text book of organic chemistry – Arun Bahl, B.S. Bahl.
3. Heterocyclic Chemistry by Raj K. Bansal
4. Organic Chemistry by Morrison and Boyd
5. Heterocyclic Chemistry by T.L. Gilchrist

BP402T. MEDICINAL CHEMISTRY – I (Theory)

45 Hours

Scope: This subject is designed to impart fundamental knowledge on the structure, chemistry and therapeutic value of drugs. The subject emphasizes on structure activity relationships of drugs, importance of physicochemical properties and metabolism of drugs. The syllabus also emphasizes on chemical synthesis of important drugs under each class.

Objectives: Upon completion of the course the student shall be able to

1. understand the chemistry of drugs with respect to their pharmacological activity
2. understand the drug metabolic pathways, adverse effect and therapeutic value of drugs
3. know the Structural Activity Relationship (SAR) of different class of drugs
4. write the chemical synthesis of some drugs

Course Content:

Study of the development of the following classes of drugs, Classification, mechanism of action, uses of drugs mentioned in the course, Structure activity relationship of selective class of drugs as specified in the course and synthesis of drugs superscripted (*)

UNIT- I **10 Hours**

Introduction to Medicinal Chemistry

History and development of medicinal chemistry

Physicochemical properties in relation to biological action

Ionization, Solubility, Partition Coefficient, Hydrogen bonding, Protein binding, Chelation, Bioisosterism, Optical and Geometrical isomerism.

Drug metabolism

Drug metabolism principles- Phase I and Phase II.

Factors affecting drug metabolism including stereo chemical aspects.

UNIT- II **10 Hours**

Drugs acting on Autonomic Nervous System

Adrenergic Neurotransmitters:

Biosynthesis and catabolism of catecholamine.

Adrenergic receptors (Alpha & Beta) and their distribution.

Sympathomimetic agents: SAR of Sympathomimetic agents

Direct acting: Nor-epinephrine, Epinephrine, Phenylephrine*, Dopamine,

Methyldopa, Clonidine, Dobutamine, Isoproterenol, Terbutaline, Salbutamol*, Bitolterol, Naphazoline, Oxymetazoline and Xylometazoline.

- Indirect acting agents: Hydroxyamphetamine, Pseudoephedrine, Propylhexedrine.
- Agents with mixed mechanism: Ephedrine, Metaraminol.

Adrenergic Antagonists:

Alpha adrenergic blockers: Tolazoline*, Phentolamine, Phenoxybenzamine, Prazosin, Dihydroergotamine, Methysergide.

Beta adrenergic blockers: SAR of beta blockers, Propranolol*, Metibranolol, Atenolol, Betazolol, Bisoprolol, Esmolol, Metoprolol, Labetolol, Carvedilol.

UNIT-III **10 Hours**

Cholinergic neurotransmitters:

Biosynthesis and catabolism of acetylcholine.

Cholinergic receptors (Muscarinic & Nicotinic) and their distribution.

Parasympathomimetic agents: SAR of Parasympathomimetic agents

Direct acting agents: Acetylcholine, Carbachol*, Bethanechol, Methacholine, Pilocarpine.

Indirect acting/ Cholinesterase inhibitors (Reversible & Irreversible): Physostigmine, Neostigmine*, Pyridostigmine, Edrophonium chloride, Tacrine hydrochloride, Ambenonium chloride, Isofluorphate, Echothiophate iodide, Parathione, Malathion.

Cholinesterase reactivator: Pralidoxime chloride.

Cholinergic Blocking agents: SAR of cholinolytic agents

Solanaceous alkaloids and analogues: Atropine sulphate, Hyoscyamine sulphate, Scopolamine hydrobromide, Homatropine hydrobromide, Ipratropium bromide*.

Synthetic cholinergic blocking agents: Tropicamide, Cyclopentolate hydrochloride, Clidinium bromide, Dicyclomine hydrochloride*, Glycopyrrolate, Methantheline bromide, Propantheline bromide, Benztropine mesylate, Orphenadrine citrate, Biperidine hydrochloride, Procyclidine hydrochloride*, Tridihexethyl chloride, Isopropamide iodide, Ethopropazine hydrochloride.

UNIT- IV **08 Hours**

Drugs acting on Central Nervous System

A. Sedatives and Hypnotics:

Benzodiazepines: SAR of Benzodiazepines, Chlordiazepoxide, Diazepam*, Oxazepam, Chlorazepate, Lorazepam, Alprazolam, Zolpidem

Barbiturtes: SAR of barbiturates, Barbital*, Phenobarbital, Mephobarbital, Amobarbital, Butabarbital, Pentobarbital, Secobarbital

Miscelleneous:

Amides & imides: Glutethmide.

Alcohol & their carbamate derivatives: Meprobomate, Ethchlorvynol.

Aldehyde & their derivatives: Triclofos sodium, Paraldehyde.

B. Antipsychotics

Phenothiazeines: SAR of Phenothiazeines - Promazine hydrochloride, Chlorpromazine hydrochloride*, Trifluprомazine, Thioridazine hydrochloride, Piperacetazine hydrochloride, Prochlorperazine maleate, Trifluoperazine hydrochloride.

Ring Analogues of Phenothiazeines: Chlorprothixene, Thiothixene, Loxapine succinate, Clozapine.

Fluro buterophenones: Haloperidol, Droperidol, Risperidone.

Beta amino ketones: Molindone hydrochloride.

Benzamides: Sulpieride.

C. Anticonvulsants: SAR of Anticonvulsants**,** mechanism of anticonvulsant action

Barbiturates: Phenobarbitone, Methabarbital. **Hydantoins:**

Phenytoin*, Mephenytoin, Ethotoin **Oxazolidine diones:**

Trimethadione, Paramethadione **Succinimides:**

Phensuximide, Methsuximide, Ethosuximide* **Urea and**

monoacylureas: Phenacemide, Carbamazepine*

Benzodiazepines: Clonazepam

Miscellaneous: Primidone, Valproic acid , Gabapentin, Felbamate

UNIT – V **07 Hours**

Drugs acting on Central Nervous System

General anesthetics:

Inhalation anesthetics: Halothane*, Methoxyflurane, Enflurane, Sevoflurane, Isoflurane, Desflurane.

Ultra short acting barbitutrates: Methohexital sodium*, Thiamylal sodium, Thiopental sodium.

Dissociative anesthetics: Ketamine hydrochloride.*

Narcotic and non-narcotic analgesics

Morphine and related drugs: SAR of Morphine analogues, Morphine sulphate, Codeine, Meperidine hydrochloride, Anilerdine hydrochloride, Diphenoxylate hydrochloride, Loperamide hydrochloride, Fentanyl citrate*, Methadone hydrochloride*, Propoxyphene hydrochloride, Pentazocine, Levorphanol tartarate.

Narcotic antagonists: Nalorphine hydrochloride, Levallorphan tartarate, Naloxone hydrochloride.

Anti-inflammatory agents: Sodium salicylate, Aspirin, Mefenamic acid*, Meclofenamate, Indomethacin, Sulindac, Tolmetin, Zomepriac, Diclofenac, Ketorolac, Ibuprofen*, Naproxen, Piroxicam, Phenacetin, Acetaminophen, Antipyrine, Phenylbutazone.

BP406P. MEDICINAL CHEMISTRY – I (Practical)

4 Hours/Week

I Preparation of drugs/ intermediates

1 1,3-pyrazole

2 1,3-oxazole

3 Benzimidazole

4 Benztriazole

5 2,3- diphenyl quinoxaline

6 Benzocaine

7 Phenytoin

8 Phenothiazine

9 Barbiturate

II Assay of drugs

1 Chlorpromazine

2 Phenobarbitone

3 Atropine

4 Ibuprofen

5 Aspirin

6 Furosemide

III Determination of Partition coefficient for any two drugs

Recommended Books (Latest Editions)

1. Wilson and Giswold's Organic medicinal and Pharmaceutical Chemistry.
2. Foye's Principles of Medicinal Chemistry.
3. Burger's Medicinal Chemistry, Vol I to IV.
4. Introduction to principles of drug design- Smith and Williams.
5. Remington's Pharmaceutical Sciences.
6. Martindale's extra pharmacopoeia.

7. Organic Chemistry by I.L. Finar, Vol. II.
8. The Organic Chemistry of Drug Synthesis by Lednicer, Vol. 1-5.
9. Indian Pharmacopoeia.
10. Text book of practical organic chemistry- A.I.Vogel.

BP 403 T. PHYSICAL PHARMACEUTICS-II (Theory)

45Hours

Scope: The course deals with the various physica and physicochemical properties, and principles involved in dosage forms/formulations. Theory and practical components of the subject help the student to get a better insight into various areas of formulation research and development, and stability studies of pharmaceutical dosage forms.

Objectives: Upon the completion of the course student shall be able to

1. Understand various physicochemical properties of drug molecules in the designing the dosage forms
2. Know the principles of chemical kinetics & to use them for stability testing nad determination of expiry date of formulations
3. Demonstrate use of physicochemical properties in the formulation development and evaluation of dosage forms.

Course Content:

UNIT-I **07 Hours**

Colloidal dispersions: Classification of dispersed systems & their general characteristics, size & shapes of colloidal particles, classification of colloids & comparative account of their general properties. Optical, kinetic & electrical properties. Effect of electrolytes, coacervation, peptization& protective action.

UNIT-II **10 Hours**

Rheology: Newtonian systems, law of flow, kinematic viscosity, effect of temperature, non-Newtonian systems, pseudoplastic, dilatant, plastic, thixotropy, thixotropy in formulation, determination of viscosity, capillary, falling Sphere, rotational viscometers

Deformation of solids: Plastic and elastic deformation, Heckel equation, Stress, Strain, Elastic Modulus

UNIT-III **10 Hours**

Coarse dispersion: Suspension, interfacial properties of suspended particles, settling in suspensions, formulation of flocculated and deflocculated suspensions. Emulsions and theories of emulsification, microemulsion and multiple emulsions; Stability of emulsions, preservation of emulsions, rheological properties of emulsions and emulsion formulation by HLB method.

UNIT-IV **10Hours**

Micromeretics: Particle size and distribution, mean particle size, number and weight distribution, particle number, methods for determining particle size by different methods, counting and separation method, particle shape, specific surface, methods for determining surface area, permeability, adsorption, derived properties of powders, porosity, packing arrangement, densities, bulkiness & flow properties.

UNIT-V **10 Hours**

Drug stability: Reaction kinetics: zero, pseudo-zero, first & second order, units of basic rate constants, determination of reaction order. Physical and chemical factors influencing the chemical degradation of pharmaceutical product: temperature, solvent, ionic strength, dielectric constant, specific & general acid base catalysis, Simple numerical problems. Stabilization of medicinal agents against common reactions like hydrolysis & oxidation. Accelerated stability testing in expiration dating of pharmaceutical dosage forms. Photolytic degradation and its prevention

BP 407P. PHYSICAL PHARMACEUTICS- II (Practical)

3 Hrs/week

1. Determination of particle size, particle size distribution using sieving method
2. Determination of particle size, particle size distribution using Microscopic method
3. Determination of bulk density, true density and porosity
4. Determine the angle of repose and influence of lubricant on angle of repose
5. Determination of viscosity of liquid using Ostwald's viscometer
6. Determination sedimentation volume with effect of different suspending agent
7. Determination sedimentation volume with effect of different concentration of single suspending agent
8. Determination of viscosity of semisolid by using Brookfield viscometer
9. Determination of reaction rate constant first order.
10. Determination of reaction rate constant second order
11. Accelerated stability studies

Recommended Books: (Latest Editions)

1. Physical Pharmacy by Alfred Martin, Sixth edition
2. Experimental pharmaceutics by Eugene, Parott.
3. Tutorial pharmacy by Cooper and Gunn.
4. Stocklosam J. Pharmaceutical calculations, Lea & Febiger, Philadelphia.
5. Liberman H.A, Lachman C., Pharmaceutical Dosage forms, Tablets, Volume-1 to 3, Marcel Dekkar Inc.
6. Liberman H.A, Lachman C, Pharmaceutical dosage forms. Disperse systems, volume 1, 2, 3. Marcel Dekkar Inc.
7. Physical Pharmaceutics by Ramasamy C, and Manavalan R.

BP 404 T. PHARMACOLOGY-I (Theory)

45 Hrs

Scope: The main purpose of the subject is to understand what drugs do to the living organisms and how their effects can be applied to therapeutics. The subject covers the information about the drugs like, mechanism of action, physiological and biochemical effects (pharmacodynamics) as well as absorption, distribution, metabolism and excretion (pharmacokinetics) along with the adverse effects, clinical uses, interactions, doses, contraindications and routes of administration of different classes of drugs.

Objectives: Upon completion of this course the student should be able to

1. Understand the pharmacological actions of different categories of drugs
2. Explain the mechanism of drug action at organ system/sub cellular/ macromolecular levels.
3. Apply the basic pharmacological knowledge in the prevention and treatment of various diseases.
4. Observe the effect of drugs on animals by simulated experiments
5. Appreciate correlation of pharmacology with other bio medical sciences

Course Content:

UNIT-I **08 hours**

1. General Pharmacology

a. Introduction to Pharmacology- Definition, historical landmarks and scope of pharmacology, nature and source of drugs, essential drugs concept and routes of drug administration, Agonists, antagonists(competitive and non competitive), spare receptors, addiction, tolerance, dependence, tachyphylaxis, idiosyncrasy, allergy.

b. Pharmacokinetics- Membrane transport, absorption, distribution, metabolism and excretion of drugs .Enzyme induction, enzyme inhibition, kinetics of elimination

UNIT-II **12 Hours**

General Pharmacology

a. Pharmacodynamics- Principles and mechanisms of drug action. Receptor theories and classification of receptors, regulation of receptors. drug receptors interactions signal transduction mechanisms, G-protein–coupled receptors, ion channel receptor, transmembrane enzyme linked receptors, transmembrane JAK-STAT binding receptor and receptors that regulate transcription factors, dose response relationship, therapeutic index, combined effects of drugs and factors modifying drug action.
b. Adverse drug reactions.
c. Drug interactions (pharmacokinetic and pharmacodynamic)
d. Drug discovery and clinical evaluation of new drugs -Drug discovery phase, preclinical evaluation phase, clinical trial phase, phases of clinical trials and pharmacovigilance.

UNIT-III **10 Hours**

2. Pharmacology of drugs acting on peripheral nervous system

a. Organization and function of ANS.

b.Neurohumoral transmission,co-transmission and classification of neurotransmitters.

c. Parasympathomimetics, Parasympatholytics, Sympathomimetics, sympatholytics.

d. Neuromuscular blocking agents and skeletal muscle relaxants (peripheral).

e. Local anesthetic agents.

f. Drugs used in myasthenia gravis and glaucoma

UNIT-IV **08 Hours**

3. Pharmacology of drugs acting on central nervous system

a. Neurohumoral transmission in the C.N.S.special emphasis on importance of various neurotransmitters like with GABA, Glutamate, Glycine, serotonin, dopamine.

b. General anesthetics and pre-anesthetics**.**

c. Sedatives, hypnotics and centrally acting muscle relaxants.

d. Anti-epileptics

e. Alcohols and disulfiram

UNIT-V **07 Hours**

3. Pharmacology of drugs acting on central nervous system

a. Psychopharmacological agents: Antipsychotics, antidepressants, anti-anxiety agents, anti-manics and hallucinogens.

b. Drugs used in Parkinsons disease and Alzheimer's disease.

c. CNS stimulants and nootropics.

d. Opioid analgesics and antagonists

e. Drug addiction, drug abuse, tolerance and dependence.

BP 408 P.PHARMACOLOGY-I (Practical)

4Hrs/Week

1. Introduction to experimental pharmacology.
2. Commonly used instruments in experimental pharmacology.
3. Study of common laboratory animals.
4. Maintenance of laboratory animals as per CPCSEA guidelines.
5. Common laboratory techniques. Blood withdrawal, serum and plasma separation, anesthetics and euthanasia used for animal studies.
6. Study of different routes of drugs administration in mice/rats.
7. Study of effect of hepatic microsomal enzyme inducers on the phenobarbitone sleeping time in mice.
8. Effect of drugs on ciliary motility of frog oesophagus
9. Effect of drugs on rabbit eye.
10. Effects of skeletal muscle relaxants using rota-rod apparatus.
11. Effect of drugs on locomotor activity using actophotometer.
12. Anticonvulsant effect of drugs by MES and PTZ method.
13. Study of stereotype and anti-catatonic activity of drugs on rats/mice.
14. Study of anxiolytic activity of drugs using rats/mice.
15. Study of local anesthetics by different methods

Note: All laboratory techniques and animal experiments are demonstrated by simulated experiments by softwares and videos

Recommended Books (Latest Editions)

1. Rang H. P., Dale M. M., Ritter J. M., Flower R. J., Rang and Dale's Pharmacology,.Churchil Livingstone Elsevier
2. Katzung B. G., Masters S. B., Trevor A. J., Basic and clinical pharmacology, Tata Mc Graw-Hill
3. Goodman and Gilman's, The Pharmacological Basis of Therapeutics
4. Marry Anne K. K., Lloyd Yee Y., Brian K. A., Robbin L.C., Joseph G. B., Wayne A. K., Bradley R.W., Applied Therapeutics, The Clinical use of Drugs, The Point Lippincott Williams & Wilkins
5. Mycek M.J, Gelnet S.B and Perper M.M. Lippincott's Illustrated Reviews-Pharmacology

6. K.D.Tripathi. Essentials of Medical Pharmacology, JAYPEE Brothers Medical Publishers (P) Ltd, New Delhi.

7. Sharma H. L., Sharma K. K., Principles of Pharmacology, Paras medical publisher

8. Modern Pharmacology with clinical Applications, by Charles R.Craig& Robert,

9. Ghosh MN. Fundamentals of Experimental Pharmacology. Hilton & Company, Kolkata.

10. Kulkarni SK. Handbook of experimental pharmacology. VallabhPrakashan,

BP 405 T.PHARMACOGNOSY AND PHYTOCHEMISTRY I (Theory)

45 Hours

Scope: The subject involves the fundamentals of Pharmacognosy like scope, classification of crude drugs, their identification and evaluation, phytochemicals present in them and their medicinal properties.

Objectives: Upon completion of the course, the student shall be able

1. to know the techniques in the cultivation and production of crude drugs
2. to know the crude drugs, their uses and chemical nature
3. know the evaluation techniques for the herbal drugs
4. to carry out the microscopic and morphological evaluation of crude drugs

Course Content:

UNIT-I **10 Hours**

Introduction to Pharmacognosy:

(a) Definition, history, scope and development of Pharmacognosy

(b) Sources of Drugs – Plants, Animals, Marine & Tissue culture

(c) Organized drugs, unorganized drugs (dried latex, dried juices, dried extracts, gums and mucilages, oleoresins and oleo- gum -resins).

Classification of drugs:

Alphabetical, morphological, taxonomical, chemical, pharmacological, chemo and sero taxonomical classification of drugs

Quality control of Drugs of Natural Origin:

Adulteration of drugs of natural origin. Evaluation by organoleptic, microscopic, physical, chemical and biological methods and properties.

Quantitative microscopy of crude drugs including lycopodium spore method, leafconstants, camera lucida and diagrams of microscopic objects to scale with camera lucida.

UNIT-II **10 Hours**

Cultivation, Collection, Processing and storage of drugs of natural origin:

Cultivation and Collection of drugs of natural origin

Factors influencing cultivation of medicinal plants.

Plant hormones and their applications.

Polyploidy, mutation and hybridization with reference to medicinal plants

Conservation of medicinal plants

UNIT-III **07 Hours**

Plant tissue culture:

Historical development of plant tissue culture, types of cultures, Nutritional requirements, growth and their maintenance.

Applications of plant tissue culture in pharmacognosy.

Edible vaccines

UNIT IV **10 Hours**

Pharmacognosy in various systems of medicine:

Role of Pharmacognosy in allopathy and traditional systems of medicine namely, Ayurveda, Unani, Siddha, Homeopathy and Chinese systems of medicine.

Introduction to secondary metabolites:

Definition, classification, properties and test for identification of Alkaloids, Glycosides, Flavonoids, Tannins, Volatile oil and Resins

UNIT V **08 Hours**

Study of biological source, chemical nature and uses of drugs of natural origin containing following drugs

Plant Products:

Fibers - Cotton, Jute, Hemp

Hallucinogens, Teratogens, Natural allergens

Primary metabolites:

General introduction, detailed study with respect to chemistry, sources, preparation, evaluation, preservation, storage, therapeutic used and commercial utility as Pharmaceutical Aids and/or Medicines for the following Primary metabolites:

Carbohydrates: Acacia, Agar, Tragacanth, Honey

Proteins and Enzymes : Gelatin, casein, proteolytic enzymes (Papain, bromelain, serratiopeptidase, urokinase, streptokinase, pepsin).

Lipids(Waxes, fats, fixed oils) : Castor oil, Chaulmoogra oil, Wool Fat, Bees Wax

Marine Drugs:

Novel medicinal agents from marine sources

BP408 P. PHARMACOGNOSY AND PHYTOCHEMISTRY I (Practical)

4 Hours/Week

1. Analysis of crude drugs by chemical tests: **(**i)Tragaccanth (ii) Acacia (iii)Agar (iv) Gelatin (v) starch (vi) Honey (vii) Castor oil
2. Determination of stomatal number and index
3. Determination of vein islet number, vein islet termination and paliside ratio.
4. Determination of size of starch grains, calcium oxalate crystals by eye piece micrometer
5. Determination of Fiber length and width
6. Determination of number of starch grains by Lycopodium spore method
7. Determination of Ash value
8. Determination of Extractive values of crude drugs
9. Determination of moisture content of crude drugs
10. Determination of swelling index and foaming

Recommended Books: (Latest Editions)

1. W.C.Evans, Trease and Evans Pharmacognosy, 16th edition, W.B. Sounders & Co., London, 2009.
2. Tyler, V.E., Brady, L.R. and Robbers, J.E., Pharmacognosy, 9th Edn., Lea and Febiger, Philadelphia, 1988.
3. Text Book of Pharmacognosy by T.E. Wallis
4. Mohammad Ali. Pharmacognosy and Phytochemistry, CBS Publishers & Distribution, New Delhi.
5. Text book of Pharmacognosy by C.K. Kokate, Purohit, Gokhlae (2007), 37th Edition, Nirali Prakashan, New Delhi.
6. Herbal drug industry by R.D. Choudhary (1996), Ist Edn, Eastern Publisher, New Delhi.
7. Essentials of Pharmacognosy, Dr.SH.Ansari, IInd edition, Birla publications, New Delhi, 2007
8. Practical Pharmacognosy: C.K. Kokate, Purohit, Gokhlae
9. Anatomy of Crude Drugs by M.A. Iyengar

SEMESTER V

BP501T. MEDICINAL CHEMISTRY – II (Theory)

45 Hours

Scope: This subject is designed to impart fundamental knowledge on the structure, chemistry and therapeutic value of drugs. The subject emphasizes on structure activity relationships of drugs, importance of physicochemical properties and metabolism of drugs. The syllabus also emphasizes on chemical synthesis of important drugs under each class.

Objectives: Upon completion of the course the student shall be able to

1. Understand the chemistry of drugs with respect to their pharmacological activity
2. Understand the drug metabolic pathways, adverse effect and therapeutic value of drugs
3. Know the Structural Activity Relationship of different class of drugs
4. Study the chemical synthesis of selected drugs

Course Content:

Study of the development of the following classes of drugs, Classification, mechanism of action, uses of drugs mentioned in the course, Structure activity relationship of selective class of drugs as specified in the course and synthesis of drugs superscripted (*)

UNIT- I **10 Hours**

Antihistaminic agents: Histamine, receptors and their distribution in the humanbody

H_1–antagonists: Diphenhydramine hydrochloride*, Dimenhydrinate, Doxylamines cuccinate, Clemastine fumarate, Diphenylphyraline hydrochloride, Tripelenamine hydrochloride, Chlorcyclizine hydrochloride, Meclizine hydrochloride, Buclizine hydrochloride, Chlorpheniramine maleate, Triprolidine hydrochloride*, Phenidamine tartarate, Promethazine hydrochloride*, Trimeprazine tartrate, Cyproheptadine hydrochloride, Azatidine maleate, Astemizole, Loratadine, Cetirizine, Levocetrazine Cromolyn sodium

H_2-antagonists: Cimetidine*, Famotidine, Ranitidin.

Gastric Proton pump inhibitors: Omeprazole, Lansoprazole, Rabeprazole, Pantoprazole

Anti-neoplastic agents:

Alkylating agents: Meclorethamine*, Cyclophosphamide, Melphalan,

Chlorambucil, Busulfan, Thiotepa

Antimetabolites: Mercaptopurine*, Thioguanine, Fluorouracil, Floxuridine, Cytarabine, Methotrexate*, Azathioprine

Antibiotics: Dactinomycin, Daunorubicin, Doxorubicin, Bleomycin

Plant products: Etoposide, Vinblastin sulphate, Vincristin sulphate

Miscellaneous: Cisplatin, Mitotane.

UNIT – II **10 Hours**

Anti-anginal:

Vasodilators: Amyl nitrite, Nitroglycerin*, Pentaerythritol tetranitrate, Isosorbide dinitrite*, Dipyridamole.

Calcium channel blockers: Verapamil, Bepridil hydrochloride, Diltiazem hydrochloride, Nifedipine, Amlodipine, Felodipine, Nicardipine, Nimodipine.

Diuretics:

Carbonic anhydrase inhibitors: Acetazolamide*, Methazolamide, Dichlorphenamide.

Thiazides: Chlorthiazide*, Hydrochlorothiazide, Hydroflumethiazide, Cyclothiazide,

Loop diuretics: Furosemide*, Bumetanide, Ethacrynic acid.

Potassium sparing Diuretics: Spironolactone, Triamterene, Amiloride.

Osmotic Diuretics: Mannitol

Anti-hypertensive Agents: Timolol, Captopril, Lisinopril, Enalapril, Benazepril hydrochloride, Quinapril hydrochloride, Methyldopate hydrochloride,* Clonidine hydrochloride, Guanethidine monosulphate, Guanabenz acetate, Sodium nitroprusside, Diazoxide, Minoxidil, Reserpine, Hydralazine hydrochloride.

UNIT- III **10 Hours**

Anti-arrhythmic Drugs: Quinidine sulphate, Procainamide hydrochloride, Disopyramide phosphate*, Phenytoin sodium, Lidocaine hydrochloride, Tocainide hydrochloride, Mexiletine hydrochloride, Lorcainide hydrochloride, Amiodarone, Sotalol.

Anti-hyperlipidemic agents: Clofibrate, Lovastatin, Cholesteramine and Cholestipol

Coagulant & Anticoagulants: Menadione, Acetomenadione, Warfarin*, Anisindione, clopidogrel

Drugs used in Congestive Heart Failure: Digoxin, Digitoxin, Nesiritide, Bosentan, Tezosentan.

UNIT- IV **08 Hours**

Drugs acting on Endocrine system

Nomenclature, Stereochemistry and metabolism of steroids

Sex hormones: Testosterone, Nandralone, Progestrones, Oestriol, Oestradiol, Oestrione, Diethyl stilbestrol.
Drugs for erectile dysfunction: Sildenafil, Tadalafil.
Oral contraceptives: Mifepristone, Norgestril, Levonorgestrol
Corticosteroids: Cortisone, Hydrocortisone, Prednisolone, Betamethasone, Dexamethasone
Thyroid and antithyroid drugs: L-Thyroxine, L-Thyronine, Propylthiouracil, Methimazole.

UNIT – V **07 Hours**

Antidiabetic agents:

Insulin and its preparations

Sulfonyl ureas: Tolbutamide*, Chlorpropamide, Glipizide, Glimepiride.

Biguanides: Metformin.

Thiazolidinediones: Pioglitazone, Rosiglitazone.

Meglitinides: Repaglinide, Nateglinide.

Glucosidase inhibitors: Acrabose, Voglibose.

Local Anesthetics: SAR of Local anesthetics

Benzoic Acid derivatives; Cocaine, Hexylcaine, Meprylcaine, Cyclomethycaine, Piperocaine.

Amino Benzoic acid derivatives: Benzocaine*, Butamben, Procaine*, Butacaine, Propoxycaine, Tetracaine, Benoxinate.

Lidocaine/Anilide derivatives: Lignocaine, Mepivacaine, Prilocaine, Etidocaine.

Miscellaneous: Phenacaine, Diperodon, Dibucaine.*

Recommended Books (Latest Editions)

1. Wilson and Giswold's Organic medicinal and Pharmaceutical Chemistry.
2. Foye's Principles of Medicinal Chemistry.
3. Burger's Medicinal Chemistry, Vol I to IV.
4. Introduction to principles of drug design- Smith and Williams.
5. Remington's Pharmaceutical Sciences.
6. Martindale's extra pharmacopoeia.
7. Organic Chemistry by I.L. Finar, Vol. II.
8. The Organic Chemistry of Drug Synthesis by Lednicer, Vol. 1to 5.
9. Indian Pharmacopoeia.
10. Text book of practical organic chemistry- A.I.Vogel.

BP 502 T. Industrial PharmacyI (Theory)

45 Hours

Scope: Course enables the student to understand and appreciate the influence of pharmaceutical additives and various pharmaceutical dosage forms on the performance of the drug product.

Objectives: Upon completion of the course the student shall be able to

1. Know the various pharmaceutical dosage forms and their manufacturing techniques.
2. Know various considerations in development of pharmaceutical dosage forms
3. Formulate solid, liquid and semisolid dosage forms and evaluate them for their quality

Course content:

3 hours/ week

UNIT-I **07 Hours**

Preformulation Studies: Introduction to preformulation, goals and objectives, study of physicochemical characteristics of drug substances.

a. Physical properties: Physical form (crystal & amorphous), particle size, shape, flow properties, solubility profile (pKa, pH, partition coefficient), polymorphism

b. Chemical Properties: Hydrolysis, oxidation, reduction, racemisation, polymerization

BCS classification of drugs & its significant

Application of preformulation considerations in the development of solid, liquid oral and parenteral dosage forms and its impact on stability of dosage forms.

UNIT-II **10 Hours**

Tablets:

a. Introduction, ideal characteristics of tablets, classification of tablets. Excipients, Formulation of tablets, granulation methods, compression and processing problems. Equipments and tablet tooling.

b. Tablet coating: Types of coating, coating materials, formulation of coating composition, methods of coating, equipment employed and defects in coating.

c. Quality control tests: In process and finished product tests

Liquid orals: Formulation and manufacturing consideration of syrups and elixirs suspensions and emulsions; Filling and packaging; evaluation of liquid orals official in pharmacopoeia

UNIT-III **08 Hours**

Capsules:

a. ***Hard gelatin capsules:*** Introduction, Production of hard gelatin capsule shells. size of capsules, Filling, finishing and special techniques of formulation of hard gelatin capsules, manufacturing defects. In process and final product quality control tests for capsules.

b. ***Soft gelatin capsules:*** Nature of shell and capsule content, size of capsules,importance of base adsorption and minim/gram factors, production, in process and final product quality control tests. Packing, storage and stability testing of soft gelatin capsules and their applications.

Pellets: Introduction, formulation requirements, pelletization process, equipments for manufacture of pellets

UNIT-IV **10 Hours**

Parenteral Products:

a. Definition, types, advantages and limitations. Preformulation factors and essential requirements, vehicles, additives, importance of isotonicity

b. Production procedure, production facilities and controls,
aseptic processing

c. Formulation of injections, sterile powders, large volume parenterals and lyophilized products.

d. Containers and closures selection, filling and sealing of ampoules, vials and infusion fluids. Quality control tests of parenteral products.

Ophthalmic Preparations: Introduction, formulation considerations; formulation of eye drops, eye ointments and eye lotions; methods of preparation; labeling, containers; evaluation of ophthalmic preparations

UNIT-V **10 Hours**

Cosmetics: Formulation and preparation of the following cosmetic preparations: lipsticks, shampoos, cold cream and vanishing cream, tooth pastes, hair dyes and sunscreens.

Pharmaceutical Aerosols: Definition, propellants, containers, valves, types of aerosol systems; formulation and manufacture of aerosols; Evaluation of aerosols; Quality control and stability studies.

Packaging Materials Science: Materials used for packaging of pharmaceutical products, factors influencing choice of containers, legal and official requirements for containers, stability aspects of packaging materials, quality control tests.

BP 506 P. Industrial PharmacyI (Practical)

4 Hours/week

1. Preformulation studies on paracetamol/asparin/or any other drug
2. Preparation and evaluation of Paracetamol tablets
3. Preparation and evaluation of Aspirin tablets
4. Coating of tablets- film coating of tables/granules
5. Preparation and evaluation of Tetracycline capsules
6. Preparation of Calcium Gluconate injection
7. Preparation of Ascorbic Acid injection
8. Qulaity control test of (as per IP) marketed tablets and capsules
9. Preparation of Eye drops/ and Eye ointments
10. Preparation of Creams (cold / vanishing cream)
11. Evaluation of Glass containers (as per IP)

Recommended Books: (Latest Editions)

1. Pharmaceutical dosage forms - Tablets, volume 1 -3 by H.A. Liberman, Leon Lachman &J.B.Schwartz
2. Pharmaceutical dosage form - Parenteral medication vol- 1&2 by Liberman & Lachman
3. Pharmaceutical dosage form disperse system VOL-1 by Liberman & Lachman
4. Modern Pharmaceutics by Gilbert S. Banker & C.T. Rhodes, 3rd Edition
5. Remington: The Science and Practice of Pharmacy, 20th edition Pharmaceutical Science (RPS)
6. Theory and Practice of Industrial Pharmacy by Liberman & Lachman
7. Pharmaceutics- The science of dosage form design by M.E.Aulton, Churchill livingstone, Latest edition
8. Introduction to Pharmaceutical Dosage Forms by H. C.Ansel, Lea &Febiger, Philadelphia, 5thedition, 2005
9. Drug stability - Principles and practice by Cartensen & C.J. Rhodes, 3rd Edition, Marcel Dekker Series, Vol 107.

BP503.T. PHARMACOLOGY-II (Theory)

45 Hours

Scope: This subject is intended to impart the fundamental knowledge on various aspects (classification, mechanism of action, therapeutic effects, clinical uses, side effects and contraindications) of drugs acting on different systems of body and in addition,emphasis on the basic concepts of bioassay.

Objectives: Upon completion of this course the student should be able to

1. Understand the mechanism of drug action and its relevance in the treatment of different diseases
2. Demonstrate isolation of different organs/tissues from the laboratory animals by simulated experiments
3. Demonstrate the various receptor actions using isolated tissue preparation
4. Appreciate correlation of pharmacology with related medical sciences

Course Content:

UNIT-I **10hours**

1. Pharmacology of drugs acting on cardio vascular system

a. Introduction to hemodynamic and electrophysiology of heart.
b. Drugs used in congestive heart failure
c. Anti-hypertensive drugs.
d. Anti-anginal drugs.
e. Anti-arrhythmic drugs.
f. Anti-hyperlipidemic drugs.

UNIT-II **10hours**

1. Pharmacology of drugs acting on cardio vascular system

a. Drug used in the therapy of shock.
b. Hematinics, coagulants and anticoagulants.
c. Fibrinolytics and anti-platelet drugs
d. Plasma volume expanders

2. Pharmacology of drugs acting on urinary system

a. Diuretics
b. Anti-diuretics.

UNIT-III **10hours**

3. Autocoids and related drugs

a. Introduction to autacoids and classification
b. Histamine, 5-HT and their antagonists.
c. Prostaglandins, Thromboxanes and Leukotrienes.
d. Angiotensin, Bradykinin and Substance P.
e. Non-steroidal anti-inflammatory agents
f. Anti-gout drugs
g. Antirheumatic drugs

UNIT-IV **08hours**

5. Pharmacology of drugs acting on endocrine system

a. Basic concepts in endocrine pharmacology.
b. Anterior Pituitary hormones- analogues and their inhibitors.
c. Thyroid hormones- analogues and their inhibitors.
d. Hormones regulating plasma calcium level- Parathormone, Calcitonin and Vitamin-D.
d. Insulin, Oral Hypoglycemic agents and glucagon.
e. ACTH and corticosteroids.

UNIT-V **07hours**

5. Pharmacology of drugs acting on endocrine system

a. Androgens and Anabolic steroids.
b. Estrogens, progesterone and oral contraceptives.
c. Drugs acting on the uterus.

6. Bioassay

a. Principles and applications of bioassay.
b.Types of bioassay
c. Bioassay of insulin, oxytocin, vasopressin, ACTH,d-tubocurarine,digitalis, histamine and 5-HT

BP 507 P. PHARMACOLOGY-II (Practical)

4Hrs/Week

1. Introduction to *in-vitro* pharmacology and physiological salt solutions.
2. Effect of drugs on isolated frog heart.
3. Effect of drugs on blood pressure and heart rate of dog.
4. Study of diuretic activity of drugs using rats/mice.
5. DRC of acetylcholine using frog rectus abdominis muscle.
6. Effect of physostigmine and atropine on DRC of acetylcholine using frog rectus abdominis muscle and rat ileum respectively.
7. Bioassay of histamine using guinea pig ileum by matching method.
8. Bioassay of oxytocin using rat uterine horn by interpolation method.
9. Bioassay of serotonin using rat fundus strip by three point bioassay.
10. Bioassay of acetylcholine using rat ileum/colon by four point bioassay.
11. Determination of PA_2 value of prazosin using rat anococcygeus muscle (by Schilds plot method).
12. Determination of PD_2 value using guinea pig ileum.
13. Effect of spasmogens and spasmolytics using rabbit jejunum.
14. Anti-inflammatory activity of drugs using carrageenan induced paw-edema model.
15. Analgesic activity of drug using central and peripheral methods

Note: All laboratory techniques and animal experiments are demonstrated by simulated experiments by softwares and videos

Recommended Books (Latest Editions)

1. Rang H. P., Dale M. M., Ritter J. M., Flower R. J., Rang and Dale's Pharmacology, Churchil Livingstone Elsevier
2. Katzung B. G., Masters S. B., Trevor A. J., Basic and clinical pharmacology, Tata Mc Graw-Hill.
3. Goodman and Gilman's, The Pharmacological Basis of Therapeutics
4. Marry Anne K. K., Lloyd Yee Y., Brian K. A., Robbin L.C., Joseph G. B., Wayne A. K., Bradley R.W., Applied Therapeutics, The Clinical use of Drugs, The Point Lippincott Williams & Wilkins.
5. Mycek M.J, Gelnet S.B and Perper M.M. Lippincott's Illustrated Reviews-Pharmacology.
6. K.D.Tripathi. Essentials of Medical Pharmacology, , JAYPEE Brothers Medical Publishers (P) Ltd, New Delhi.
7. Sharma H. L., Sharma K. K., Principles of Pharmacology, Paras medical publisher
8. Modern Pharmacology with clinical Applications, by Charles R.Craig& Robert.
9. Ghosh MN. Fundamentals of Experimental Pharmacology. Hilton & Company, Kolkata.
10. Kulkarni SK. Handbook of experimental pharmacology. Vallabh Prakashan.

BP504 T. PHARMACOGNOSY AND PHYTOCHEMISTRY II (Theory)

45Hours

Scope: The main purpose of subject is to impart the students the knowledge of how the secondary metabolites are produced in the crude drugs, how to isolate and identify and produce them industrially. Also this subject involves the study of producing the plants and phytochemicals through plant tissue culture, drug interactions and basic principles of traditional system of medicine

Objectives: Upon completion of the course, the student shall be able

1. to know the modern extraction techniques, characterization and identification of the herbal drugs and phytoconstituents
2. to understand the preparation and development of herbal formulation.
3. to understand the herbal drug interactions
4. to carryout isolation and identification of phytoconstituents

Course Content:

UNIT-I **7 Hours**

Metabolic pathways in higher plants and their determination

a) Brief study of basic metabolic pathways and formation of different secondary metabolites through these pathways- Shikimic acid pathway, Acetate pathways and Amino acid pathway.
b) Study of utilization of radioactive isotopes in the investigation of Biogenetic studies.

UNIT-II **14 Hours**

General introduction, composition, chemistry & chemical classes, biosources, therapeutic uses and commercial applications of following

secondary metabolites:

Alkaloids: Vinca, Rauwolfia, Belladonna, Opium,
Phenylpropanoids and Flavonoids: Lignans, Tea, Ruta
Steroids, Cardiac Glycosides & Triterpenoids: Liquorice, Dioscorea, Digitalis
Volatile oils: Mentha, Clove, Cinnamon, Fennel, Coriander,
Tannins: Catechu, Pterocarpus
Resins: Benzoin, Guggul, Ginger, Asafoetida, Myrrh, Colophony
Glycosides: Senna, Aloes, Bitter Almond
Iridoids, Other terpenoids & Naphthaquinones: Gentian, Artemisia, taxus, carotenoids

UNIT-III **06 Hours**

Isolation, Identification and Analysis of Phytoconstituents

a) Terpenoids: Menthol, Citral, Artemisin
b) Glycosides: Glycyrhetinic acid & Rutin
c) Alkaloids: Atropine,Quinine,Reserpine,Caffeine
d) Resins: Podophyllotoxin, Curcumin

UNIT-IV **10 Hours**

Industrial production, estimation and utilization of the following phytoconstituents: Forskolin, Sennoside, Artemisinin, Diosgenin, Digoxin, Atropine, Podophyllotoxin, Caffeine, Taxol, Vincristine and Vinblastine

UNIT V **8 Hours**

Basics of Phytochemistry

Modern methods of extraction, application of latest techniques like Spectroscopy, chromatography and electrophoresis in the isolation, purification and identification of crude drugs.

BP 508 P. PHARMACOGNOSY AND PHYTOCHEMISTRY II (Practical)

4 Hours/Week

1. Morphology, histology and powder characteristics & extraction & detection of: Cinchona, Cinnamon, Senna, Clove, Ephedra, Fennel and Coriander
2. Exercise involving isolation & detection of active principles
   a. Caffeine - from tea dust.
   b. Diosgenin from Dioscorea
   c. Atropine from Belladonna
   d. Sennosides from Senna
3. Separation of sugars by Paper chromatography
4. TLC of herbal extract
5. Distillation of volatile oils and detection of phytoconstitutents by TLC
6. Analysis of crude drugs by chemical tests: **(**i) Asafoetida (ii) Benzoin (iii) Colophony (iv) Aloes (v) Myrrh

Recommended Books: (Latest Editions)

1. W.C.Evans, Trease and Evans Pharmacognosy, 16th edition, W.B. Sounders & Co., London, 2009.
2. Mohammad Ali. Pharmacognosy and Phytochemistry, CBS Publishers & Distribution, New Delhi.
3. Text book of Pharmacognosy by C.K. Kokate, Purohit, Gokhlae (2007), 37th Edition, Nirali Prakashan, New Delhi.
4. Herbal drug industry by R.D. Choudhary (1996), Ist Edn, Eastern Publisher, New Delhi.
5. Essentials of Pharmacognosy, Dr.SH.Ansari, IInd edition, Birla publications, New Delhi, 2007
6. Herbal Cosmetics by H.Pande, Asia Pacific Business press, Inc, New Delhi.
7. A.N. Kalia, Textbook of Industrial Pharmacognosy, CBS Publishers, New Delhi, 2005.
8. R Endress, Plant cell Biotechnology, Springer-Verlag, Berlin, 1994.
9. Pharmacognosy & Pharmacobiotechnology. James Bobbers, Marilyn KS, VE Tylor.
10. The formulation and preparation of cosmetic, fragrances and flavours.
11. Remington's Pharmaceutical sciences.
12. Text Book of Biotechnology by Vyas and Dixit.
13. Text Book of Biotechnology by R.C. Dubey.

BP 505 T. PHARMACEUTICAL JURISPRUDENCE (Theory)

45 Hours

Scope: This course is designed to impart basic knowledge on important legislations related to the profession of pharmacy in India.

Objectives: Upon completion of the course, the student shall be able to understand:

1. The Pharmaceutical legislations and their implications in the development and marketing of pharmaceuticals.
2. Various Indian pharmaceutical Acts and Laws
3. The regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals
4. The code of ethics during the pharmaceutical practice

Course Content:

UNIT-I **10 Hours**

Drugs and Cosmetics Act, 1940 and its rules 1945:

Objectives, Definitions, Legal definitions of schedules to the Act and Rules

Import of drugs – Classes of drugs and cosmetics prohibited from import, Import under license or permit. Offences and penalties**.**

Manufacture of drugs – Prohibition of manufacture and sale of certain drugs,

Conditions for grant of license and conditions of license for manufacture of drugs, Manufacture of drugs for test, examination and analysis, manufacture of new drug, loan license and repacking license.

UNIT-II **10 Hours**

Drugs and Cosmetics Act, 1940 and its rules 1945.

Detailed study of Schedule G, H, M, N, P,T,U, V, X, Y, Part XII B, Sch F & DMR (OA)

Sale of Drugs – Wholesale, Retail sale and Restricted license. Offences and penalties

Labeling & Packing of drugs- General labeling requirements and specimen labels for drugs and cosmetics, List of permitted colors. Offences and penalties.

Administration of the Act and Rules – Drugs Technical Advisory Board, Central drugs Laboratory, Drugs Consultative Committee, Government drug analysts, Licensing authorities, controlling authorities, Drugs Inspectors

UNIT-III **10 Hours**

- **Pharmacy Act –1948**: Objectives, Definitions, Pharmacy Council of India; its constitution and functions, Education Regulations, State and Joint state pharmacy councils; constitution and functions, Registration of Pharmacists, Offences and

Penalties

- **Medicinal and Toilet Preparation Act –1955**: Objectives, Definitions, Licensing, Manufacture In bond and Outside bond, Export of alcoholic preparations, Manufacture of Ayurvedic, Homeopathic, Patent & Proprietary Preparations. Offences and Penalties.
- **Narcotic Drugs and Psychotropic substances Act-1985 and Rules**: Objectives, Definitions, Authorities and Officers, Constitution and Functions of narcotic & Psychotropic Consultative Committee, National Fund for Controlling the Drug Abuse, Prohibition, Control and Regulation, opium poppy cultivation and production of poppy straw, manufacture, sale and export of opium, Offences and Penalties

UNIT-IV **08 Hours**

- **Study of Salient Features of Drugs and Magic Remedies Act and its rules:** Objectives, Definitions, Prohibition of certain advertisements, Classes of Exempted advertisements, Offences and Penalties
- **Prevention of Cruelty to animals Act-1960:** Objectives, Definitions, Institutional Animal Ethics Committee, CPCSEA guidelines for Breeding and Stocking of Animals, Performance of Experiments, Transfer and acquisition of animals for experiment, Records, Power to suspend or revoke registration, Offences and Penalties
- **National Pharmaceutical Pricing Authority:** Drugs Price Control Order (DPCO)-2013. Objectives, Definitions, Sale prices of bulk drugs, Retail price of formulations, Retail price and ceiling price of scheduled formulations, National List of Essential Medicines (NLEM)

UNIT-V **07 Hours**

- **Pharmaceutical Legislations –** A brief review, Introduction, Study of drugs enquiry committee, Health survey and development committee, Hathi committee and Mudaliar committee
- **Code of Pharmaceutical ethics** D efinition, Pharmacist in relation to his job, trade, medical profession and his profession, Pharmacist's oath
- **Medical Termination of Pregnancy Act**
- **Right to Information Act**
- **Introduction to Intellectual Property Rights (IPR)**

Recommended books: (Latest Edition)

1. Forensic Pharmacy by B. Suresh

2. Text book of Forensic Pharmacy by B.M. Mithal
3. Hand book of drug law-by M.L. Mehra
4. A text book of Forensic Pharmacy by N.K. Jain
5. Drugs and Cosmetics Act/Rules by Govt. of India publications.
6. Medicinal and Toilet preparations act 1955 by Govt. of India publications.
7. Narcotic drugs and psychotropic substances act by Govt. of India publications
8. Drugs and Magic Remedies act by Govt. of India publication
9.Bare Acts of the said laws published by Government. Reference books (Theory)

SEMESTER VI

BP601T. MEDICINAL CHEMISTRY – III (Theory)

45 Hours

Scope: This subject is designed to impart fundamental knowledge on the structure, chemistry and therapeutic value of drugs. The subject emphasis on modern techniques of rational drug design like quantitative structure activity relationship (QSAR), Prodrug concept, combinatorial chemistry and Computer aided drug design (CADD). The subject also emphasizes on the chemistry, mechanism of action, metabolism, adverse effects, Structure Activity Relationships (SAR), therapeutic uses and synthesis of important drugs.

Objectives: Upon completion of the course student shall be able to

1. Understand the importance of drug design and different techniques of drug design.
2. Understand the chemistry of drugs with respect to their biological activity.
3. Know the metabolism, adverse effects and therapeutic value of drugs.
4. Know the importance of SAR of drugs.

Course Content:

Study of the development of the following classes of drugs, Classification, mechanism of action, uses of drugs mentioned in the course, Structure activity relationship of selective class of drugs as specified in the course and synthesis of drugs superscripted by (*)

UNIT – I **10 Hours**

Antibiotics

Historical background, Nomenclature, Stereochemistry, Structure activity relationship, Chemical degradation classification and important products of the following classes.

β-Lactam antibiotics: Penicillin, Cepholosporins, β- Lactamase inhibitors, Monobactams

Aminoglycosides: Streptomycin, Neomycin, Kanamycin

Tetracyclines: Tetracycline,Oxytetracycline, Chlortetracycline, Minocycline, Doxycycline

UNIT – II **10 Hours**

Antibiotics

Historical background, Nomenclature, Stereochemistry, Structure activity relationship, Chemical degradation classification and important products of the following classes.

Macrolide: Erythromycin Clarithromycin, Azithromycin.

Miscellaneous: Chloramphenicol*, Clindamycin.

Prodrugs: Basic concepts and application of prodrugs design.

Antimalarials: Etiology of malaria.

Quinolines: SAR, Quinine sulphate, Chloroquine*, Amodiaquine, Primaquine phosphate, Pamaquine*, Quinacrine hydrochloride, Mefloquine.

Biguanides and dihydro triazines: Cycloguanil pamoate, Proguanil.

Miscellaneous: Pyrimethamine, Artesunete, Artemether, Atovoquone.

UNIT – III **10 Hours**

Anti-tubercular Agents

Synthetic anti tubercular agents: Isoniozid*, Ethionamide, Ethambutol, Pyrazinamide, Para amino salicylic acid.*

Anti tubercular antibiotics: Rifampicin, Rifabutin, Cycloserine Streptomycine, Capreomycin sulphate.

Urinary tract anti-infective agents

Quinolones: SAR of quinolones, Nalidixic Acid,Norfloxacin, Enoxacin, Ciprofloxacin*, Ofloxacin, Lomefloxacin, Sparfloxacin, Gatifloxacin, Moxifloxacin

Miscellaneous: Furazolidine, Nitrofurantoin*, Methanamine.

Antiviral agents:

Amantadine hydrochloride, Rimantadine hydrochloride, Idoxuridine trifluoride, Acyclovir*, Gancyclovir, Zidovudine, Didanosine, Zalcitabine, Lamivudine, Loviride, Delavirding, Ribavirin, Saquinavir, Indinavir, Ritonavir.

UNIT – IV **08 Hours**

Antifungal agents:

Antifungal antibiotics: Amphotericin-B, Nystatin, Natamycin, Griseofulvin.

Synthetic Antifungal agents: Clotrimazole, Econazole, Butoconazole, Oxiconazole Tioconozole, Miconazole*, Ketoconazole, Terconazole, Itraconazole, Fluconazole, Naftifine hydrochloride, Tolnaftate*.

Anti-protozoal Agents: Metronidazole*, Tinidazole, Ornidazole, Diloxanide, Iodoquinol, Pentamidine Isethionate, Atovaquone, Eflornithine.

Anthelmintics: Diethylcarbamazine citrate*, Thiabendazole, Mebendazole*, Albendazole, Niclosamide, Oxamniquine, Praziquantal, Ivermectin.

Sulphonamides and Sulfones

Historical development, chemistry, classification and SAR of Sulfonamides: Sulphamethizole, Sulfisoxazole, Sulphamethizine, Sulfacetamide*, Sulphapyridine, Sulfamethoxaole*, Sulphadiazine, Mefenide acetate, Sulfasalazine.

Folate reductase inhibitors: Trimethoprim*, Cotrimoxazole.

Sulfones: Dapsone*.

UNIT – V **07 Hours**

Introduction to Drug Design

Various approaches used in drug design.

Physicochemical parameters used in quantitative structure activity relationship (QSAR) such as partition coefficient, Hammet's electronic parameter, Tafts steric parameter and Hansch analysis.

Pharmacophore modeling and docking techniques.

Combinatorial Chemistry: Concept and applications of combinatorial chemistry: solid phase and solution phase synthesis.

BP607P. MEDICINAL CHEMISTRY- III (Practical)

4 Hours / week

I Preparation of drugs and intermediates

1 Sulphanilamide

2 7-Hydroxy, 4-methyl coumarin

3 Chlorobutanol

4 Triphenyl imidazole

5 Tolbutamide

6 Hexamine

II Assay of drugs

1 Isonicotinic acid hydrazide

2 Chloroquine

3 Metronidazole

4 Dapsone

5 Chlorpheniramine maleate

6 Benzyl penicillin

III Preparation of medicinally important compounds or intermediates by Microwave irradiation technique

IV Drawing structures and reactions using chem draw®

V Determination of physicochemical properties such as logP, clogP, MR, Molecular weight, Hydrogen bond donors and acceptors for class of drugs course content using drug design software Drug likeliness screening (Lipinskies RO5)

Recommended Books (Latest Editions)

1. Wilson and Giswold's Organic medicinal and Pharmaceutical Chemistry.
2. Foye's Principles of Medicinal Chemistry.
3. Burger's Medicinal Chemistry, Vol I to IV.
4. Introduction to principles of drug design- Smith and Williams.
5. Remington's Pharmaceutical Sciences.
6. Martindale's extra pharmacopoeia.

7. Organic Chemistry by I.L. Finar, Vol. II.
8. The Organic Chemistry of Drug Synthesis by Lednicer, Vol. 1-5.
9. Indian Pharmacopoeia.
10. Text book of practical organic chemistry- A.I.Vogel.

BP602 T. PHARMACOLOGY-III (Theory)

45 Hours

Scope: This subject is intended to impart the fundamental knowledge on various aspects (classification, mechanism of action, therapeutic effects, clinical uses, side effects and contraindications) of drugs acting on respiratory and gastrointestinal system, infectious diseases, immuno-pharmacology and in addition,emphasis on the principles of toxicology and chronopharmacology.

Objectives: Upon completion of this course the student should be able to:

1. understand the mechanism of drug action and its relevance in the treatment of different infectious diseases
2. comprehend the principles of toxicology and treatment of various poisoningsand
3. appreciate correlation of pharmacology with related medical sciences.

Course Content:

UNIT-I **10hours**

1. Pharmacology of drugs acting on Respiratory system

a. Anti -asthmatic drugs
b. Drugs used in the management of COPD
c. Expectorants and antitussives
d. Nasal decongestants
e. Respiratory stimulants

2. Pharmacology of drugs acting on the Gastrointestinal Tract

a. Antiulcer agents.
b. Drugs for constipation and diarrhoea.
c. Appetite stimulants and suppressants.
d. Digestants and carminatives.
e. Emetics and anti-emetics.

UNIT-II **10hours**

3. Chemotherapy

a. General principles of chemotherapy.

b. Sulfonamides and cotrimoxazole.

c. Antibiotics- Penicillins, cephalosporins, chloramphenicol, macrolides, quinolones and fluoroquinolins, tetracycline and aminoglycosides

UNIT-III **10hours**

3. Chemotherapy

a. Antitubercular agents

b. Antileprotic agents

c. Antifungal agents

d. Antiviral drugs

e.Anthelmintics

f. Antimalarial drugs

g. Antiamoebic agents

UNIT-IV **08hours**

3. Chemotherapy

l. Urinary tract infections and sexually transmitted diseases.

m. Chemotherapy of malignancy.

4. Immunopharmacology

a. Immunostimulants

b. Immunosuppressant

Protein drugs, monoclonal antibodies, target drugs to antigen, biosimilars

UNIT-V **07hours**

5. Principles of toxicology

a. Definition and basic knowledge of acute, subacute and chronic toxicity.

b. Definition and basic knowledge of genotoxicity, carcinogenicity, teratogenicity and mutagenicity

c. General principles of treatment of poisoning

d. Clinical symptoms and management of barbiturates, morphine, organophosphosphorus compound and lead, mercury and arsenic poisoning.

6. Chronopharmacology

a. Definition of rhythm and cycles.

b. Biological clock and their significance leading to chronotherapy.

BP 608 P. PHARMACOLOGY-III (Practical)

4Hrs/Week

1. Dose calculation in pharmacological experiments
2. Antiallergic activity by mast cell stabilization assay
3. Study of anti-ulcer activity of a drug using pylorus ligand (SHAY) rat model and NSAIDS induced ulcer model.
4. Study of effect of drugs on gastrointestinal motility
5. Effect of agonist and antagonists on guinea pig ileum
6. Estimation of serum biochemical parameters by using semi- autoanalyser
7. Effect of saline purgative on frog intestine
8. Insulin hypoglycemic effect in rabbit
9. Test for pyrogens (rabbit method)
10. Determination of acute oral toxicity (LD50) of a drug from a given data
11. Determination of acute skin irritation / corrosion of a test substance
12. Determination of acute eye irritation / corrosion of a test substance
13. Calculation of pharmacokinetic parameters from a given data
14. Biostatistics methods in experimental pharmacology(student's t test, ANOVA)
15. Biostatistics methods in experimental pharmacology (Chi square test, Wilcoxon Signed Rank test)

**Experiments are demonstrated by simulated experiments/videos*

Recommended Books (Latest Editions)

1. Rang H. P., Dale M. M., Ritter J. M., Flower R. J., Rang and Dale's Pharmacology, Churchil Livingstone Elsevier
2. Katzung B. G., Masters S. B., Trevor A. J., Basic and clinical pharmacology, Tata Mc Graw-Hill
3. Goodman and Gilman's, The Pharmacological Basis of Therapeutics
4. Marry Anne K. K., Lloyd Yee Y., Brian K. A., Robbin L.C., Joseph G. B., Wayne A. K., Bradley R.W., Applied Therapeutics, The Clinical use of Drugs. The Point Lippincott Williams & Wilkins
5. Mycek M.J, Gelnet S.B and Perper M.M. Lippincott's Illustrated Reviews-Pharmacology
6. K.D.Tripathi. Essentials of Medical Pharmacology, , JAYPEE Brothers Medical Publishers (P) Ltd, New Delhi.
7. Sharma H. L., Sharma K. K., Principles of Pharmacology, Paras medical publisher Modern Pharmacology with clinical Applications, by Charles R.Craig& Robert,
8. Ghosh MN. Fundamentals of Experimental Pharmacology. Hilton & Company, Kolkata,
9. Kulkarni SK. Handbook of experimental pharmacology. VallabhPrakashan,
10. N.Udupa and P.D. Gupta, Concepts in Chronopharmacology.

BP 603 T. HERBAL DRUG TECHNOLOGY (Theory)

45 hours

Scope: This subject gives the student the knowledge of basic understanding of herbal drug industry, the quality of raw material, guidelines for quality of herbal drugs, herbal cosmetics, natural sweeteners, nutraceutical etc. The subject also emphasizes on Good Manufacturing Practices (GMP), patenting and regulatory issues of herbal drugs

Objectives: Upon completion of this course the student should be able to:

1. understand raw material as source of herbal drugs from cultivation to herbal drug product
2. know the WHO and ICH guidelines for evaluation of herbal drugs
3. know the herbal cosmetics, natural sweeteners, nutraceuticals
4. appreciate patenting of herbal drugs, GMP .

Course content:

UNIT-I **11 Hours**

Herbs as raw materials

Definition of herb, herbal medicine, herbal medicinal product, herbal drug preparation
Source of Herbs
Selection, identification and authentication of herbal materials
Processing of herbal raw material

Biodynamic Agriculture

Good agricultural practices in cultivation of medicinal plants including Organic farming.
Pest and Pest management in medicinal plants: Biopesticides/Bioinsecticides.

Indian Systems of Medicine

a) Basic principles involved in Ayurveda, Siddha, Unani and Homeopathy
b) Preparation and standardization of Ayurvedic formulations viz Aristas and Asawas, Ghutika,Churna, Lehya and Bhasma.

UNIT-II **7 Hours**

Nutraceuticals

General aspects, Market, growth, scope and types of products available in the market. Health benefits and role of Nutraceuticals in ailments like Diabetes, CVS diseases, Cancer, Irritable bowel syndrome and various Gastro intestinal diseases.
Study of following herbs as health food: Alfaalfa, Chicory, Ginger, Fenugreek, Garlic, Honey, Amla, Ginseng, Ashwagandha, Spirulina

Herbal-Drug and Herb-Food Interactions: General introduction to interaction and classification. Study of following drugs and their possible side effects and interactions: Hypercium, kava-kava, Ginkobiloba, Ginseng, Garlic, Pepper & Ephedra.

UNIT-III **10 Hours**

Herbal Cosmetics

Sources and description of raw materials of herbal origin used via, fixed oils, waxes, gums colours, perfumes, protective agents, bleaching agents, antioxidants in products such as skin care, hair care and oral hygiene products.

Herbal excipients:
Herbal Excipients – Significance of substances of natural origin as excipients – colorants, sweeteners, binders, diluents, viscosity builders, disintegrants, flavors & perfumes.

Herbal formulations :
Conventional herbal formulations like syrups, mixtures and tablets and Novel dosage forms like phytosomes

UNIT- IV **10 Hours**

Evaluation of Drugs WHO & ICH guidelines for the assessment of herbal drugs
Stability testing of herbal drugs.

Patenting and Regulatory requirements of natural products:
a) Definition of the terms: Patent, IPR, Farmers right, Breeder's right, Bioprospecting and Biopiracy
b) Patenting aspects of Traditional Knowledge and Natural Products. Case study of Curcuma & Neem.

Regulatory Issues - Regulations in India (ASU DTAB, ASU DCC), Regulation of manufacture of ASU drugs - Schedule Z of Drugs & Cosmetics Act for ASU drugs.

UNIT-V **07 Hours**

General Introduction to Herbal Industry
Herbal drugs industry: Present scope and future prospects.
A brief account of plant based industries and institutions involved in work on medicinal and aromatic plants in India.

Schedule T – Good Manufacturing Practice of Indian systems of medicine
Components of GMP (Schedule – T) and its objectives
Infrastructural requirements, working space, storage area, machinery and equipments, standard operating procedures, health and hygiene, documentation and records.

BP 609 P. HERBAL DRUG TECHNOLOGY (Practical)

4 hours/ week

1. To perform preliminary phytochemical screening of crude drugs.
2. Determination of the alcohol content of Asava and Arista
3. Evaluation of excipients of natural origin
4. Incorporation of prepared and standardized extract in cosmetic formulations like creams, lotions and shampoos and their evaluation.
5. Incorporation of prepared and standardized extract in formulations like syrups, mixtures and tablets and their evaluation as per Pharmacopoeial requirements.
6. Monograph analysis of herbal drugs from recent Pharmacopoeias
7. Determination of Aldehyde content
8. Determination of Phenol content
9. Determination of total alkaloids

Recommended Books: (Latest Editions)

1. Textbook of Pharmacognosy by Trease & Evans.
2. Textbook of Pharmacognosy by Tyler, Brady & Robber.
3. Pharmacognosy by Kokate, Purohit and Gokhale
4. Essential of Pharmacognosy by Dr.S.H.Ansari
5. Pharmacognosy & Phytochemistry by V.D.Rangari
6. Pharmacopoeal standards for Ayurvedic Formulation (Council of Research in Indian Medicine & Homeopathy)
7. Mukherjee, P.W. Quality Control of Herbal Drugs: An Approach to Evaluation of Botanicals. Business Horizons Publishers, New Delhi, India, 2002.

BP 604 T. BIOPHARMACEUTICS AND PHARMACOKINETICS (Theory)

45 Hours

Scope: This subject is designed to impart knowledge and skills of Biopharmaceutics and pharmacokinetics and their applications in pharmaceutical development, design of dose and dosage regimen and in solving the problems arised therein.

Objectives: Upon completion of the course student shall be able to:

1. Understand the basic concepts in biopharmaceutics and pharmacokinetics and their significance.
2. Use of plasma drug concentration-time data to calculate the pharmacokinetic parameters to describe the kinetics of drug absorption, distribution, metabolism, excretion, elimination.
3. To understand the concepts of bioavailability and bioequivalence of drug products and their significance.
4. Understand various pharmacokinetic parameters, their significance & applications.

Course Content:

UNIT-I **10 Hours**

Introduction to Biopharmaceutics

Absorption; Mechanisms of drug absorption through GIT, factors influencing drug absorption though GIT, absorption of drug from Non per oral extra-vascular routes, **Distribution** Tissue permeability of drugs, binding of drugs, apparent, volume of drug distribution, plasma and tissue protein binding of drugs, factors affecting protein-drug binding. Kinetics of protein binding, Clinical significance of protein binding of drugs

UNIT- II **10 Hours**

Elimination: Drug metabolism and basic understanding metabolic pathways renal excretion of drugs, factors affecting renal excretion of drugs, renal clearance, Non renal routes of drug excretion of drugs

Bioavailability and Bioequivalence: Definition and Objectives of bioavailability, absolute and relative bioavailability, measurement of bioavailability, *in-vitro* drug dissolution models, *in-vitro-in-vivo* correlations, bioequivalence studies, methods to enhance the dissolution rates and bioavailability of poorly soluble drugs.

UNIT- III **10 Hours**

Pharmacokinetics: Definition and introduction to Pharmacokinetics, Compartment models, Non compartment models, physiological models, One compartment open model. (a). Intravenous Injection (Bolus) (b). Intravenous infusion and (c) Extra vascular administrations. Pharmacokinetics parameters - K_E ,t1/2,Vd,AUC,Ka, Clt and CL_R- definitions methods of eliminations, understanding of their significance and application

UNIT- IV **08 Hours**

Multicompartment models: Two compartment open model. IV bolus
Kinetics of multiple dosing, steady state drug levels, calculation of loading and mainetnance doses and their significance in clinical settins.

UNIT- V **07 Hours**

Nonlinear Pharmacokinetics: a. Introduction, b. Factors causing Non-linearity.
c. Michaelis-menton method of estimating parameters, Explanation with example of drugs.

Recommended Books: (Latest Editions)

1. Biopharmaceutics and Clinical Pharmacokinetics by, Milo Gibaldi.
2. Biopharmaceutics and Pharmacokinetics; By Robert F Notari
3. Applied biopharmaceutics and pharmacokinetics, Leon Shargel and Andrew B.C.YU 4th edition,Prentice-Hall Inernational edition.USA
4. Bio pharmaceutics and Pharmacokinetics-A Treatise, By D. M. Brahmankar and Sunil B.Jaiswal,Vallabh Prakashan Pitampura, Delhi
5. Pharmacokinetics: By Milo Glbaldi Donald, R. Mercel Dekker Inc.
6. Hand Book of Clinical Pharmacokinetics, By Milo Gibaldi and Laurie Prescott by ADIS Health Science Press.
7. Biopharmaceutics; By Swarbrick
8. Clinical Pharmacokinetics, Concepts and Applications: By Malcolm Rowland and
9. Thomas, N. Tozen, Lea and Febrger, Philadelphia, 1995.
10. Dissolution, Bioavailability and Bioequivalence, By Abdou H.M, Mack, Publishing Company,Pennsylvania 1989.
11. Biopharmaceutics and Clinical Pharmacokinetics-An introduction 4th edition Revised and expanded by Rebort F Notari Marcel Dekker Inn, New York and Basel, 1987.
12. Remington's Pharmaceutical Sciences, By Mack Publishing Company, Pennsylvnia

BP 605 T. PHARMACEUTICAL BIOTECHNOLOGY (Theory)

45 Hours

Scope:

- Biotechnology has a long promise to revolutionize the biological sciences and technology.
- Scientific application of biotechnology in the field of genetic engineering, medicine and fermentation technology makes the subject interesting.
- Biotechnology is leading to new biological revolutions in diagnosis, prevention and cure of diseases, new and cheaper pharmaceutical drugs.
- Biotechnology has already produced transgenic crops and animals and the future promises lot more.
- It is basically a research-based subject.

Objectives: Upon completion of the subject student shall be able to;

1. Understanding the importance of Immobilized enzymes in Pharmaceutical Industries
2. Genetic engineering applications in relation to production of pharmaceuticals
3. Importance of Monoclonal antibodies in Industries
4. Appreciate the use of microorganisms in fermentation technology

Unit I **10 Hours**

a) Brief introduction to Biotechnology with reference to Pharmaceutical Sciences.

b) Enzyme Biotechnology- Methods of enzyme immobilization and applications.

c) Biosensors- Working and applications of biosensors in Pharmaceutical Industries.

d) Brief introduction to Protein Engineering.

e) Use of microbes in industry. Production of Enzymes- General consideration - Amylase, Catalase, Peroxidase, Lipase, Protease, Penicillinase.

f) Basic principles of genetic engineering.

Unit II **10 Hours**

a) Study of cloning vectors, restriction endonucleases and DNA ligase.

b) Recombinant DNA technology. Application of genetic engineering in medicine.

c) Application of r DNA technology and genetic engineering in the production of:

i) Interferon ii) Vaccines- hepatitis- B iii) Hormones-Insulin.

d) Brief introduction to PCR

Unit III **10 Hours**

Types of immunity- humoral immunity, cellular immunity

a) Structure of Immunoglobulins

b) Structure and Function of MHC

c) Hypersensitivity reactions, Immune stimulation and Immune suppressions.

d) General method of the preparation of bacterial vaccines, toxoids, viral vaccine, antitoxins, serum-immune blood derivatives and other products relative to immunity.

e) Storage conditions and stability of official vaccines

f) Hybridoma technology- Production, Purification and Applications

g) Blood products and Plasma Substituties.

Unit IV **08Hours**

a) Immuno blotting techniques- ELISA, Western blotting, Southern blotting.

b) Genetic organization of Eukaryotes and Prokaryotes

c) Microbial genetics including transformation, transduction, conjugation, plasmids and transposons.

d) Introduction to Microbial biotransformation and applications.

e) Mutation: Types of mutation/mutants.

Unit V **07 Hours**

a) Fermentation methods and general requirements, study of media, equipments, sterilization methods, aeration process, stirring.

b) Large scale production fermenter design and its various controls.

c) Study of the production of - penicillins, citric acid, Vitamin B12, Glutamic acid, Griseofulvin,

d) Blood Products: Collection, Processing and Storage of whole human blood, dried human plasma, plasma Substituties.

Recommended Books (Latest edition):

1. B.R. Glick and J.J. Pasternak: Molecular Biotechnology: Principles and Applications of RecombinantDNA: ASM Press Washington D.C.
2. RA Goldshy et. al., : Kuby Immunology.
3. J.W. Goding: Monoclonal Antibodies.
4. J.M. Walker and E.B. Gingold: Molecular Biology and Biotechnology by Royal

Society of Chemistry.
5. Zaborsky: Immobilized Enzymes, CRC Press, Degraland, Ohio.
6. S.B. Primrose: Molecular Biotechnology (Second Edition) Blackwell Scientific Publication.
7. Stanbury F., P., Whitakar A., and Hall J., S., Principles of fermentation technology, 2nd edition, Aditya books Ltd., New Delhi

BP606TPHARMACEUTICAL QUALITY ASSURANCE (Theory)

45 Hours

Scope: This course deals with the various aspects of quality control and quality assurance aspects of pharmaceutical industries. It deals with the important aspects like cGMP, QC tests, documentation, quality certifications and regulatory affairs.

Objectives: Upon completion of the course student shall be able to:

- understand the cGMP aspects in a pharmaceutical industry
- appreciate the importance of documentation
- understand the scope of quality certifications applicable to pharmaceutical industries
- understand the responsibilities of QA & QC departments

Course content:

UNIT – I **10 Hours**

Quality Assurance and Quality Management concepts: Definition and concept of Quality control, Quality assurance and GMP

Total Quality Management (TQM): Definition, elements, philosophies

ICH Guidelines: purpose, participants, process of harmonization, Brief overview of QSEM, with special emphasis on Q-series guidelines, ICH stability testing guidelines

Quality by design (QbD): Definition, overview, elements of QbD program, tools

ISO 9000 & ISO14000: Overview, Benefits, Elements, steps for registration

NABL accreditation : Principles and procedures

UNIT - II **10 Hours**

Organization and personnel: Personnel responsibilities, training, hygiene and personal records.

Premises: Design, construction and plant layout, maintenance, sanitation, environmental control, utilities and maintenance of sterile areas, control of contamination.

Equipments and raw materials: Equipment selection, purchase specifications, maintenance, purchase specifications and maintenance of stores for raw materials.

UNIT – III **10 Hours**

Quality Control: Quality control test for containers, rubber closures and secondary packing

materials.

Good Laboratory Practices: General Provisions, Organization and Personnel, Facilities, Equipment, Testing Facilities Operation, Test and Control Articles, Protocol for Conduct of a Nonclinical Laboratory Study, Records and Reports, Disqualification of Testing Facilities

UNIT – IV **08 Hours**

Complaints: Complaints and evaluation of complaints, Handling of return good, recalling and waste disposal.

Document maintenance in pharmaceutical industry: Batch Formula Record, Master Formula Record, SOP, Quality audit, Quality Review and Quality documentation, Reports and documents, distribution records.

UNIT – V **07 Hours**

Calibration and Validation: Introduction, definition and general principles of calibration, qualification and validation, importance and scope of validation, types of validation, validation master plan. Calibration of pH meter, Qualification of UV-Visible spectrophotometer, General principles of Analytical method Validation.

Warehousing: Good warehousing practice, materials management

Recommended Books: (Latest Edition)

1. Quality Assurance Guide by organization of Pharmaceutical Products of India.
2. Good Laboratory Practice Regulations, 2nd Edition, Sandy Weinberg Vol. 69.
3. Quality Assurance of Pharmaceuticals- A compendium of Guide lines and Related materials Vol I WHO Publications.
4. A guide to Total Quality Management- Kushik Maitra and Sedhan K Ghosh
5. How to Practice GMP's – P P Sharma.
6. ISO 9000 and Total Quality Management – Sadhank G Ghosh
7. The International Pharmacopoeia – Vol I, II, III, IV- General Methods of Analysis and Quality specification for Pharmaceutical Substances, Excipients and Dosage forms
8. Good laboratory Practices – Marcel Deckker Series
9. ICH guidelines, ISO 9000 and 14000 guidelines

SEMESTER VII

BP701T. INSTRUMENTAL METHODS OF ANALYSIS (Theory)

45 Hours

Scope: This subject deals with the application of instrumental methods in qualitative and quantitative analysis of drugs. This subject is designed to impart a fundamental knowledge on the principles and instrumentation of spectroscopic and chromatographic technique. This also emphasizes on theoretical and practical knowledge on modern analytical instruments that are used for drug testing.

Objectives: Upon completion of the course the student shall be able to

1. Understand the interaction of matter with electromagnetic radiations and its applications in drug analysis
2. Understand the chromatographic separation and analysis of drugs.
3. Perform quantitative & qualitative analysis of drugs using various analytical instruments.

Course Content:

UNIT –I **10 Hours**

UV Visible spectroscopy

Electronic transitions, chromophores, auxochromes, spectral shifts, solvent effect on absorption spectra, Beer and Lambert's law, Derivation and deviations.

Instrumentation - Sources of radiation, wavelength selectors, sample cells, detectors- Photo tube, Photomultiplier tube, Photo voltaic cell, Silicon Photodiode.

Applications - Spectrophotometric titrations, Single component and multi component analysis

Fluorimetry

Theory, Concepts of singlet, doublet and triplet electronic states, internal and external conversions, factors affecting fluorescence, quenching, instrumentation and applications

UNIT –II **10 Hours**

IR spectroscopy

Introduction, fundamental modes of vibrations in poly atomic molecules, sample handling, factors affecting vibrations

Instrumentation - Sources of radiation, wavelength selectors, detectors - Golay cell, Bolometer, Thermocouple, Thermister, Pyroelectric detector and applications

Flame Photometry-Principle, interferences, instrumentation and applications

Atomic absorption spectroscopy- Principle, interferences, instrumentation and applications

Nepheloturbidometry- Principle, instrumentation and applications

UNIT –III **10 Hours**

Introduction to chromatography

Adsorption and partition column chromatography-Methodology, advantages, disadvantages and applications.

Thin layer chromatography- Introduction, Principle, Methodology, Rf values, advantages, disadvantages and applications.

Paper chromatography-Introduction, methodology, development techniques, advantages, disadvantages and applications

Electrophoresis– Introduction, factors affecting electrophoretic mobility, Techniques of paper, gel, capillary electrophoresis, applications

UNIT –IV **08 Hours**

Gas chromatography - Introduction, theory, instrumentation, derivatization, temperature programming, advantages, disadvantages and applications

High performance liquid chromatography (HPLC)-Introduction, theory, instrumentation, advantages and applications.

UNIT –V **07 Hours**

Ion exchange chromatography- Introduction, classification, ion exchange resins, properties, mechanism of ion exchange process, factors affecting ion exchange, methodology and applications

Gel chromatography- Introduction, theory, instrumentation and applications

Affinity chromatography- Introduction, theory, instrumentation and applications

BP705P. INSTRUMENTAL METHODS OF ANALYSIS (Practical)

4 Hours/Week

1. Determination of absorption maxima and effect of solvents on absorption maxima of organic compounds
2. Estimation of dextrose by colorimetry
3. Estimation of sulfanilamide by colorimetry
4. Simultaneous estimation of ibuprofen and paracetamol by UV spectroscopy
5. Assay of paracetamol by UV- Spectrophotometry
6. Estimation of quinine sulfate by fluorimetry
7. Study of quenching of fluorescence
8. Determination of sodium by flame photometry
9. Determination of potassium by flame photometry
10. Determination of chlorides and sulphates by nephelo turbidometry
11. Separation of amino acids by paper chromatography
12. Separation of sugars by thin layer chromatography
13. Separation of plant pigments by column chromatography
14. Demonstration experiment on HPLC
15. Demonstration experiment on Gas Chromatography

Recommended Books (Latest Editions)

1. Instrumental Methods of Chemical Analysis by B.K Sharma
2. Organic spectroscopy by Y.R Sharma
3. Text book of Pharmaceutical Analysis by Kenneth A. Connors
4. Vogel's Text book of Quantitative Chemical Analysis by A.I. Vogel
5. Practical Pharmaceutical Chemistry by A.H. Beckett and J.B. Stenlake
6. Organic Chemistry by I. L. Finar
7. Organic spectroscopy by William Kemp
8. Quantitative Analysis of Drugs by D. C. Garrett
9. Quantitative Analysis of Drugs in Pharmaceutical Formulations by P. D. Sethi
10. Spectrophotometric identification of Organic Compounds by Silverstein

BP 702 T. INDUSTRIAL PHARMACYII (Theory)

45 Hours

Scope: This course is designed to impart fundamental knowledge on pharmaceutical product development and translation from laboratory to market

Objectives: Upon completion of the course, the student shall be able to:

1. Know the process of pilot plant and scale up of pharmaceutical dosage forms
2. Understand the process of technology transfer from lab scale to commercial batch
3. Know different Laws and Acts that regulate pharmaceutical industry
4. Understand the approval process and regulatory requirements for drug products

Course Content:

UNIT-I **10 Hours**

Pilot plant scale up techniques: General considerations - including significance of personnel requirements, space requirements, raw materials, Pilot plant scale up considerations for solids, liquid orals, semi solids and relevant documentation, SUPAC guidelines, Introduction to platform technology

UNIT-II **10 Hours**

Technology development and transfer: WHO guidelines for Technology Transfer(TT): Terminology, Technology transfer protocol, Quality risk management, Transfer from R & D to production (Process, packaging and cleaning), Granularity of TT Process (API, excipients, finished products, packaging materials) Documentation, Premises and equipments, qualification and validation, quality control, analytical method transfer, Approved regulatory bodies and agencies, Commercialization - practical aspects and problems (case studies), TT agencies in India - APCTD, NRDC, TIFAC, BCIL, TBSE / SIDBI; TT related documentation - confidentiality agreement, licensing, MoUs, legal issues

UNIT-III **10 Hours**

Regulatory affairs: Introduction, Historical overview of Regulatory Affairs, Regulatory authorities, Role of Regulatory affairs department, Responsibility of Regulatory Affairs Professionals

Regulatory requirements for drug approval: Drug Development Teams, Non-Clinical Drug Development, Pharmacology, Drug Metabolism and Toxicology, General considerations of Investigational New Drug (IND) Application, Investigator's Brochure (IB) and New Drug Application (NDA), Clinical research / BE studies, Clinical Research Protocols, Biostatistics in Pharmaceutical Product Development, Data Presentation for FDA Submissions, Management of Clinical Studies.

UNIT-IV **08 Hours**

Quality management systems: Quality management & Certifications: Concept of Quality, Total Quality Management, Quality by Design (QbD), Six Sigma concept, Out of Specifications (OOS), Change control, Introduction to ISO 9000 series of quality systems standards, ISO 14000, NABL, GLP

UNIT-V **07 Hours**

Indian Regulatory Requirements: Central Drug Standard Control Organization (CDSCO) and State Licensing Authority: Organization, Responsibilities, Certificate of Pharmaceutical Product (COPP), Regulatory requirements and approval procedures for New Drugs.

Recommended Books: (Latest Editions)

1. Regulatory Affairs from Wikipedia, the free encyclopedia modified on 7th April available at http,//en.wikipedia.org/wiki/Regulatory_ Affairs.
2. International Regulatory Affairs Updates, 2005. available at http://www.iraup.com/about.php
3. Douglas J Pisano and David S. Mantus. Text book of FDA Regulatory Affairs A Guide for Prescription Drugs, Medical Devices, and Biologics' Second Edition.
4. Regulatory Affairs brought by learning plus, inc. available at http.//www.cgmp.com/ra.htm.

BP 703T. PHARMACY PRACTICE (Theory)

45 Hours

Scope: In the changing scenario of pharmacy practice in India, for successful practice of Hospital Pharmacy, the students are required to learn various skills like drug distribution, drug information, and therapeutic drug monitoring for improved patient care. In community pharmacy, students will be learning various skills such as dispensing of drugs, responding to minor ailments by providing suitable safe medication, patient counselling for improved patient care in the community set up.

Objectives: Upon completion of the course, the student shall be able to

1. know various drug distribution methods in a hospital
2. appreciate the pharmacy stores management and inventory control
3. monitor drug therapy of patient through medication chart review and clinical review
4. obtain medication history interview and counsel the patients
5. identify drug related problems
6. detect and assess adverse drug reactions
7. interpret selected laboratory results (as monitoring parameters in therapeutics) of specific disease states
8. know pharmaceutical care services
9. do patient counseling in community pharmacy;
10. appreciate the concept of Rational drug therapy.

Unit I: **10 Hours**

a) Hospital and it's organization

Definition, Classification of hospital- Primary, Secondary and Tertiary hospitals, Classification based on clinical and non- clinical basis, Organization Structure of a Hospital, and Medical staffs involved in the hospital and their functions.

b) Hospital pharmacy and its organization

Definition, functions of hospital pharmacy, Organization structure, Location, Layout and staff requirements, and Responsibilities and functions of hospital pharmacists.

c) Adverse drug reaction

Classifications - Excessive pharmacological effects, secondary pharmacological effects, idiosyncrasy, allergic drug reactions, genetically determined toxicity, toxicity following sudden withdrawal of drugs, Drug interaction- beneficial interactions, adverse interactions, and pharmacokinetic drug interactions, Methods for detecting

drug interactions, spontaneous case reports and record linkage studies, and Adverse drug reaction reporting and management.

d) Community Pharmacy

Organization and structure of retail and wholesale drug store, types and design, Legal requirements for establishment and maintenance of a drug store, Dispensing of proprietary products, maintenance of records of retail and wholesale drug store.

Unit II: 10 Hours

a) Drug distribution system in a hospital

Dispensing of drugs to inpatients, types of drug distribution systems, charging policy and labelling, Dispensing of drugs to ambulatory patients, and Dispensing of controlled drugs.

b) Hospital formulary

Definition, contents of hospital formulary, Differentiation of hospital formulary and Drug list, preparation and revision, and addition and deletion of drug from hospital formulary.

c) Therapeutic drug monitoring

Need for Therapeutic Drug Monitoring, Factors to be considered during the Therapeutic Drug Monitoring, and Indian scenario for Therapeutic Drug Monitoring.

d) Medication adherence

Causes of medication non-adherence, pharmacist role in the medication adherence, and monitoring of patient medication adherence.

e) Patient medication history interview

Need for the patient medication history interview, medication interview forms.

f) Community pharmacy management

Financial, materials, staff, and infrastructure requirements.

Unit III: 10 Hours

a) Pharmacy and therapeutic committee

Organization, functions, Policies of the pharmacy and therapeutic committee in including drugs into formulary, inpatient and outpatient prescription, automatic stop order, and emergency drug list preparation.

b) Drug information services

Drug and Poison information centre, Sources of drug information, Computerised services, and storage and retrieval of information.

c) Patient counseling

Definition of patient counseling; steps involved in patient counseling, and Special cases that require the pharmacist

d) Education and training program in the hospital

Role of pharmacist in the education and training program, Internal and external training program, Services to the nursing homes/clinics, Code of ethics for community pharmacy, and Role of pharmacist in the interdepartmental communication and community health education.

e) Prescribed medication order and communication skills

Prescribed medication order- interpretation and legal requirements, and Communication skills- communication with prescribers and patients.

Unit IV 8 Hours

a) Budget preparation and implementation

Budget preparation and implementation

b) Clinical Pharmacy

Introduction to Clinical Pharmacy, Concept of clinical pharmacy, functions and responsibilities of clinical pharmacist, Drug therapy monitoring - medication chart review, clinical review, pharmacist intervention, Ward round participation, Medication history and Pharmaceutical care.

Dosing pattern and drug therapy based on Pharmacokinetic & disease pattern.

c) Over the counter (OTC) sales

Introduction and sale of over the counter, and Rational use of common over the counter medications.

Unit V 7 Hours

a) Drug store management and inventory control

Organisation of drug store, types of materials stocked and storage conditions, Purchase and inventory control: principles, purchase procedure, purchase order, procurement and stocking, Economic order quantity, Reorder quantity level, and Methods used for the analysis of the drug expenditure

b) Investigational use of drugs

Description, principles involved, classification, control, identification, role of hospital pharmacist, advisory committee.

c) Interpretation of Clinical Laboratory Tests

Blood chemistry, hematology, and urinalysis

Recommended Books (Latest Edition):

1. Merchant S.H. and Dr. J.S.Quadry. *A textbook of hospital pharmacy*, 4th ed. Ahmadabad: B.S. Shah Prakakshan; 2001.
2. Parthasarathi G, Karin Nyfort-Hansen, Milap C Nahata. *A textbook of Clinical Pharmacy Practice- essential concepts and skills,* 1st ed. Chennai: Orient Longman Private Limited; 2004.
3. William E. Hassan. *Hospital pharmacy*, 5th ed. Philadelphia: Lea & Febiger; 1986.
4. Tipnis Bajaj. *Hospital Pharmacy*, 1st ed. Maharashtra: Career Publications; 2008.
5. Scott LT. *Basic skills in interpreting laboratory data*, 4thed. American Society of Health System Pharmacists Inc; 2009.
6. Parmar N.S. *Health Education and Community Pharmacy,* 18th ed. India: CBS Publishers & Distributers; 2008.

Journals:

1. Therapeutic drug monitoring. ISSN: 0163-4356
2. Journal of pharmacy practice. ISSN : 0974-8326
3. American journal of health system pharmacy. ISSN: 1535-2900 (online)
4. Pharmacy times (Monthly magazine)

BP 704T: NOVEL DRUG DELIVERY SYSTEMS (Theory)

45 Hours

Scope: This subject is designed to impart basic knowledge on the area of novel drug delivery systems.

Objectives: Upon completion of the course student shall be able

1. To understand various approaches for development of novel drug delivery systems.
2. To understand the criteria for selection of drugs and polymers for the development of Novel drug delivery systems, their formulation and evaluation

Course content:

Unit-I **10 Hours**

Controlled drug delivery systems: Introduction, terminology/definitions and rationale, advantages, disadvantages, selection of drug candidates.Approaches to design controlled release formulations based on diffusion, dissolution and ion exchange principles. Physicochemical and biological properties of drugs relevant to controlled release formulations

Polymers: Introduction, classification, properties, advantages and application of polymers in formulation of controlled release drug delivery systems.

Unit-II **10 Hours**

Microencapsulation: Definition, advantages and disadvantages, microspheres /microcapsules, microparticles, methods of microencapsulation, applications

Mucosal Drug Delivery system: Introduction, Principles of bioadhesion / mucoadhesion, concepts, advantages and disadvantages, transmucosal permeability and formulation considerations of buccal delivery systems

Implantable Drug Delivery Systems: Introduction, advantages and disadvantages, concept of implantsand osmotic pump

Unit-III **10 Hours**

Transdermal Drug Delivery Systems: Introduction, Permeation through skin, factors affecting permeation, permeation enhancers, basic components of TDDS, formulation approaches

Gastroretentive drug delivery systems: Introduction, advantages, disadvantages, approaches for GRDDS – Floating, high density systems, inflatable and gastroadhesive systems and their applications

Nasopulmonary drug delivery system: Introduction to Nasal and Pulmonary routes of drug delivery, Formulation of Inhalers (dry powder and metered dose), nasal sprays, nebulizers

Unit-IV **08 Hours**

Targeted drug Delivery: Concepts and approaches advantages and disadvantages, introduction to liposomes, niosomes, nanoparticles, monoclonal antibodies and their applications

Unit-V **07 Hours**

Ocular Drug Delivery Systems: Introduction, intra ocular barriers and methods to overcome –Preliminary study, ocular formulations and ocuserts

Intrauterine Drug Delivery Systems: Introduction, advantages and disadvantages, development of intra uterine devices (IUDs) and applications

Recommended Books: (Latest Editions)

1. Y W. Chien, Novel Drug Delivery Systems, 2nd edition, revised and expanded, Marcel Dekker, Inc., New York, 1992.
2. Robinson, J. R., Lee V. H. L, Controlled Drug Delivery Systems, Marcel Dekker, Inc., New York, 1992.
3. Encyclopedia of Controlled Delivery. Edith Mathiowitz, Published by Wiley Interscience Publication, John Wiley and Sons, Inc, New York. Chichester/Weinheim
4. N.K. Jain, Controlled and Novel Drug Delivery, CBS Publishers & Distributors, New Delhi, First edition 1997 (reprint in 2001).
5. S.P. Vyas and R.K. Khar, Controlled Drug Delivery -concepts and advances, Vallabh Prakashan, New Delhi, First edition 2002.

Journals

1. Indian Journal of Pharmaceutical Sciences (IPA)
2. Indian Drugs (IDMA)
3. Journal of Controlled Release (Elsevier Sciences)
4. Drug Development and Industrial Pharmacy (Marcel & Decker)
5. International Journal of Pharmaceutics (Elsevier Sciences)

SEMESTER VIII

BP801T. BIOSTATISITCS AND RESEARCH METHODOLOGY (Theory)

45 Hours

Scope: To understand the applications of Biostatics in Pharmacy. This subject deals with descriptive statistics, Graphics, Correlation, Regression, logistic regression Probability theory, Sampling technique, Parametric tests, Non Parametric tests, ANOVA, Introduction to Design of Experiments, Phases of Clinical trials and Observational and Experimental studies, SPSS, R and MINITAB statistical software's, analyzing the statistical data using Excel**.**

Objectives: Upon completion of the course the student shall be able to

- Know the operation of M.S. Excel, SPSS, R and MINITAB®, DoE (Design of Experiment)
- Know the various statistical techniques to solve statistical problems
- Appreciate statistical techniques in solving the problems**.**

Course content:

Unit-I **10 Hours**

Introduction: Statistics, Biostatistics, Frequency distribution

Measures of central tendency: Mean, Median, Mode- Pharmaceutical examples

Measures of dispersion: Dispersion, Range, standard deviation, Pharmaceutical problems

Correlation: Definition, Karl Pearson's coefficient of correlation, Multiple correlation - Pharmaceuticals examples

Unit-II **10 Hours**

Regression: Curve fitting by the method of least squares, fitting the lines y= a + bx and x = a + by, Multiple regression, standard error of regression– Pharmaceutical Examples

Probability: Definition of probability, Binomial distribution, Normal distribution, Poisson's distribution, properties - problems

Sample, Population, large sample, small sample, Null hypothesis, alternative hypothesis, sampling, essence of sampling, types of sampling, Error-I type, Error-II type, Standard error of mean (SEM) - Pharmaceutical examples

Parametric test: t-test(Sample, Pooled or Unpaired and Paired) , ANOVA, (One way and Two way), Least Significance difference

Unit-III **10 Hours**

Non Parametric tests: Wilcoxon Rank Sum Test, Mann-Whitney U test, Kruskal-Wallis test, Friedman Test

Introduction to Research: Need for research, Need for design of Experiments, Experiential Design Technique, plagiarism

Graphs: Histogram, Pie Chart, Cubic Graph, response surface plot, Counter Plot graph

Designing the methodology: Sample size determination and Power of a study, Report writing and presentation of data, Protocol, Cohorts studies, Observational studies, Experimental studies, Designing clinical trial, various phases.

Unit-IV **8 Hours**

Blocking and confounding system for Two-level factorials

Regression modeling: Hypothesis testing in Simple and Multiple regressionmodels

Introduction to Practical components of Industrial and Clinical Trials Problems: Statistical Analysis Using Excel, SPSS, MINITAB®, DESIGN OF EXPERIMENTS, R - Online Statistical Software's to Industrial and Clinical trial approach

Unit-V **7Hours**

Design and Analysis of experiments:

Factorial Design: Definition, 2^2, 2^3design. Advantage of factorial design

Response Surface methodology: Central composite design, Historical design, Optimization Techniques

Recommended Books (Latest edition):

1. Pharmaceutical statistics- Practical and clinical applications, Sanford Bolton, publisher Marcel Dekker Inc. NewYork.
2. Fundamental of Statistics – Himalaya Publishing House- S.C.Guptha
3. Design and Analysis of Experiments –PHI Learning Private Limited, R. Pannerselvam,
4. Design and Analysis of Experiments – Wiley Students Edition, Douglas and C. Montgomery

BP 802T SOCIAL AND PREVENTIVE PHARMACY

Hours: 45

Scope:
The purpose of this course is to introduce to students a number of health issues and their challenges. This course also introduced a number of national health programmes. The roles of the pharmacist in these contexts are also discussed.

Objectives:
After the successful completion of this course, the student shall be able to:

- Acquire high consciousness/realization of current issuesrelated to health and pharmaceutical problems within the country and worldwide.
- Have a critical way of thinking based on current healthcare development.
- Evaluate alternative ways of solving problems related tohealth and pharmaceutical issues

Course content:

Unit I: 10 Hours

Concept of health and disease: Definition, concepts and evaluation of public health. Understanding the concept of prevention and control of disease, social causes of diseases and social problems of the sick.

Social and health education: Food in relation to nutrition and health, Balanced diet, Nutritional deficiencies, Vitamin deficiencies, Malnutrition and its prevention.

Sociology and health: Socio cultural factors related to health and disease, Impact of urbanization on health and disease, Poverty and health

Hygiene and health: personal hygiene and health care; avoidable habits

Unit II: 10 Hours

Preventive medicine: General principles of prevention and control of diseases such as cholera, SARS, Ebola virus, influenza, acute respiratory infections, malaria, chicken guinea, dengue, lymphatic filariasis, pneumonia, hypertension, diabetes mellitus, cancer, drug addiction-drug substance abuse

Unit III: 10 Hours

National health programs, its objectives, functioning and outcome of the following: HIV AND AIDS control programme, TB, Integrated disease surveillance program (IDSP), National leprosy control programme, National mental health program, National

programme for prevention and control of deafness, Universal immunization programme, National programme for control of blindness, Pulse polio programme.

Unit IV: **08 Hours**

National health intervention programme for mother and child, National family welfare programme, National tobacco control programme, National Malaria Prevention Program, National programme for the health care for the elderly, Social health programme; role of WHO in Indian national program

Unit V: **07 Hours**

Community services in rural, urban and school health: Functions of PHC, Improvement in rural sanitation, national urban health mission, Health promotion and education in school.

Recommended Books (Latest edition)*:*

1. Short Textbook of Preventive and Social Medicine, Prabhakara GN, 2nd Edition, 2010, ISBN: 9789380704104, JAYPEE Publications
2. Textbook of Preventive and Social Medicine (Mahajan and Gupta), Edited by Roy Rabindra Nath, Saha Indranil, 4th Edition, 2013, ISBN: 9789350901878, JAYPEE Publications
3. Review of Preventive and Social Medicine (Including Biostatistics), Jain Vivek, 6th Edition, 2014, ISBN: 9789351522331, JAYPEE Publications
4. Essentials of Community Medicine—A Practical Approach, Hiremath Lalita D, Hiremath Dhananjaya A, 2nd Edition, 2012, ISBN: 9789350250440, JAYPEE Publications
5. Park Textbook of Preventive and Social Medicine, K Park, 21st Edition, 2011, ISBN-14: 9788190128285, BANARSIDAS BHANOT PUBLISHERS.
6. Community Pharmacy Practice, Ramesh Adepu, BSP publishers, Hyderabad

Recommended Journals:

1. Research in Social and Administrative Pharmacy, Elsevier, Ireland

BP803ET. PHARMA MARKETING MANAGEMENT (Theory)

45 Hours

Scope:

The pharmaceutical industry not only needs highly qualified researchers, chemists and, technical people, but also requires skilled managers who can take the industry forward by managing and taking the complex decisions which are imperative for the growth of the industry. The Knowledge and Know-how of marketing management groom the people for taking a challenging role in Sales and Product management.

Course Objective: The course aims to provide an understanding of marketing concepts and techniques and their applications in the pharmaceutical industry.

Unit I **10 Hours**

Marketing:

Definition, general concepts and scope of marketing; Distinction between marketing & selling; Marketing environment; Industry and competitive analysis; Analyzing consumer buying behavior; industrial buying behavior.

Pharmaceutical market:

Quantitative and qualitative aspects; size and composition of the market; demographic descriptions and socio-psychological characteristics of the consumer; market segmentation& targeting.Consumer profile; Motivation and prescribing habits of the physician; patients' choice of physician and retail pharmacist.Analyzing the Market;Role of market research.

Unit II **10 Hours**

Product decision:

Classification, product line and product mix decisions, product life cycle,product portfolio analysis; product positioning; New product decisions; Product branding, packaging and labeling decisions, Product management in pharmaceutical industry.

Unit III **10 Hours**

Promotion:

Methods, determinants of promotional mix, promotional budget; An overview of personal selling, advertising, direct mail, journals, sampling, retailing, medical exhibition, public relations, online promotional techniques for OTC Products.

Unit IV **10 Hours**

Pharmaceutical marketing channels:

Designing channel, channel members, selecting the appropriate channel, conflict in channels, physical distribution management: Strategic importance, tasks in physical distribution management.

Professional sales representative (PSR):

Duties of PSR, purpose of detailing, selection and training, supervising, norms for customer calls, motivating, evaluating, compensation and future prospects of the PSR.

Unit V **10 Hours**

Pricing:

Meaning, importance, objectives, determinants of price; pricing methods and strategies, issues in price management in pharmaceutical industry. An overview of DPCO (Drug Price Control Order)and NPPA (National Pharmaceutical Pricing Authority).

Emerging concepts in marketing:

Vertical & Horizontal Marketing; RuralMarketing; Consumerism; Industrial Marketing; Global Marketing.

Recommended Books: (Latest Editions)

1. Philip Kotler and Kevin Lane Keller: Marketing Management, Prentice Hall of India, New Delhi
2. Walker, Boyd and Larreche : Marketing Strategy- Planning and Implementation, Tata MC GrawHill, New Delhi.
3. Dhruv Grewal and Michael Levy: Marketing, Tata MC Graw Hill
4. Arun Kumar and N Menakshi: Marketing Management, Vikas Publishing, India
5. Rajan Saxena: Marketing Management; Tata MC Graw-Hill (India Edition)
6. Ramaswamy, U.S & Nanakamari, S: Marketing Managemnt:Global Perspective, IndianContext,Macmilan India, New Delhi.
7. Shanker, Ravi: Service Marketing, Excell Books, New Delhi
8. Subba Rao Changanti, Pharmaceutical Marketing in India (GIFT – Excel series) Excel Publications.

BP804 ET: PHARMACEUTICAL REGULATORY SCIENCE (Theory)

45Hours

Scope: This course is designed to impart the fundamental knowledge on the regulatory requirements for approval of new drugs, and drug products in regulated markets of India & other countries like US, EU, Japan, Australia,UK etc. It prepares the students to learn in detail on the regulatory requirements, documentation requirements, and registration procedures for marketing the drug products.

Objectives: Upon completion of the subject student shall be able to;

1. Know about the process of drug discovery and development
2. Know the regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals
3. Know the regulatory approval process and their registration in Indian and international markets

Course content:

Unit I **10Hours**

New Drug Discovery and development

Stages of drug discovery, Drug development process, pre-clinical studies, non-clinical activities, clinical studies, Innovator and generics, Concept of generics, Generic drug product development.

Unit II **10Hours**

Regulatory Approval Process

Approval processes and timelines involved in Investigational New Drug (IND), New Drug Application (NDA), Abbreviated New Drug Application (ANDA). Changes to an approved NDA / ANDA.

Regulatory authorities and agencies

Overview of regulatory authorities of India, United States, European Union, Australia, Japan, Canada (Organization structure and types of applications)

Unit III **10Hours**

Registration of Indian drug product in overseas market

Procedure for export of pharmaceutical products, Technical documentation, Drug Master Files (DMF), Common Technical Document (CTD), electronic Common Technical

Document (eCTD), ASEAN Common Technical Document (ACTD)research.

Unit IV **08Hours**

Clinical trials

Developing clinical trial protocols, Institutional Review Board / Independent Ethics committee - formation and working procedures, Informed consent process and procedures, GCP obligations of Investigators, sponsors & Monitors, Managing and Monitoring clinical trials, Pharmacovigilance - safety monitoring in clinical trials

Unit V **07Hours**

Regulatory Concepts

Basic terminology, guidance, guidelines, regulations, Laws and Acts, Orange book, Federal Register, Code of Federal Regulatory, Purple book

Recommended books (Latest edition):

1. Drug Regulatory Affairs by Sachin Itkar, Dr. N.S. Vyawahare, Nirali Prakashan.
2. The Pharmaceutical Regulatory Process, Second Edition Edited by Ira R. Berry and Robert P. Martin, Drugs and the Pharmaceutical Sciences,Vol.185. Informa Health care Publishers.
3. New Drug Approval Process: Accelerating Global Registrations By Richard A Guarino, MD, 5th edition, Drugs and the Pharmaceutical Sciences,Vol.190.
4. Guidebook for drug regulatory submissions / Sandy Weinberg. By John Wiley & Sons. Inc.
5. FDA Regulatory Affairs: a guide for prescription drugs, medical devices, and biologics /edited by Douglas J. Pisano, David Mantus.
6. Generic Drug Product Development, Solid Oral Dosage forms, Leon Shargel and Isader Kaufer, Marcel Dekker series, Vol.143
7. Clinical Trials and Human Research: A Practical Guide to Regulatory Compliance By Fay A. Rozovsky and Rodney K. Adams
8. Principles and Practices of Clinical Research, Second Edition Edited by John I. Gallin and Frederick P. Ognibene
9. Drugs: From Discovery to Approval, Second Edition By Rick Ng

BP 805T: PHARMACOVIGILANCE (Theory)

45 hours

Scope: This paper will provide an opportunity for the student to learn about development of pharmacovigilance as a science, basic terminologies used in pharmacovigilance, global scenario of Pharmacovigilance, train students on establishing pharmacovigilance programme in an organization, various methods that can be used to generate safety data and signal detection. This paper also develops the skills of classifying drugs, diseases and adverse drug reactions.

Objectives:

At completion of this paper it is expected that students will be able to (know, do, and appreciate):

1. Why drug safety monitoring is important?
2. History and development of pharmacovigilance
3. National and international scenario of pharmacovigilance
4. Dictionaries, coding and terminologies used in pharmacovigilance
5. Detection of new adverse drug reactions and their assessment
6. International standards for classification of diseases and drugs
7. Adverse drug reaction reporting systems and communication in pharmacovigilance
8. Methods to generate safety data during pre clinical, clinical and post approval phases of drugs' life cycle
9. Drug safety evaluation in paediatrics, geriatrics, pregnancy and lactation
10. Pharmacovigilance Program of India (PvPI) requirement for ADR reporting in India
11. ICH guidelines for ICSR, PSUR, expedited reporting, pharmacovigilance planning
12. CIOMS requirements for ADR reporting
13. Writing case narratives of adverse events and their quality.

Course Content

Unit I **10 Hours**

Introduction to Pharmacovigilance

- History and development of Pharmacovigilance
- Importance of safety monitoring of Medicine
- WHO international drug monitoring programme
- Pharmacovigilance Program of India(PvPI)

Introduction to adverse drug reactions

- Definitions and classification of ADRs
- Detection and reporting
- Methods in Causality assessment
- Severity and seriousness assessment
- Predictability and preventability assessment
- Management of adverse drug reactions

Basic terminologies used in pharmacovigilance

- Terminologies of adverse medication related events
- Regulatory terminologies

Unit II **10 hours**

Drug and disease classification

- Anatomical, therapeutic and chemical classification of drugs
- International classification of diseases
- Daily defined doses
- International Non proprietary Names for drugs

Drug dictionaries and coding in pharmacovigilance

- WHO adverse reaction terminologies
- MedDRA and Standardised MedDRA queries
- WHO drug dictionary
- Eudravigilance medicinal product dictionary

Information resources in pharmacovigilance

- Basic drug information resources
- Specialised resources for ADRs

Establishing pharmacovigilance programme

- Establishing in a hospital
- Establishment & operation of drug safety department in industry
- Contract Research Organisations (CROs)
- Establishing a national programme

Unit III **10 Hours**

Vaccine safety surveillance

- Vaccine Pharmacovigilance
- Vaccination failure
- Adverse events following immunization

Pharmacovigilance methods

- Passive surveillance – Spontaneous reports and case series
- Stimulated reporting
- Active surveillance – Sentinel sites, drug event monitoring and registries
- Comparative observational studies – Cross sectional study, case control study and cohort study
- Targeted clinical investigations

Communication in pharmacovigilance

- Effective communication in Pharmacovigilance
- Communication in Drug Safety Crisis management
- Communicating with Regulatory Agencies, Business Partners, Healthcare facilities & Media

Unit IV **8 Hours**

Safety data generation

- Pre clinical phase
- Clinical phase
- Post approval phase (PMS)

ICH Guidelines for Pharmacovigilance

- Organization and objectives of ICH
- Expedited reporting
- Individual case safety reports
- Periodic safety update reports
- Post approval expedited reporting
- Pharmacovigilance planning
- Good clinical practice in pharmacovigilance studies

Unit V **7 hours**

Pharmacogenomics of adverse drug reactions

- Genetics related ADR with example focusing PK parameters.

Drug safety evaluation in special population

- Paediatrics
- Pregnancy and lactation
- Geriatrics

CIOMS

- CIOMS Working Groups
- CIOMS Form

CDSCO (India) and Pharmacovigilance

- D&C Act and Schedule Y
- Differences in Indian and global pharmacovigilance requirements

Recommended Books (Latest edition):

1. Textbook of Pharmacovigilance: S K Gupta, Jaypee Brothers, Medical Publishers.
2. Practical Drug Safety from A to Z By Barton Cobert, Pierre Biron, Jones and Bartlett Publishers.
3. Mann's Pharmacovigilance:Elizabeth B. Andrews, Nicholas, Wiley Publishers.
4. Stephens' Detection of New Adverse Drug Reactions: John Talbot, Patrick Walle, Wiley Publishers.
5. An Introduction to Pharmacovigilance: Patrick Waller,Wiley Publishers.
6. Cobert's Manual of Drug Safety and Pharmacovigilance: Barton Cobert,Jones& Bartlett Publishers.
7. Textbook of Pharmacoepidemiolog edited by Brian L. Strom, Stephen E Kimmel, Sean Hennessy,Wiley Publishers.
8. A Textbook of Clinical Pharmacy Practice -Essential Concepts and Skills:G. Parthasarathi, Karin NyfortHansen,Milap C. Nahata
9. National Formulary of India
10. Text Book of Medicine by Yashpal Munjal

11. Text book of Pharmacovigilance: concept and practice by GP Mohanta and PK Manna

12. http://www.whoumc.org/DynPage.aspx?id=105825&mn1=7347&mn2=7259&mn3=7297
13. http://www.ich.org/
14. http://www.cioms.ch/
15. http://cdsco.nic.in/
16. http://www.who.int/vaccine_safety/en/
17. http://www.ipc.gov.in/PvPI/pv_home.html

BP 806 ET. QUALITY CONTROL AND STANDARDIZATION OF HERBALS (Theory)

Scope: In this subject the student learns about the various methods and guidelines for evaluation and standardization of herbs and herbal drugs. The subject also provides an opportunity for the student to learn cGMP, GAP and GLP in traditional system of medicines.

Objectives: Upon completion of the subject student shall be able to;

1. know WHO guidelines for quality control of herbal drugs
2. know Quality assurance in herbal drug industry
3. know the regulatory approval process and their registration in Indian and international markets
4. appreciate EU and ICH guidelines for quality control of herbal drugs

Unit I **10 hours**

Basic tests for drugs – Pharmaceutical substances, Medicinal plants materials and dosage forms

WHO guidelines for quality control of herbal drugs.

Evaluation of commercial crude drugs intended for use

Unit II **10 hours**

Quality assurance in herbal drug industry of cGMP, GAP, GMP and GLP in traditional system of medicine.

WHO Guidelines on current good manufacturing Practices (cGMP) for Herbal Medicines

WHO Guidelines on GACP for Medicinal Plants.

Unit III **10 hours**

EU and ICH guidelines for quality control of herbal drugs.

Research Guidelines for Evaluating the Safety and Efficacy of Herbal Medicines

Unit IV **08 hours**

Stability testing of herbal medicines.Application of various chromatographic techniques in standardization of herbal products.

Preparation of documents for new drug application and export registration

GMP requirements and Drugs & Cosmetics Act provisions.

Unit V **07 hours**

Regulatory requirements for herbal medicines.

WHO guidelines on safety monitoring of herbal medicines in pharmacovigilance systems

Comparison of various Herbal Pharmacopoeias.

Role of chemical and biological markers in standardization of herbal products

Recommended Books: (Latest Editions

1. Pharmacognosy by Trease and Evans
2. Pharmacognosy by Kokate, Purohit and Gokhale
3. Rangari, V.D., Text book of Pharmacognosy and Phytochemistry Vol. I , Carrier Pub., 2006.
4. Aggrawal, S.S., Herbal Drug Technology. Universities Press, 2002.
5. EMEA. Guidelines on Quality of Herbal Medicinal Products/Traditional Medicinal Products,
6. Mukherjee, P.W. Quality Control of Herbal Drugs: An Approach to Evaluation of Botanicals. Business Horizons Publishers, New Delhi, India, 2002.
7. Shinde M.V., Dhalwal K., Potdar K., Mahadik K. Application of quality control principles to herbal drugs. International Journal of Phytomedicine 1(2009); p. 4-8.
8. WHO. Quality Control Methods for Medicinal Plant Materials, World Health Organization, Geneva, 1998. WHO. Guidelines for the Appropriate Use of Herbal Medicines. WHO Regional Publications, Western Pacific Series No 3, WHO Regional office for the Western Pacific, Manila, 1998.
9. WHO. The International Pharmacopeia, Vol. 2: Quality Specifications, 3rd edn. World Health Organization, Geneva, 1981.
10. WHO. Quality Control Methods for Medicinal Plant Materials. World Health Organization, Geneva, 1999.
11. WHO. WHO Global Atlas of Traditional, Complementary and Alternative Medicine. 2 vol. set. Vol. 1 contains text and Vol. 2, maps. World Health Organization, Geneva, 2005.
12. WHO. Guidelines on Good Agricultural and Collection Practices (GACP) for Medicinal Plants. World Health Organization, Geneva, 2004.

BP 807 ET. COMPUTER AIDED DRUG DESIGN (Theory)

45 Hours

Scope: This subject is designed to provide detailed knowledge of rational drug design process and various techniques used in rational drug design process.

Objectives: Upon completion of the course, the student shall be able to understand

- Design and discovery of lead molecules
- The role of drug design in drug discovery process
- The concept of QSAR and docking
- Various strategies to develop new drug like molecules.
- The design of new drug molecules using molecular modeling software

Course Content:

UNIT-I **10 Hours**

Introduction to Drug Discovery and Development

Stages of drug discovery and development

Lead discovery and Analog Based Drug Design

Rational approaches to lead discovery based on traditional medicine, Random screening, Non-random screening, serendipitous drug discovery, lead discovery based on drug metabolism, lead discovery based on clinical observation.

Analog Based Drug Design: Bioisosterism, Classification, Bioisosteric replacement. Any three case studies

UNIT-II **10 Hours**

Quantitative Structure Activity Relationship (QSAR)

SAR versus QSAR, History and development of QSAR, Types of physicochemical parameters, experimental and theoretical approaches for the determination of physicochemical parameters such as Partition coefficient, Hammet's substituent constant and Tafts steric constant. Hansch analysis, Free Wilson analysis, 3D-QSAR approaches like COMFA and COMSIA.

UNIT-III **10 Hours**

Molecular Modeling and virtual screening techniques

Virtual Screening techniques: Drug likeness screening, Concept of pharmacophore mapping and pharmacophore based Screening,

Molecular docking: Rigid docking, flexible docking, manual docking, Docking based screening. *De novo* drug design.

UNIT-IV **08 Hours**

Informatics & Methods in drug design

Introduction to Bioinformatics, chemoinformatics. ADME databases, chemical, biochemical and pharmaceutical databases.

UNIT-V **07 Hours**

Molecular Modeling: Introduction to molecular mechanics and quantum mechanics.Energy Minimization methods and Conformational Analysis, global conformational minima determination.

Recommended Books (Latest Editions)

1. Robert GCK, ed., "Drug Action at the Molecular Level" University Prak Press Baltimore.
2. Martin YC. "Quantitative Drug Design" Dekker, New York.
3. Delgado JN, Remers WA eds "Wilson & Gisvolds's Text Book of Organic Medicinal & Pharmaceutical Chemistry" Lippincott, New York.
4. Foye WO "Principles of Medicinal chemistry 'Lea & Febiger.
5. Koro lkovas A, Burckhalter JH. "Essentials of Medicinal Chemistry" Wiley Interscience.
6. Wolf ME, ed "The Basis of Medicinal Chemistry, Burger's Medicinal Chemistry" John Wiley & Sons, New York.
7. Patrick Graham, L., An Introduction to Medicinal Chemistry, Oxford University Press.
8. Smith HJ, Williams H, eds, "Introduction to the principles of Drug Design" Wright Boston.
9. Silverman R.B. "The organic Chemistry of Drug Design and Drug Action" Academic Press New York.

BP808ET: CELL AND MOLECULAR BIOLOGY (Elective subject)

45 Hours

Scope:

- Cell biology is a branch of biology that studies cells – their physiological properties, their structure, the organelles they contain, interactions with their environment, their life cycle, division, death and cell function.
- This is done both on a microscopic and molecular level.
- Cell biology research encompasses both the great diversity of single-celled organisms like bacteria and protozoa, as well as the many specialized cells in multi-cellular organismssuch as humans, plants, and sponges.

Objectives: Upon completion of the subject student shall be able to;

- Summarize cell and molecular biology history.
- Summarize cellular functioning and composition.
- Describe the chemical foundations of cell biology.
- Summarize the DNA properties of cell biology.
- Describe protein structure and function.
- Describe cellular membrane structure and function.
- Describe basic molecular genetic mechanisms.
- Summarize the Cell Cycle

Course content:

Unit I **10Hours**

a) Cell and Molecular Biology: Definitions theory and basics and Applications.
b) Cell and Molecular Biology: History and Summation.
c) Properties of cells and cell membrane.
d) Prokaryotic versus Eukaryotic
e) Cellular Reproduction
f) Chemical Foundations – an Introduction and Reactions (Types)

Unit II **10 Hours**

a) DNA and the Flow of Molecular Information
b) DNA Functioning
c) DNA and RNA
d) Types of RNA
e) Transcription and Translation

Unit III **10 Hours**

a) Proteins: Defined **and** Amino Acids
b) Protein Structure

c) Regularities in Protein Pathways
d) Cellular Processes
e) Positive Control and significance of Protein Synthesis

Unit IV **08 Hours**

a) Science of Genetics
b) Transgenics and Genomic Analysis
c) Cell Cycle analysis
d) Mitosis and Meiosis
e) Cellular Activities and Checkpoints

Unit V **07 Hours**

a) Cell Signals: Introduction
b) Receptors for Cell Signals
c) Signaling Pathways: Overview
d) Misregulation of Signaling Pathways
e) Protein-Kinases: Functioning

Recommended Books (latest edition):

1. W.B. Hugo and A.D. Russel: Pharmaceutical Microbiology, Blackwell Scientific publications, Oxford London.
2. Prescott and Dunn., Industrial Microbiology, 4th edition, CBS Publishers & Distributors, Delhi.
3. Pelczar, Chan Kreig, Microbiology, Tata McGraw Hill edn.
4. Malcolm Harris, Balliere Tindall and Cox: Pharmaceutical Microbiology.
5. Rose: Industrial Microbiology.
6. Probisher, Hinsdill et al: Fundamentals of Microbiology, 9th ed. Japan
7. Cooper and Gunn's: Tutorial Pharmacy, CBS Publisher and Distribution.
8. Peppler: Microbial Technology.
9. Edward: Fundamentals of Microbiology.
10. N.K.Jain: Pharmaceutical Microbiology, Vallabh Prakashan, Delhi
11. Bergeys manual of systematic bacteriology, Williams and Wilkins- A Waverly company
12. B.R. Glick and J.J. Pasternak: Molecular Biotechnology: Principles and Applications of RecombinantDNA: ASM Press Washington D.C.
13. RA Goldshy et. al., : Kuby Immunology.

BP809ET. COSMETIC SCIENCE(Theory)

45Hours

UNIT I **10Hours**

Classification of cosmetic and cosmeceutical products

Definition of cosmetics as per Indian and EU regulations, Evolution of cosmeceuticals from cosmetics, cosmetics as quasi and OTC drugs

Cosmetic excipients: Surfactants, rheology modifiers, humectants, emollients, preservatives. Classification and application

Skin: Basic structure and function of skin.

Hair: Basic structure of hair. Hair growth cycle.

Oral Cavity: Common problem associated with teeth and gums**.**

UNIT II **10 Hours**

Principles of formulation and building blocks of skin care products:

Face wash,

Moisturizing cream, Cold Cream, Vanishing cream and their advantages and disadvantages.Application of these products in formulation of cosmecuticals.

Antiperspants & deodorants- Actives & mechanism of action.

Principles of formulation and building blocks of Hair care products:

Conditioning shampoo, Hair conditioner,anti-dandruff shampoo.

Hair oils.

Chemistry and formulation of Para-phylene diamine based hair dye.

Principles of formulation and building blocks of oral care products:

Toothpaste for bleeding gums, sensitive teeth. Teeth whitening, Mouthwash.

UNIT III **10 Hours**

Sun protection, Classification of Sunscreens and SPF.

Role of herbs in cosmetics:

Skin Care: Aloe and turmeric

Hair care: Henna and amla.

Oral care: Neem and clove

Analytical cosmetics: BIS specification and analytical methods for shampoo, skin-cream and toothpaste**.**

UNIT IV **08 Hours**.

Principles of Cosmetic Evaluation:Principles of sebumeter, corneometer. Measurement of TEWL, Skin Color, Hair tensile strength, Hair combing properties

Soaps,and syndet bars. Evolution and skin benfits.

UNIT V **07 Hours**

Oily and dry skin, causes leading to dry skin, skin moisturisation. Basic understanding of the terms Comedogenic, dermatitis.

Cosmetic problems associated with Hair and scalp: Dandruff, Hair fall causes

Cosmetic problems associated with skin: blemishes, wrinkles, acne, prickly heat and body odor.

Antiperspirants and Deodorants- Actives and mechanism of action

References

1) Harry's Cosmeticology, Wilkinson, Moore, Seventh Edition, George Godwin.
2) Cosmetics – Formulations, Manufacturing and Quality Control, P.P. Sharma, 4th Edition, Vandana Publications Pvt. Ltd., Delhi.
3) Text book of cosmelicology by Sanju Nanda & Roop K. Khar, Tata Publishers.

BP810 ET. PHARMACOLOGICAL SCREENING METHODS

45 Hours

Scope: This subject is designed to impart the basic knowledge of preclinical studies in experimental animals including design, conduct and interpretations of results.

Objectives

Upon completion of the course the student shall be able to,

- Appreciate the applications of various commonly used laboratory animals.
- Appreciate and demonstrate the various screening methods used in preclinical research
- Appreciate and demonstrate the importance of biostatistics and researchmethodology
- Design and execute a research hypothesis independently

Unit –I	**08 Hours**
Laboratory Animals: Study of CPCSEA and OECD guidelines for maintenance, breeding and conduct of experiments on laboratory animals, Common lab animals: Description and applications of different species and strains of animals. Popular transgenic and mutant animals. Techniques for collection of blood and common routes of drug administration in laboratory animals, Techniques of blood collection and euthanasia.	
Unit –II	**10 Hours**
Preclinical screening models a. Introduction: Dose selection, calculation and conversions, preparation of drug solution/suspensions, grouping of animals and importance of sham negative and positive control groups. Rationale for selection of animal species and sex for the study. b. **Study of screening animal models for** Diuretics, nootropics, anti-Parkinson's,antiasthmatics, **Preclinical screening models:** for CNS activity- analgesic, antipyretic,anti-inflammatory, general anaesthetics, sedative and hypnotics, antipsychotic, antidepressant, antiepileptic, antiparkinsonism, alzheimer's disease	

Unit –III **Preclinical screening models:** for ANS activity, sympathomimetics, sympatholytics, parasympathomimetics, parasympatholytics, skeletal muscle relaxants, drugs acting on eye, local anaethetics	
Unit –IV **Preclinical screening models:** for CVS activity- antihypertensives, diuretics, antiarrhythmic, antidyslepidemic, anti aggregatory, coagulants, and anticoagulants Preclinical screening models for other important drugs like antiulcer, antidiabetic, anticancer and antiasthmatics.	
Research methodology and Bio-statistics Selection of research topic, review of literature, research hypothesis and study design Pre-clinical data analysis and interpretation using Students 't' test and One-way ANOVA. Graphical representation of data	**05 Hours**

Recommended Books (latest edition):

1. Fundamentals of experimental Pharmacology-by M.N.Ghosh
2. Hand book of Experimental Pharmacology-S.K.Kulakarni
3. CPCSEA guidelines for laboratory animal facility.
4. Drug discovery and Evaluation by Vogel H.G.
5. Drug Screening Methods by Suresh Kumar Gupta and S. K. Gupta
6. Introduction to biostatistics and research methods by PSS Sundar Rao and J Richard

BP 811 ET. ADVANCED INSTRUMENTATION TECHNIQUES

45 Hours

Scope: This subject deals with the application of instrumental methods in qualitative and quantitative analysis of drugs. This subject is designed to impart advanced knowledge on the principles and instrumentation of spectroscopic and chromatographic hyphenated techniques. This also emphasizes on theoretical and practical knowledge on modern analytical instruments that are used for drug testing.

Objectives: Upon completion of the course the student shall be able to

- understand the advanced instruments used and its applications in drug analysis
- understand the chromatographic separation and analysis of drugs.
- understand the calibration of various analytical instruments
- know analysis of drugs using various analytical instruments.

Course Content:

UNIT-I **10 Hours**

Nuclear Magnetic Resonance spectroscopy

Principles of H-NMR and C-NMR, chemical shift, factors affecting chemical shift, coupling constant, Spin - spin coupling, relaxation, instrumentation and applications

Mass Spectrometry- Principles, Fragmentation, Ionization techniques – Electron impact, chemical ionization, MALDI, FAB, Analyzers-Time of flight and Quadrupole, instrumentation, applications

UNIT-II **10 Hours**

Thermal Methods of Analysis: Principles, instrumentation and applications of ThermogravimetricAnalysis (TGA), Differential Thermal Analysis (DTA), Differential Scanning Calorimetry (DSC)

X-Ray Diffraction Methods: Origin of X-rays, basic aspects of crystals, X-ray

Crystallography, rotating crystal technique, single crystal diffraction,powder diffraction, structural elucidation and applications.

UNIT-III **10 Hours**

Calibration and validation-as per ICH and USFDA guidelines

Calibration of following Instruments

Electronic balance, UV-Visible spectrophotometer, IR spectrophotometer,

Fluorimeter, Flame Photometer, HPLC and GC

UNIT-IV **08 Hours**

Radio immune assay: Importance, various components, Principle, different methods, Limitation and Applications of Radio immuno assay

Extraction techniques:General principle and procedure involved in the solid phase extraction and liquid-liquid extraction

UNIT-V **07 Hours**

Hyphenated techniques-LC-MS/MS, GC-MS/MS, HPTLC-MS.

Recommended Books (Latest Editions)

1. Instrumental Methods of Chemical Analysis by B.K Sharma
2. Organic spectroscopy by Y.R Sharma
3. Text book of Pharmaceutical Analysis by Kenneth A. Connors
4. Vogel's Text book of Quantitative Chemical Analysis by A.I. Vogel
5. Practical Pharmaceutical Chemistry by A.H. Beckett and J.B. Stenlake
6. Organic Chemistry by I. L. Finar
7. Organic spectroscopy by William Kemp
8. Quantitative Analysis of Drugs by D. C. Garrett
9. Quantitative Analysis of Drugs in Pharmaceutical Formulations by P. D. Sethi
10. Spectrophotometric identification of Organic Compounds by Silverstein

BP 812 ET. DIETARY SUPPLEMENTS AND NUTRACEUTICALS

No. of hours :3 **Tutorial:1** **Credit point:4**

Scope :

This subject covers foundational topic that are important for understanding the need and requirements of dietary supplements among different groups in the population.

Objective:

This module aims to provide an understanding of the concepts behind the theoretical applications of dietary supplements. By the end of the course, students should be able to :

1. Understand the need of supplements by the different group of people to maintain healthy life.
2. Understand the outcome of deficiencies in dietary supplements.
3. Appreciate the components in dietary supplements and the application.
4. Appreciate the regulatory and commercial aspects of dietary supplements including health claims.

UNIT I **07 hours**

a. Definitions of Functional foods, Nutraceuticals and Dietary supplements. Classification of Nutraceuticals, Health problems and diseases that can be prevented or cured by Nutraceuticals i.e. weight control, diabetes, cancer, heart disease, stress, osteoarthritis, hypertension etc.
b. Public health nutrition, maternal and child nutrition, nutrition and ageing, nutrition education in community.
c. Source, Name of marker compounds and their chemical nature, Medicinal uses and health benefits of following used as nutraceuticals/functional foods: Spirulina, Soyabean, Ginseng, Garlic, Broccoli, Gingko, Flaxseeds

UNIT II **15 hours**

Phytochemicals as nutraceuticals: Occurrence and characteristic features(chemical nature medicinal benefits) of following

a) Carotenoids- α and β-Carotene, Lycopene, Xanthophylls, leutin
b) Sulfides: Diallyl sulfides, Allyl trisulfide.
c) Polyphenolics: Reservetrol
d) Flavonoids- Rutin , Naringin, Quercitin, Anthocyanidins, catechins, Flavones
e) Prebiotics / Probiotics.: Fructo oligosaccharides, Lacto bacillum
f) Phyto estrogens : Isoflavones, daidzein, Geebustin, lignans
g) Tocopherols
h) Proteins, vitamins, minerals, cereal, vegetables and beverages as functional foods: oats, wheat bran, rice bran, sea foods, coffee, tea and the like.

UNIT III **07 hours**

a) Introduction to free radicals: Free radicals, reactive oxygen species, production of free radicals in cells, damaging reactions of free radicals on lipids, proteins, Carbohydrates, nucleic acids.

b) Dietary fibres and complex carbohydrates as functional food ingredients..

UNIT IV **10 hours**

a) Free radicals in Diabetes mellitus, Inflammation, Ischemic reperfusion injury, Cancer, Atherosclerosis, Free radicals in brain metabolism and pathology, kidney damage, muscle damage. Free radicals involvement in other disorders. Free radicals theory of ageing.

b) Antioxidants: Endogenous antioxidants – enzymatic and nonenzymatic antioxidant defence, Superoxide dismutase, catalase, Glutathione peroxidase, Glutathione Vitamin C, Vitamin E, α- Lipoic acid, melatonin
Synthetic antioxidants: Butylated hydroxy Toluene, Butylated hydroxy Anisole.

c) Functional foods for chronic disease prevention

UNIT V **06 hours**

a) Effect of processing, storage and interactions of various environmental factors on the potential of nutraceuticals.

b) Regulatory Aspects; FSSAI, FDA, FPO, MPO, AGMARK. HACCP and GMPs on Food Safety. Adulteration of foods.

c) Pharmacopoeial Specifications for dietary supplements and nutraceuticals.

References:

1. Dietetics by Sri Lakshmi
2. Role of dietary fibres and neutraceuticals in preventing diseases by K.T Agusti and P.Faizal: BSPunblication.
3. Advanced Nutritional Therapies by Cooper. K.A., (1996).
4. The Food Pharmacy by Jean Carper, Simon & Schuster, UK Ltd., (1988).
5. Prescription for Nutritional Healing by James F.Balch and Phyllis A.Balch 2nd Edn., Avery Publishing Group, NY (1997).
6. G. Gibson and C.williams Editors *2000 Functional foods* Woodhead Publ.Co.London.
7. Goldberg, I. *Functional Foods*. 1994. Chapman and Hall, New York.
8. Labuza, T.P. 2000 Functional Foods and Dietary Supplements: Safety, Good Manufacturing Practice (GMPs) and Shelf Life Testing in *Essentials of Functional Foods* M.K. Sachmidl and T.P. Labuza eds. Aspen Press.
9. Handbook of Nutraceuticals and Functional Foods, Third Edition (Modern Nutrition)
10. Shils, ME, Olson, JA, Shike, M. 1994 *Modern Nutrition in Health and Disease*. Eighth edition. Lea and Febiger

Semester VIII – Elective course on Pharmaceutical Product Development

No of Hours: 3 Tutorial:1 Credit points:4

Unit-I **10 Hours**

Introduction to pharmaceutical product development, objectives, regulations related to preformulation, formulation development, stability assessment, manufacturing and quality control testing of different types of dosage forms

Unit-II **10 Hours**

An advanced study of Pharmaceutical Excipients in pharmaceutical product development with a special reference to the following categories

i. Solvents and solubilizers
ii. Cyclodextrins and their applications
iii. Non - ionic surfactants and their applications
iv. Polyethylene glycols and sorbitols
v. Suspending and emulsifying agents
vi. Semi solid excipients

Unit-III **10 Hours**

An advanced study of Pharmaceutical Excipients in pharmaceutical product development with a special reference to the following categories

i. Tablet and capsule excipients
ii. Directly compressible vehicles
iii. Coat materials
iv. Excipients in parenteral and aerosols products
v. Excipients for formulation of NDDS

Selection and application of excipients in pharmaceutical formulations with specific industrial applications

Unit-IV **08 Hours**

Optimization techniques in pharmaceutical product development.A study of various optimization techniques for pharmaceutical product development with specific examples.Optimization by factorial designs and their applications.A study of QbD and its application in pharmaceutical product development.

Unit-V **07 Hours**

Selection and quality control testing of packaging materials for pharmaceutical product development- regulatory considerations.

Recommended Books (Latest editions)

1. Pharmaceutical Statistics Practical and Clinical Applications by Stanford Bolton, CharlesBon; Marcel Dekker Inc.
2. Encyclopedia of Pharmaceutical Technology, edited by James swarbrick, Third Edition,Informa Healthcare publishers.
3. Pharmaceutical Dosage Forms, Tablets, Volume II, edited by Herbert A. Lieberman andLeon Lachman; Marcel Dekker, Inc.
4. The Theory and Practice of Industrial Pharmacy, Fourth Edition, edited by Roop kKhar, S P Vyas, Farhan J Ahmad, Gaurav K Jain; CBS Publishers and Distributors Pvt.Ltd. 2013.
5. Martin's Physical Pharmacy and Pharmaceutical Sciences, Fifth Edition, edited by Patrick J. Sinko, BI Publications Pvt. Ltd.
6. Targeted and Controlled Drug Delivery, Novel Carrier Systems by S. P. Vyas and R. K.Khar, CBS Publishers and Distributors Pvt. Ltd, First Edition 2012.
7. Pharmaceutical Dosage Forms and Drug Delivery Systems, Loyd V. Allen Jr., Nicholas B.Popovich, Howard C. Ansel, 9th Ed. 40
8. Aulton's Pharmaceutics – The Design and Manufacture of Medicines, Michael E. Aulton,3rd Ed.
9. Remington – The Science and Practice of Pharmacy, 20th Ed.
10. Pharmaceutical Dosage Forms – Tablets Vol 1 to 3, A. Liberman, Leon Lachman andJoseph B. Schwartz
11. Pharmaceutical Dosage Forms – Disperse Systems Vol 1 to 3, H.A. Liberman, Martin, M.R and Gilbert S. Banker.
12. Pharmaceutical Dosage Forms – Parenteral Medication Vol 1 & 2, Kenneth E. Avis andH.A. Libermann.
13. Advanced Review Articles related to the topics.

B.Pharm Program outcomes

S.No	PO Number	Name of the PO	outcome
1	PO-01	Pharmacy Knowledge	Possess knowledge and comprehension of the core and basic knowledge associated with the profession of pharmacy, including biomedical sciences; pharmaceutical sciences; behavioral, social, and administrative pharmacy sciences; and manufacturing practices.
2	PO-02	Planning Abilities	Demonstrate effective planning abilities including time management, resource management, delegation skills and organizational skills. Develop and implement plans and organize work to meet deadlines.
3	PO-03	Problem analysis	tilize the principles of scientific enquiry, thinking analytically, clearly and critically, while solving problems and making decisions during daily practice. Find, analyze, evaluate and apply information systematically and shall make defensible decisions.
4	PO-04	Modern tool usage	Learn, select, and apply appropriate methods and procedures, resources, and modern pharmacy-related computing tools with an understanding of the limitations.
5	PO-05	Leadership skills:	Understand and consider the human reaction to change, motivation issues, leadership and team-building when planning changes required for fulfillment of practice, professional and societal responsibilities. Assume participatory roles as responsible citizens or leadership roles when appropriate to facilitate improvement in health and well- being.

6	PO-06	Professional Identity:	Understand, analyze and communicate the value of their professional roles in society (e.g. health care professionals, promoters of health, educators, managers, employers, employees).
7	PO-07	Pharmaceutical Ethics	Honour personal values and apply ethical principles in professional and social contexts. Demonstrate behavior that recognizes cultural and personal variability in values, communication and lifestyles. Use ethical frameworks; apply ethical principles while making decisions and take responsibility for the outcomes associated with the decisions.
8	PO-08	Communication:	Communicate effectively with the pharmacy community and with society at large, such as, being able to comprehend and write effective reports, make effective presentations and documentation, and give and receive clear instructions.
9	PO-09	The Pharmacist and society:	Apply reasoning informed by the contextual knowledge to assess societal, health, safety and legal issues and the consequent responsibilities relevant to the professional pharmacy practice.
10	PO-10	Environment and sustainability:	Understand the impact of the professional pharmacy solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
11	PO-11	Life-long learning	Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. Self- assess and use feedback effectively from others to identify learning needs and to satisfy these needs on an ongoing basis.

Program Educational Objectives

Program Educational Objectives

- PEO 1 To train graduates of the program with a strong foundation to pursue higher studies and adapt in a globe of constantly developing trends.
- PEO 2 To prepare graduates of the program to attain a broad array of professional skills for the successful career in pharmaceutical and healthcare systems.
- PEO 3 To produce graduates of the program to exhibit professionalism, ethical attitude, communication skills and teamwork in their profession and adapt to current trends by engaging in lifelong learning.

Program Specific Objectives

- **PSO1: Work** in different divisions of pharmaceutical industry like manufacturing, quality control, quality assurance, sales, marketing and regulatory divisions.
- **PSO2: Explore** opportunities as pharmacists in community and hospital pharmacy settings.
- **PSO3: Join** different government organizations as drug analyst, chemist and drug inspectors for better management and control of pharmaceutical activities.

COURSE OUTCOMES

FACULTY OF PHARMACY

Course Outcomes - B.Pharm

Sl. No.	Name of the Program	Name of the Course	Course Outcome

1	B.Pharm 1st sem	Human anatomy and Physiology-I	1. Students would have studied about the gross morphology, structure and functions of cell, skeletal, muscular, cardiovascular system of the humanbody. 2. They would have understood the various homeostatic mechanisms and their imbalances. 3. Students would able to identify the different types of bones in human body. 4. Students would be able to identify the various tissues of different systems of human body. 5. Students would learn about the various experimental techniques related to physiology. 6. They would have learnt various techniques like blood group determination, blood pressure measurement, blood cells counting
2		Pharmaceutical analysis I	1. Learning this subject content will develop the ideas with the fundamental of analytical chemistry among the pupil. 2. It constructs the fundamental methodology to prepare different strength of solutions. 3. It facilitate the fellow pupil to predict the sources of mistakes and errors. 4. It helps to develop the fundamentals of volumetric analytical skills. 5. It peculates the basic knowledge in the principles of electrochemical analytical techniques 6. The student interpretation skills will be improve by the course content in terms of choice of analytical

			techniques to perform the estimation of different category drugs.
3		Pharmaceutics I	1.Upon completion of this program the student will have fundamental knowledge in preparing conventional dosage forms
4		Pharmaceutical inorganic chemistry	1. Well acquainted with the principles of limit tests. 2. Familiar with different classes of inorganic pharmaceuticals and their analysis 3. Identification of different anions, cations and different inorganic pharmaceuticals. 4. Knowledge about the sources of impurities and methods to determine the impurities in inorganic drugs and pharmaceuticals 5. understand the medicinal and pharmaceutical importance of inorganic compounds 6. To have been introduced to a variety of inorganic drug classes.

5		Communication skills	Upon completion of the course the student shall be able to 1. Understand the behavioral needs for a Pharmacist to function effectively in the 2. areas of pharmaceutical operation 3. Communicate effectively (Verbal and Non Verbal) 4. Effectively manage the team as a team player 5. Develop interview skills 6. Develop Leadership qualities and essentials
6		Remedial biology	The main aim of this course is to
		Remedial mathematics	make aware the students to understand and learn about : 1. Cell biology (Basic Nature of Plant cell and Animal cell) 2. Classification System of both Plants & Animals 3. Various tissue system and organ system in plant and animals 4. Theory of evolution 5. Anatomy and Physiology of plants and animals 1. Apply mathematical concepts and principles to perform computations for Pharmaceutical Sciences. 2. Create, use and analyze mathematical representations and mathematical relationships 3. Communicate mathematical knowledge and understanding to help in the field of Clinical Pharmacy 4. Perform abstract mathematical reasoning

Sl. No.	**Name of the Program**	**Name of the Course**	**Course Outcome**

1	B.Pharm 2nd sem	Human anatomy and physiology II	1. Students would have studied about the gross morphology, structure and functions of nervous, respiratory, urinary and reproductive systems in the human body. 2. They would have studied in detailed about energy and metabolism. 3. Students would able to identify the various organs of different systems of human body. 4. They would have performed and learnt about the experiments like neurological reflex, body temperature measurement 5. They would have studied elaborate on interlinked mechanisms in the maintenance of normal functioning of human body 6. They would have learnt and performed the experiments like Olfaction, gustation reflex and eye sight
2		Pharmaceutical organic chemistry I	1. Write the structure, name of the organic compound 2. Knowledge about the type of isomerism 3. Write the reaction, name the reaction and orientation of reactions 4. Account for reactivity/stability of compounds, 5. Identify/confirm the unknown organic compound 6. Knowledge about the naming reactions of carbonyl compounds 7. To perform common laboratory techniques including reflux, distillation, recrystallization, vacuum filtration, etc.
3		Biochemistry	1. To understand the importance of metabolism of

			substrates. 2. Will acquire chemistry and biological importance of biological macromolecules. 3. To acquire knowledge in qualitative and quantitative estimation of the biological macromolecules. 4. To know the interpretation of data emanating from a Clinical Test Lab. 5. To know how physiological conditions influence the structures and re-activities of biomolecules. 6. To understand the basic principles of protein and polysaccharide structure.
4		Pathophysiology	1. 1.Describe the etiology and pathogenesis of the selected disease states 2. 2.Knowledge of signs and symptoms of the diseases 3. Identify the complications of the diseases. 4. 4.Know most commonly encountered pathophysiological state(s) and/or disease mechanism(s), as well as any clinical testing requirements

5		Computer applications in pharmacy	On completion of this course, the students will be able to: 1. 1.Apply the knowledge of mathematics and computing fundamentals to pharmaceutical applications for any given requirement 2. Design and develop solutions to analyze
			pharmaceutical problems using computers. 3. Integrate and apply efficiently the contemporary IT tools to all Pharmaceutical related activities 4. 4. Solve and work with a professional context pertaining to ethics, social, cultural and regulations with regard to Pharmacy .
6		Environmental sciences	1. This program shall create an awareness about environmental problems, develop an attitude towards of concern for the environment.

Sl. No.	**Name of the Program**	**Name of the Course**	**Course Outcome**

1	B.Pharm 3rd sem	Pharmaceutical organic chemistry II	1. Basic knowledge regarding general methods of preparation of organic compounds. 2. Understand the reactions of some organic compounds. 3. To understand Reactivity of organic compounds. 4. Special emphasis on mechanisms and orientation of chemical reactions 1. 5.To acquire knowledge in heterocyclic compounds 2. 6. To acquire knowledge about the electrophilic and nucleophilic reactions.
2		Physical pharmaceutics I	Upon successful completion of the course, students will be able to: 1. State the physicochemical properties of drug molecules, pH, and solubility 2. Explain the role of surfactants, interfacial phenomenon and thermodynamics 3. Describe the flow behavior of fluids and concept of complexation 4. Analyze the chemical stability tests of various drug products 5. Understand the physical properties of solutions, buffers, isotonicity, disperse systems and rheology. 6. Understand of physicochemical properties of drugs including solubility, distribution, adsorption, and stability.

			7. Have basic knowledge of pharmaceutical suspensions and colloids. 8. 7.Have basic understanding of the pharmaceutical applications of various physical 9.Principles such as lyophilization, aerosols, condensed systems, and phase diagram.
4		Microbiology	1. Students will be able to acquire, articulate, retain and apply specialized language and knowledge relevant to microbiology. 2. Students will acquire and demonstrate competency in laboratory safety and in routine and specialized microbiological laboratory skills applicable to microbiological research or clinical methods, including accurately reporting observations and analysis. 3. Students will communicate scientific concepts, experimental results and analytical arguments clearly and concisely, both verbally and in writing. 4. Students will demonstrate isolation of and identification of microbes. 5. Students can able to design microbiology laboratory considering all the aspects of safety 6.Students will acquire knowledge about validating the microbiological equipment and reporting the observations

4		Pharmaceutical engineering	1. To know various unit operations used in Pharmaceutical industries.
			2. To understand the material handling techniques. 3. To perform various processes involved in pharmaceutical manufacturing process. 4. To carry out various test to prevent environmental pollution. 5. To appreciate and comprehend significance of plant lay out design for optimum 6.Use of resources. 7. To appreciate the various preventive methods used for corrosion control in 8. Pharmaceutical industries
5		Pharmaceutical jurisprudence	1. Know the Pharmaceutical legislations and their implications in the development and marketing 2. Know various Indian pharmaceutical Acts, Laws and schedule 3. Know the regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals 4. Know code of ethics during the pharmaceutical practice

Sl. No.	Name of the Program	Name of the Course	Course Outcome

1	B.Pharm 4th sem	Pharmaceutical organic chemistry III	1. To acquire the knowledge and understanding of the basic experimental principles of heterocyclic chemistry. 2. To draw the structures and synthesize simple pharmaceutically active organic compounds having five and six membered heterocyclic compounds. 3. To describe detailed mechanisms for common naming reactions. 4. To be able to run experimental techniques, procedures and safe laboratory practices. 5. Stereo-chemical features including conformation and stereo electronic effects; Geometrical isomers
2		Medicinal chemistry I	1. Helps in correlating between pharmacology of a disease and its mitigation or cure. 2. To understand the drug metabolic pathways, adverse effect and therapeutic value of drugs 3. To know the structural activity relationship of different class of drugs. 4. Well acquainted with the synthesis of some important class of drugs. 5. Knowledge about the mechanism pathways of different class of medicinal compounds.

			6. To understand the chemistry of drugs with respect to their pharmacological activity.
3		Physical pharmaceutics II	Upon successful completion of the course, students will be able to: 1. State the physicochemical properties of drug molecules, pH, and solubility 2. Explain the role of surfactants, interfacial phenomenon and thermodynamics 3. Describe the flow behavior of fluids and concept of complexation 4. Analyze the chemical stability tests of various drug products 5. Understand the physical properties of solutions, buffers, isotonicity, disperse systems and rheology. 6. Understand of physicochemical properties of drugs including solubility, distribution, adsorption, and stability. 7. Have basic knowledge of pharmaceutical suspensions and colloids. 8. Have basic understanding of the pharmaceutical applications of various physical 9.Principles such as lyophilization, aerosols, condensed systems, and phase diagram.

4		Pharmacology I	1. Students would have understood the pharmacological actions of different categories of drugs 2. They would have studied in detailed about mechanism of drug action at organ system/sub cellular/ macromolecular levels. 3. They would have understood the application of basic pharmacological knowledge in the prevention and treatment of various diseases. 4. They would have observed the effect of drugs on animals by simulated experiments 5. They would got an idea about correlation of pharmacology with other bio medical sciences. 6. They would have understood the signal transduction mechanism of various receptors

5		Pharmacognosy I	This course is one of the most advanced introductions in Herbal Medicines that is offered. Will learn and get experience about: 1. Herbs, and their Science. 2. Classification of Medicinal Plants, Phytochemistry, Carbohydrates, Lipids, 3. Terpenes, Polyphenols, Alkaloids, Pharmacology, Toxicity, Formulations and Preparations of HerbalMedicines. 4. How herbs influence our physiology and can be helpful against several disorders. 5. Relationsbetween Phyto-therapy and the Elderly, Phytotherapy and Children, Understanding Herbal Action, and Understanding the MateriaMedica. 6. The recognition of medicinal plants, identification of adulteration andContamination. 7. Ethnobotany&Ethnopharmacology in drug discovery process. 8. 8. DNA Finger printing.

Sl. No.	Name of the Program	Name of the Course	Course Outcome
1	B.Pharm 5th sem	Medicinal chemistry II	1. Helps in correlating between pharmacology of a disease and its mitigation or cure. 2. To write the chemical synthesis of some drugs. 3. To know the structural activity relationship of different class of drugs. 4. Knowledge about the mechanism pathways of different class of medicinal compounds. 5. To acquire knowledge about the chemotherapy for cancer. 6. To understand the chemistry of drugs with respect to their pharmacological activity.

2		Formulative pharmacy	1. After successful completion of the course student will be able to understand the various drug delivery system and its mechanisms. 2. Students will learn advanced drug delivery system early stage. 3. Developing a preparation of the drug which is both stable and acceptable to the patient. 4. They know very well about orally administered drugs, injectables, aerosol and semisolid preparations with standard protocols. 5. Formulated drugs are stored in a suitable container closure system for extended periods of time. 6. Also they know the stability study and its standard evaluation procedure for better storage conditions.
3		Pharmacology II	1. Students would have understood the mechanism of drug action and its relevance in the treatment of different diseases 2. They would be trained with isolation of different organs/tissues from the laboratory animals by simulated experiments 3. They would have observed the various receptor actions using isolated tissue preparation 4. Students would appreciate the correlation of pharmacology with related medical sciences 5. They would have understood the cell communication mechanism 6. They would appreciate the newer targets of several disease conditions for treatment.

4		Pharmacognosy II	This course is one of the most advanced introductions in Herbal Medicines that is offered. Will learn and get experience about 1. Herbs, and their Science. 2. Classification of Medicinal Plants, Phytochemistry, Carbohydrates, Lipids, 3. Terpenes, Polyphenols, Alkaloids, Pharmacology, Toxicity, Formulations and Preparations of HerbalMedicines. 4. How herbs influence our physiology and can be helpful against several disorders. 5. RelationsbetweenPhyto-therapy and the Elderly, Phytotherapy and Children, Understanding Herbal Action, and Understanding the MateriaMedica. 6. The recognition of medicinal plants, identification of adulteration and Contamination. 7. Ethnobotany&Ethnopharmacology in drug discovery process. 8. DNA Finger printing.
5		Pharmaceutical biotechnology	1. 1 .Students will understand the various techniques used in modern biotechnology. 2. Students can design research strategy with step-by-step instructions to address a research problem 3. Students can able to provide examples of current applications of biotechnology and advances in the different areas like medical, microbial, environmental, bioremediation, agricultural, plant, animal, and

			forensic 4. Students can explain the concept and application of monoclonal antibody technology 5. Students can demonstrate and Provide examples on how to use microbes and mammalian cells for the production of pharmaceutical products 6. Students can able to explain the general principles of generating transgenic plants, animals and microbes

Sl. No.	Name of the Program	Name of the Course	Course Outcome

1	B.Pharm 6th sem	Medicinal chemistry III	1. To develop an understanding of the physico-chemical properties of drugs. 2. To understand how current drugs were developed by using pharmacophore modeling and docking technique. 3. To acquire knowledge in the chemotherapy for cancer and microbial diseases and different anti-viral agents. 4. To acquire knowledge about the mechanism pathways of different class of medicinal compounds. 5. To have been introduced to a variety of drug classes and some pharmacological properties. 6. To acquire knowledge on thrust areas fir further research.
2		Pharmacology III	1. Students would have studied elaborately on mechanism of drug action and its relevance in the treatment of different infectious diseases 2. They comprehended the principles of toxicology and treatment of various poisonings and 3. They came across the methods of toxicity studies 4. They studied about symptoms of several poisonings 5. They studied about treatment of several poisonings 6. Students understood the toxicity profile of each drugs

3		Herbal drug	1. The aim of the degree

		technology	course is to provide graduates with a good knowledge of thebasic and applied know-how and professional skills in Herbal drugScienceand Technology and the necessary training for admission to the postgraduate courses in this field. 2. They will acquire operative know-how and be able to carry out technical and 3. management tasks and professional activities in the areas of transformation of 4. medicinal herbs, management of the quality of the processes, marketing of 5. medicinal plants and derivatives for use in herbal, food and cosmetic products, 6. Guaranteeing conformity with the national and EU laws in force. 7. At the end of the course, the graduate will have acquired the following know-howand skills: · The recognition, collection and preservation of medicinal plants. · Analyses and dosage of active ingredients. · The biological effects of medicinal plants. · The toxicological aspects of active ingredients and finished products. · The study, design, management, control and conduction of the processing systems of medicinal plants and derivatives. · Management of quality of medicinal plant products and derivatives. · The possible application of medicinal plants and derivatives as health Products, including the food

			and cosmetics sectors. · Technical-scientific consulting in the specialized press for the herbalsector, the promotion of information in the medicinal plants and derivatives sector.
4		Biopharmaceutics and pharmacokinetics	After successful completion of the course student will be able to: 1. Understand the concept of ADME of drug in human body. 2. Determine the various pharmacokinetic parameters from either plasma concentration or urinary excretion data for drug 3. Apply the various regulations related to developing BA-BE study protocol for the new drug molecule.
5		Pharmaceutical quality assurance	1. The students understand the importance of quality in pharmaceutical products. 2. The students is explored into importance of Good practices such as GMP,GLPect. 3. The factors affecting the quality of pharmaceutical is explored. 4. He understands the regulatory aspects of pharmaceutical taught to the student. 5. The process involved in manufacturing of pharmaceuticals different section/department and activity is learnt. 6. The various documentation process is highlighted to the student.

Sl. No.	Name of the Program	Name of the Course	Course Outcome
1	B.Pharm4th year	Medicinal chemistry II	1. Helps in correlating between pharmacology of a disease and its mitigation or cure. 2. To write the chemical synthesis of some drugs. 3. To know the structural activity relationship of different class of drugs. 4. Knowledge about the mechanism pathways of different class of medicinal compounds. 5. To acquire knowledge about the chemotherapy for cancer. 6. To understand the chemistry of drugs with respect to their pharmacological activity.

2		Pharmacology II	1. Students understood the mechanism of drug action and its relevance in the treatment of different diseases 2. They comprehended the principles of toxicology and treatment of various poisonings. 3. They are able to locate and isolate different organs/tissues from the laboratory animals used in pharmacological experiments 4. They studied in detailed about various receptor actions using isolated tissue preparation 5. They understood the correlation of pharmacology

			with related medical sciences 6. Students were studied about the various methods of toxicity studies

3		Advanced Pharmacognosy	This course is one of the oldest specialisations in Herbal Medicines that is offered. Will learn and get experience about 1. Definition and objectives of Pharmacognosy. Information about the use of Medicinal plants. Plant as a source of drugs of pharmaceutical interest. 2. Extraction procedures for natural compounds, their differences and their applications the main pathways of aromatic amino acids, alkaloids, phenylpropanoids 3. Biogenesis and biological activity of natural products coming from mevalonate: terpenoids and steroids; 4. The biological activities of several compounds belonging to polyketides, terpenoids and steroids; and their traditional use and application in pharmaceutical and/or nutraceutical field. 5. Indian Traditional systems of Medicine. 6. Use of microscopic methods in the identification of natural drugs and herbal products, with emphasis on the use of light and scanning electron microscopes. 7. Principles and concepts in plant taxonomy, which include identification, classification, nomenclature, discussion of major recent/modern systems, family characterization and field work methods. 8. Marine natural product chemistry. Include examples

			of marine antineoplastic agents, marine toxins, and other pharmaceutically relevant marine natural products from various marine organisms. 9. Introduction to Herbal cosmetics and Nutrients.
4		Formulative and Industrial pharmacy	1. know the various pharmaceutical dosage forms and their manufacturing techniques. 2. know various considerations in development of pharmaceutical dosage forms 3. formulate solid, liquid and semisolid dosage forms and evaluate them for their quality.
5		Instrumental method of analysis	The student will learn to 1. The basic theoretical knowledge of the instrumentation techniques available. 2. Theoretically understand the aspects of separation for multi components. 3. Practical skills for the analysis of drugs and excipients using various instrumentation techniques. 4. To make accurate analysis and report the results in defined formats. 5. To learn documentation and express the observations with clarity. 6. To understand the professional and safety responsibilities for working in the analysis laboratory.

6		Pharmacy practice	1. Students will demonstrate knowledge of and ability to use principles of therapeutics, quality improvement, communication, economics, health behavior, social and administrative aspects,

			health policy and legal issues in the practice of pharmacy. 2. Students will use knowledge of drug distribution methods in hospital and apply it in the practice of pharmacy. 3. Students will effectively apply principles of drug store management and inventory control to medication use. 4. Students will provide patient-centered care to diverse patients using the best available evidence and monitor drug therapy of patient through medication chart review, obtain medication history interview and counsel the patients, identify drug related problems. 5. Students will engage in innovative activities by making use of the knowledge of clinical trials 6. Students will exhibit professional ethics by producing safe and appropriate medication use throughout society

Course Outcomes – M.Pharm

1. Pharmaceutics

Sl. No.	Name of the Program	Name of the Course	Course Outcome
1	M. Pharm.	Drug Delivery Systems	· Drug delivery system give a detailed information transporting a pharmaceutical compound in the body as needed to safely achieve its desired therapeutic effect. · Also it refers to approaches, formulations, technologies, and systems for transporting a pharmaceutical compound in the body as needed to safely achieve its desired therapeutic effect with suitable drug delivery. · Vaccine delivery and different mode of application approach for clinical use. · They know the different types of Drug carrier used in the process of drug delivery which serves to improve the selectivity, effectiveness, and/or safety of drug administration. · The students will know the latest drug delivery knowledge and think to develop new formulation based on the individual Requirement. · Recent developments in protein and peptide for parenteral delivery approaches will give new dimension of drug deliver for antibiotics, insulin, etc.
2		Modern Pharmaceutics	· Basics of medical devices and IVDs, process of development, ethical and

			quality considerations harmonization initiatives for approval and marketing of medical devices and IVDs regulatory approval process for medical devices and IVDs in India, US, Canada, EU, Japan and ASEAN clinical evaluation and investigation of medical devices and IVDs
3		Regulatory Affairs	· The Concepts of innovator and generic drugs, drug development process · The Regulatory guidance's and guidelines for filing and approval process · Preparation of Dossiers and their submission to regulatory agencies in different countries · Post approval regulatory requirements for actives and drug products · Submission of global documents in CTD/ eCTD formats · Clinical trials requirements for approvals for conducting clinical trials · Pharmacovigilence and process of monitoring in clinical trials
4		Molecular Pharmaceutics (Nano Tech and targeted DDS)	· The various approaches for development of novel drug delivery systems. · The criteria for selection of drugs and polymers for the development of NTDS · The formulation and evaluation of novel drug delivery systems.

5		Advanced Biopharmaceutics and pharmacokinetics	· The basic concepts in biopharmaceutics and pharmacokinetics. · The use raw data and derive the pharmacokinetic models

			and parameters the best describe the process of drug absorption, distribution, metabolism and elimination. · The critical evaluation of biopharmaceutic studies involving drug product equivalency. · The design and evaluation of dosage regimens of the drugs using pharmacokinetic and biopharmaceutic parameters. · The potential clinical pharmacokinetic problems and application of basics of pharmacokinetic
6		Computer Aided drug delivery System	· History of Computers in Pharmaceutical Research and Development · Computational Modeling of Drug Disposition · Computers in Preclinical Development · Optimization Techniques in Pharmaceutical Formulation · Computers in Market Analysis · Computers in Clinical Development · Artificial Intelligence (AI) and Robotics · Computational fluid dynamics(CFD)

7		Cosmetics and Cosmeceuticals	· Key ingredients used in cosmetics and cosmeceuticals. · Key building blocks for various formulations. · Various key ingredients and basic science to develop cosmetics and · cosmeceuticals · Scientific knowledge to develop cosmetics and with desired Safety, stability, and efficacy.

2016

THE MASTER OF PHARMACY (M. PHARM.)

COURSE REGULATION 2014

(BASED ON NOTIFICATION IN THE GAZETTE OF INDIA NO. 362, DATED DECEMBER 11, 2014)

SCHEME AND SYLLABUS

PHARMACY COUNCIL OF INDIA
Combined Council's Building, Kotla Road,
Aiwan-E-Ghalib Marg, New Delhi-110 002.
Website : www.pci.nic.

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PHARMACY COUNCIL OF INDIA

NOTIFICATION

New Delhi, the 10th December, 2014

The Master of Pharmacy (M.Pharm) Course Regulations, 2014

No. 14-136/ 2014-PCI.—In exercise of the powers conferred by Sections 10 and 18 of the Pharmacy Act, 1948 (8 of 1948), the Pharmacy Council of India, with the approval of the Central Government hereby makes the following regulations; namely–

CHAPTER –I:REGULATIONS

1. Short Title and Commencement

These regulations shall be called as "The Revised Regulations for the Master of Pharmacy (M. Pharm.)Degree Program - Credit Based Semester System (CBSS) of the Pharmacy Council of India, New Delhi". They shall come into effect from the Academic Year 2016-17. The regulations framed are subject to modifications from time to time by the authorities of the university.

2. Minimum qualification for admission

A Pass in the following examinations

a) B. Pharm Degree examination of an Indian university established by law in India from an institution approved by Pharmacy Council of India and has scored not less than 55 % of the maximum marks (aggregate of 4 years of B.Pharm.)

b) Every student, selected for admission to post graduate pharmacy program in any PCI approved institution should have obtained registration with the State Pharmacy Council or should obtain the same within one month from the date of his/her admission, failing which the admission of the candidate shall be cancelled.

Note: It is mandatory to submit a migration certificate obtained from the respective university where the candidate had passed his/her qualifying degree (B.Pharm.)

3. Duration of the program

The program of study for M.Pharm. shall extend over a period of four semesters (two academic years). The curricula and syllabi for the program shall be prescribed from time to time by Phamacy Council of India, New Delhi.

4. Medium of instruction and examinations

Medium of instruction and examination shall be in English.

5. Working days in each semester

Each semestershall consist of not less than 100 working days. The odd semesters shall be conducted from the month of June/July to November/December and the even semesters shall be conducted from the month of December/January to May/June in every calendar year.

6. Attendance and progress

A candidate is required to put in at least 80% attendance in individual courses considering theory and practical separately. The candidate shall complete the prescribed course satisfactorily to be eligible to appear for the respective examinations.

7. Program/Course credit structure

As per the philosophy of Credit Based Semester System, certain quantum of academic work viz. theory classes, practical classes, seminars, assignments, etc. are measured in terms of credits. On satisfactory completion of the courses, a candidate earns credits. The amount of credit associated with a course is dependent upon the number of hours of instruction per week in that course. Similarly the credit associated with any of the other academic, co/extra-curricular activities is dependent upon the quantum of work expected to be put in for each of these activities per week/per activity.

7.1. Credit assignment

7.1.1. Theory and Laboratory courses

Courses are broadly classified as Theory and Practical. Theory courses consist of lecture (L) and Practical (P) courses consist of hours spent in the laboratory. Credits (C) for a course is dependent on the number of hours of instruction per week in that course, and is obtained by using a multiplier of one (1) for lecture and a multiplier of half (1/2) for practical (laboratory) hours.Thus, for example, a theory course having four lectures per week throughout the semester carries a credit of 4. Similarly, a practical having four laboratory hours per week throughout semester carries a credit of 2.

The contact hours of seminars, assignments and research work shall be treated as that of practical courses for the purpose of calculating credits. i.e., the contact hours shall be multiplied by 1/2. Similarly, the contact hours of journal club, research work presentations and discussions with the supervisor shall be considered as theory course and multiplied by 1.

7.2. Minimum credit requirements

The minimum credit points required for the award of M. Pharm. degree is 95. However based on the credit points earned by the students under the head of co-curricular activities, a student shall earn a maximum of 100 credit points. These credits are divided into Theory courses, Practical, Seminars, Assignments,Research work, Discussions with the supervisor, Journal club and Co-Curricular activities over the duration of four semesters. The credits

are distributed semester-wise as shown in Table 14. Courses generally progress in sequence, building competencies and their positioning indicates certain academic maturity on the part of the learners. Learners are expected to follow the semester-wise schedule of courses given in the syllabus.

8. Academic work

A regular record of attendance both in Theory, Practical, Seminar, Assignment, Journal club, Discussion with the supervisor, Research work presentation and Dissertation shall be maintained by the department / teaching staff of respective courses.

9. Course of study

The specializations in M.Pharm program is given in Table 1.

Table – 1: List of M.Pharm. Specializations and their Code

S. No.	Specialization	Code
1.	Pharmaceutics	MPH
2.	Industrial Pharmacy	MIP
3.	Pharmaceutical Chemistry	MPC
4.	Pharmaceutical Analysis	MPA
5.	Pharmaceutical Quality Assurance	MQA
6.	Pharmaceutical Regulatory Affairs	MRA
7.	Pharmaceutical Biotechnology	MPB
8.	Pharmacy Practice	MPP
9.	Pharmacology	MPL
10.	Pharmacognosy	MPG

The course of study for M.Pharm specializations shall include Semester wise Theory & Practical as given in Table – 2 to 11. The number of hours to be devoted to each theory and practical course in any semester shall not be less than that shown in Table – 2 to 11.

Table – 2: Course of study for M. Pharm. (Pharmaceutics)

Course Code	Course	Credit Hours	Credit Points	Hrs./wk	Marks
Semester I					
MPH101T	Modern Pharmaceutical Analytical Techniques	4	4	4	100
MPH102T	Drug Delivery System	4	4	4	100
MPH103T	Modern Pharmaceutics	4	4	4	100
MPH104T	Regulatory Affair	4	4	4	100
MPH105P	Pharmaceutics Practical I	12	6	12	150
-	Seminar/Assignment	7	4	7	100
Total		35	26	35	650
Semester II					
MPH201T	Molecular Pharmaceutics (Nano Tech and Targeted DDS)	4	4	4	100
MPH202T	Advanced Biopharmaceutics & Pharmacokinetics	4	4	4	100
MPH203T	Computer Aided Drug Delivery System	4	4	4	100
MPH204T	Cosmetic and Cosmeceuticals	4	4	4	100
MPH205P	Pharmaceutics Practical II	12	6	12	150
-	Seminar/Assignment	7	4	7	100
	Total	35	26	35	650

Table – 3: Course of study for M. Pharm. (Industrial Pharmacy)

Course Code	Course	Credit Hours	Credit Points	Hrs./wk	Marks
Semester I					
MIP101T	Modern Pharmaceutical Analytical Techniques	4	4	4	100
MIP102T	Pharmaceutical Formulation Development	4	4	4	100
MIP103T	Novel drug delivery systems	4	4	4	100
MIP104T	Intellectual Property Rights	4	4	4	100
MIP105P	Industrial Pharmacy Practical I	12	6	12	150
-	Seminar/Assignment	7	4	7	100
Total		35	26	35	650
Semester II					
MIP201T	Advanced Biopharmaceutics and Pharmacokinetics	4	4	4	100
MIP202T	Scale up and Technology Transfer	4	4	4	100
MIP203T	Pharmaceutical Production Technology	4	4	4	100
MIP204T	Entrepreneurship Management	4	4	4	100
MIP205P	Industrial Pharmacy Practical II	12	6	12	150
-	Seminar/Assignment	7	4	7	100
	Total	35	26	35	650

Table – 4: Course of study for M. Pharm. (Pharmaceutical Chemistry)

Course Code	Course	Credit Hours	Credit Points	Hrs./wk	Marks
Semester I					
MPC101T	Modern Pharmaceutical Analytical Techniques	4	4	4	100
MPC1012T	Advanced Organic Chemistry -I	4	4	4	100
MPC103T	Advanced Medicinal chemistry	4	4	4	100
MPC104T	Chemistry of Natural Products	4	4	4	100
MPC105P	Pharmaceutical Chemistry Practical I	12	6	12	150
-	Seminar/Assignment	7	4	7	100
	Total	35	26	35	650
Semester II					
MPC201T	Advanced Spectral Analysis	4	4	4	100
MPC202T	Advanced Organic Chemistry -II	4	4	4	100
MPC203T	Computer Aided Drug Design	4	4	4	100
MPC204T	Pharmaceutical Process Chemistry	4	4	4	100
MPC205P	Pharmaceutical Chemistry Practical II	12	6	12	150
-	Seminar/Assignment	7	4	7	100
	Total	35	26	35	650

Table – 5: Course of study for M. Pharm. (Pharmaceutical Analysis)

Course Code	Course	Credit Hours	Credit Points	Hrs./wk	Marks
Semester I					
MPA101T	Modern Pharmaceutical Analytical Techniques	4	4	4	100
MPA102T	Advanced Pharmaceutical Analysis	4	4	4	100
MPA103T	Pharmaceutical Validation	4	4	4	100
MPA104T	Food Analysis	4	4	4	100
MPA105P	Pharmaceutical Analysis Practical I	12	6	12	150
-	Seminar/Assignment	7	4	7	100
Total		35	26	35	650
Semester II					
MPA201T	Advanced Instrumental Analysis	4	4	4	100
MPA202T	Modern Bio-Analytical Techniques	4	4	4	100
MPA203T	Quality Control and Quality Assurance	4	4	4	100
MPA204T	Herbal and Cosmetic Analysis	4	4	4	100
MPA205P	Pharmaceutical Analysis Practical II	12	6	12	150
-	Seminar/Assignment	7	4	7	100
	Total	35	26	35	650

Table – 6: Course of study for M. Pharm. (Pharmaceutical Quality Assurance)

Course Code	Course	Credit Hours	Credit Points	Hrs./wk	Marks
Semester I					
MQA101T	Modern Pharmaceutical Analytical Techniques	4	4	4	100
MQA102T	Quality Management System	4	4	4	100
MQA103T	Quality Control and Quality Assurance	4	4	4	100
MQA104T	Product Development and Technology Transfer	4	4	4	100
MQA105P	Pharmaceutical Quality Assurance Practical I	12	6	12	150
-	Seminar/Assignment	7	4	7	100
Total		35	26	35	650
Semester II					
MQA201T	Hazards and Safety Management	4	4	4	100
MQA202T	Pharmaceutical Validation	4	4	4	100
MQA203T	Audits and Regulatory Compliance	4	4	4	100
MQA204T	Pharmaceutical Manufacturing Technology	4	4	4	100
MQA205P	Pharmaceutical Quality Assurance Practical II	12	6	12	150
-	Seminar/Assignment	7	4	7	100
	Total	35	26	35	650

Table – 7: Course of study for M. Pharm. (Regulatory Affairs)

Course Code	Course	Credit Hours	Credit Points	Hrs./ wk	Marks
Semester I					
MRA 101T	Good Regulatory Practices	4	4	4	100
MRA 102T	Documentation and Regulatory Writing	4	4	4	100
MRA 103T	Clinical Research Regulations	4	4	4	100
MRA 104T	Regulations and Legislation for Drugs & Cosmetics, Medical Devices, Biologicals & Herbals, and Food & Nutraceuticals In India and Intellectual Property Rights	4	4	4	100
MRA 105P	Regulatory Affairs Practical I	12	6	12	150
	Seminar/Assignment	7	4	7	100
	Total	35	26	35	650
Semester II					
MRA 201T	Regulatory Aspects of Drugs & Cosmetics	4	4	4	100
MRA 202T	Regulatory Aspects of Herbal & Biologicals	4	4	4	100
MRA 203T	Regulatory Aspects of Medical Devices	4	4	4	100
MRA 204T	Regulatory Aspects of Food & Nutraceuticals	4	4	4	100
MRA 205P	Regulatory Affairs Practical II	12	6	12	150
	Seminar/Assignment	7	4	7	100
	Total	35	26	35	650

Table – 8: Course of study for M. Pharm. (Pharmaceutical Biotechnology)

Course Code	Course	Credit Hours	Credit Points	Hrs./wk	Marks
Semester I					
MPB 101T	Modern Pharmaceutical Analytical Techniques	4	4	4	100
MPB 102T	Microbial And Cellular Biology	4	4	4	100
MPB 103T	Bioprocess Engineering and Technology	4	4	4	100
MPB 104T	Advanced Pharmaceutical Biotechnology	4	4	4	100
MPB 105P	Pharmaceutical Biotechnology Practical I	12	6	12	150
-	Seminar/Assignment	7	4	7	100
Total		35	26	35	650
Semester II					
MPB 201T	Proteins and protein Formulation	4	4	4	100
MPB 202T	Immunotechnology	4	4	4	100
MPB 203T	Bioinformatics and Computer Technology	4	4	4	100
MPB 204T	Biological Evaluation of Drug Therapy	4	4	4	100
MPB 205P	Pharmaceutical Biotechnology Practical II	12	6	12	150
-	Seminar/Assignment	7	4	7	100
	Total	35	26	35	650

Table – 9: Course of study for M. Pharm. (Pharmacy Practice)

Course Code	Course	Credit Hours	Credit Points	Hrs./wk	Marks
Semester I					
MPP 101T	Clinical Pharmacy Practice	4	4	4	100
MPP 102T	Pharmacotherapeutics-I	4	4	4	100
MPP 103T	Hospital & Community Pharmacy	4	4	4	100
MPP 104T	Clinical Research	4	4	4	100
MPP 105P	Pharmacy Practice Practical I	12	6	12	150
-	Seminar/Assignment	7	4	7	100
Total		35	26	35	650
Semester II					
MPP 201T	Principles of Quality Use of Medicines	4	4	4	100
MPP 102T	Pharmacotherapeutics II	4	4	4	100
MPP 203T	Clinical Pharmacokinetics and Therapeutic Drug Monitoring	4	4	4	100
MPP 204T	Pharmacoepidemiology & Pharmacoeconomics	4	4	4	100
MPP 205P	Pharmacy Practice Practical II	12	6	12	150
-	Seminar/Assignment	7	4	7	100
	Total	35	26	35	650

Table – 10: Course of study for (Pharmacology)

Course Code	Course	Credit Hours	Credit Points	Hrs./wk	Marks
Semester I					
MPL 101T	Modern Pharmaceutical Analytical Techniques	4	4	4	100
MPL 102T	Advanced Pharmacology-I	4	4	4	100
MPL 103T	Pharmacological and Toxicological Screening Methods-I	4	4	4	100
MPL 104T	Cellular and Molecular Pharmacology	4	4	4	100
MPL 105P	Pharmacology Practical I	12	6	12	150
-	Seminar/Assignment	7	4	7	100
Total		35	26	35	650
Semester II					
MPL 201T	Advanced Pharmacology II	4	4	4	100
MPL 202T	Pharmacological and Toxicological Screening Methods-II	4	4	4	100
MPL 203T	Principles of Drug Discovery	4	4	4	100
MPL 204T	Experimental Pharmacology practical- II	4	4	4	100
MPL 205P	Pharmacology Practical II	12	6	12	150
-	Seminar/Assignment	7	4	7	100
	Total	35	26	35	650

Table – 11: Course of study for M. Pharm. (Pharmacognosy)

Course Code	Course	Credit Hours	Credit Points	Hrs./wk	Marks
Semester I					
MPG101T	Modern Pharmaceutical Analytical Techniques	4	4	4	100
MPG102T	Advanced Pharmacognosy-1	4	4	4	100
MPG103T	Phytochemistry	4	4	4	100
MPG104T	Industrial Pharmacognostical Technology	4	4	4	100
MPG105P	Pharmacognosy Practical I	12	6	12	150
-	Seminar/Assignment	7	4	7	100
Total		35	26	35	650
Semester II					
MPG201T	Medicinal Plant biotechnology	4	4	4	100
MPG102T	Advanced Pharmacognosy-II	4	4	4	100
MPG203T	Indian system of medicine	4	4	4	100
MPG204T	Herbal cosmetics	4	4	4	100
MPG205P	Pharmacognosy Practical II	12	6	12	150
-	Seminar/Assignment	7	4	7	100
	Total	35	26	35	650

Table – 12: Course of study for M. Pharm. III Semester
(Common for All Specializations)

Course Code	Course	Credit Hours	Credit Points
MRM 301T	Research Methodology and Biostatistics*	4	4
-	Journal club	1	1
-	Discussion / Presentation (Proposal Presentation)	2	2
-	Research Work	28	14
Total		35	21

* Non University Exam

Table – 13: Course of study for M. Pharm. IV Semester
(Common for All Specializations)

Course Code	Course	Credit Hours	Credit Points
-	Journal Club	1	1
-	Research Work	31	16
-	Discussion/Final Presentation	3	3
Total		35	20

Table – 14: Semester wise credits distribution

Semester	Credit Points
I	26
II	26
III	21
IV	20
Co-curricular Activities (Attending Conference, Scientific Presentations and Other Scholarly Activities)	Minimum=02 Maximum=07*
Total Credit Points	Minimum=95 Maximum=100*

*Credit Points for Co-curricular Activities

Table – 15: Guidelines for Awarding Credit Points for Co-curricular Activities

Name of the Activity	Maximum Credit Points Eligible / Activity
Participation in National Level Seminar/Conference/Workshop/Symposium/ Training Programs (related to the specialization of the student)	01
Participation in international Level Seminar/Conference/Workshop/Symposium/ Training Programs (related to the specialization of the student)	02
Academic Award/Research Award from State Level/National Agencies	01
Academic Award/Research Award from International Agencies	02
Research / Review Publication in National Journals (Indexed in Scopus / Web of Science)	01
Research / Review Publication in International Journals (Indexed in Scopus / Web of Science)	02

Note: International Conference: Held Outside India

International Journal: The Editorial Board Outside India

*The credit points assigned for extracurricular and or co-curricular activities shall be given by the Principals of the colleges and the same shall be submitted to the University. The criteria to acquire this credit point shall be defined by the colleges from time to time.

10. Program Committee

1. The M. Pharm. programme shall have a Programme Committee constituted by the Head of the institution in consultation with all the Heads of the departments.

2. The composition of the Programme Committee shall be as follows:
A teacher at the cadre of Professor shall be the Chairperson; One Teacher from eachM.Pharm specialization and four student representatives (two from each academic year), nominated by the Head of the institution.

3. Duties of the Programme Committee:
   i. Periodically reviewing the progress of the classes.
   ii. Discussing the problems concerning curriculum, syllabus and the conduct of classes.
   iii. Discussing with the course teachers on the nature and scope of assessment for the course and the same shall be announced to the students at the beginning of respective semesters.

iv. Communicating its recommendation to the Head of the institution on academic matters.
v. The Programme Committee shall meet at least twice in a semester preferably at the end of each sessionalexam and before the end semester exam.

11. Examinations/Assessments

The schemes for internal assessment and end semester examinations are given in Table – 16.

11.1. End semester examinations

The End Semester Examinations for each theory and practical coursethrough semesters I to IVshall beconducted by the respective university except for the subject with asterix symbol (*) in table I and II for which examinations shall be conducted by the subject experts at college level and the marks/grades shall be submitted to the university.

Tables – 1616 : Schemes for internal assessments and end semester

(Pharmaceutics- MPH)

Course Code	Course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
SEMESTER I								
MPH 101T	Modern Pharmaceutical Analytical Techniques	10	15	1 Hr	25	75	3 Hrs	100
MPH 102T	Drug Delivery System	10	15	1 Hr	25	75	3 Hrs	100
MPH 103T	Modern Pharmaceutics	10	15	1 Hr	25	75	3 Hrs	100
MPH 104T	Regulatory Affair	10	15	1 Hr	25	75	3 Hrs	100
MPH 105P	Pharmaceutics Practical I	20	30	6 Hrs	50	100	6 Hrs	150
-	Seminar /Assignment	-	-	-	-	-	-	100
Total								650
SEMESTER II								
MPH 201T	Molecular Pharmaceutics(Nano Tech and Targeted DDS)	10	15	1 Hr	25	75	3 Hrs	100
MPH 202T	Advanced Biopharmaceutics & Pharmacokinetics	10	15	1 Hr	25	75	3 Hrs	100
MPH 203T	Computer Aided Drug Delivery System	10	15	1 Hr	25	75	3 Hrs	100
MPH	Cosmetic	10	15	1 Hr	25	75	3 Hrs	100

204T	and Cosmeceuticals							
MPH 205P	Pharmaceutics Practical I	20	30	6 Hrs	50	100	6 Hrs	150
-	Seminar /Assignment	-	-	-	-	-	-	100
Total								650

Tables – 1717 : Schemes for internal assessments and end semester
(Industrial Pharmacy- MIP)

Course Code	Course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total			
			Marks	Duration		Marks	Duration	
SEMESTER I								
MIP101T	Modern Pharmaceutical Analytical Techniques	10	15	1 Hr	25	75	3 Hrs	100
MIP102T	Pharmaceutical Formulation Development	10	15	1 Hr	25	75	3 Hrs	100
MIP103T	Novel drug delivery systems	10	15	1 Hr	25	75	3 Hrs	100
MIP104T	Intellectual Property Rights	10	15	1 Hr	25	75	3 Hrs	100
MIP105P	Industrial Pharmacy Practical I	20	30	6 Hrs	50	100	6 Hrs	150
-	Seminar /Assignment	-	-	-	-	-	-	100
Total								650
SEMESTER II								
MIP201T	Advanced Biopharmaceutics and Pharmacokinetics	10	15	1 Hr	25	75	3 Hrs	100
MIP202T	Scale up and Technology Transfer	10	15	1 Hr	25	75	3 Hrs	100
MIP203T	Pharmaceutical Production Technology	10	15	1 Hr	25	75	3 Hrs	100
MIP204T	Entrepreneurship Management	10	15	1 Hr	25	75	3 Hrs	100

MIP205P	Industrial Pharmacy Practical II	20	30	6 Hrs	50	100	6 Hrs	150
-	Seminar /Assignment	-	-	-	-	-	-	100
Total								650

(Pharmaceutical Chemistry-MPC)

Course Code	Course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
SEMESTER I								
MPC101T	Modern Pharmaceutical Analytical Techniques	10	15	1 Hr	25	75	3 Hrs	100
MPC102T	Advanced Organic Chemistry -I	10	15	1 Hr	25	75	3 Hrs	100
MPC103T	Advanced Medicinal chemistry	10	15	1 Hr	25	75	3 Hrs	100
MPC104T	Chemistry of Natural Products	10	15	1 Hr	25	75	3 Hrs	100
MPC105P	Pharmaceutical Chemistry Practical I	20	30	6 Hrs	50	100	6 Hrs	150
-	Seminar /Assignment	-	-	-	-	-	-	100
Total								650
SEMESTER II								
MPC201T	Advanced Spectral Analysis	10	15	1 Hr	25	75	3 Hrs	100
MPC202T	Advanced Organic Chemistry -II	10	15	1 Hr	25	75	3 Hrs	100
MPC203T	Computer Aided Drug Design	10	15	1 Hr	25	75	3 Hrs	100
MPC204T	Pharmaceutical Process Chemistry	10	15	1 Hr	25	75	3 Hrs	100
MPC205P	Pharmaceutic	20	30	6 Hrs	50	100	6	150

	al Chemistry Practical II						Hrs	
-	Seminar /Assignment	-	-	-	-	-	-	100
Total								650

Tables – 19: Schemes for internal assessments and end semester examinations (Pharmaceutical Analysis-MPA)

Course Code	Course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total			
			Marks	Duration		Marks	Duration	
SEMESTER I								
MPA101T	Modern Pharmaceutical Analysis	10	15	1 Hr	25	75	3 Hrs	100
MPA102T	Advanced Pharmaceutical Analysis	10	15	1 Hr	25	75	3 Hrs	100
MPA103T	Pharmaceutical Validation	10	15	1 Hr	25	75	3 Hrs	100
MPA104T	Food Analysis	10	15	1 Hr	25	75	3 Hrs	100
MPA105P	Pharmaceutical Analysis-I	20	30	6 Hrs	50	100	6 Hrs	150
-	Seminar /Assignment	-	-	-	-	-	-	100
Total								650
SEMESTER II								
MPA201T	Advanced Instrumental Analysis	10	15	1 Hr	25	75	3 Hrs	100
MPA202T	Modern Bio-Analytical Techniques	10	15	1 Hr	25	75	3 Hrs	100
MPA203T	Quality Control and Quality	10	15	1 Hr	25	75	3 Hrs	100

	Assurance							
MPA204T	Herbal and Cosmetic analysis	10	15	1 Hr	25	75	3 Hrs	100
MPA205P	Pharmaceutical Analysis-II	20	30	6 Hrs	50	100	6 Hrs	150
-	Seminar /Assignment	-	-	-	-	-	-	100
Total								650

Tables – 20: Schemes for internal assessments and end semester examinations (Pharmaceutical Quality Assurance-MQA)

Course Code	Course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total			
			Marks	Duration		Marks	Duration	
SEMESTER I								
MQA101T	Modern Pharmaceutical Analytical Techniques	10	15	1 Hr	25	75	3 Hrs	100
MQA102T	Quality Management System	10	15	1 Hr	25	75	3 Hrs	100
MQA103T	Quality Control and Quality Assurance	10	15	1 Hr	25	75	3 Hrs	100
MQA104T	Product Development and Technology Transfer	10	15	1 Hr	25	75	3 Hrs	100
MQA105P	Pharmaceutical Quality Assurance Practical I	20	30	6 Hrs	50	100	6 Hrs	150
-	Seminar /Assignment	-	-	-	-	-	-	100
Total								650
SEMESTER II								
MQA201T	Hazards and Safety Management	10	15	1 Hr	25	75	3 Hrs	100
MQA202T	Pharmaceutical Validation	10	15	1 Hr	25	75	3 Hrs	100
MQA203T	Audits and Regulatory Compliance	10	15	1 Hr	25	75	3 Hrs	100
MQA204T	Pharmaceutical Manufacturing Technology	10	15	1 Hr	25	75	3 Hrs	100
MQA205P	Pharmaceutical Quality Assurance Practical II	20	30	6 Hrs	50	100	6 Hrs	150
-	Seminar /Assignment	-	-	-	-	-	-	100
Total								650

Tables – 21: Schemes for internal assessments and end semester examinations (Pharmaceutical Regulatory Affairs-MRA)

Course Code	Course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total			
			Marks	Duration		Marks	Duration	
SEMESTER I								
MRA101T	Good Pharmaceutical Practices	10	15	1 Hr	25	75	3 Hrs	100
MRA102T	Documentation and Regulatory Writing	10	15	1 Hr	25	75	3 Hrs	100
MRA103T	Clinical Research Regulations	10	15	1 Hr	25	75	3 Hrs	100
MRA104T	Regulations and Legislation for Drugs & Cosmetics, Medical Devices, Biologicals & Herbals, and Food & Nutraceuticals In India and Intellectual Property Rights	10	15	1 Hr	25	75	3 Hrs	100
MRA105T	Pharmaceutical Regulatory Affairs Practical I	20	30	6 Hrs	50	100	6 Hrs	150
-	Seminar /Assignment	-	-	-	-	-	-	100
Total								650
SEMESTER II								
MRA201T	Regulatory Aspects of Drugs & Cosmetics	10	15	1 Hr	25	75	3 Hrs	100

MRA202T	Regulatory Aspects of Herbal & Biologicals	10	15	1 Hr	25	75	3 Hrs	100
MRA203T	Regulatory Aspects of Medical Devices	10	15	1 Hr	25	75	3 Hrs	100
MRA204T	Regulatory Aspects of Food & Nutraceuticals	10	15	1 Hr	25	75	3 Hrs	100
MRA205P	Pharmaceutical Regulatory Affairs Practical II	20	30	6 Hrs	50	100	6 Hrs	150
-	Seminar /Assignment	-	-	-	-	-	-	100
Total								650

Tables – 22: Schemes for internal assessments and end semester examinations (Pharmaceutical Biotechnology-MPB)

Course Code	Course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
SEMESTER I								
MPB101T	Modern Pharmaceutical Analytical Techniques	10	15	1 Hr	25	75	3 Hrs	100
MPB102T	Microbial And Cellular Biology	10	15	1 Hr	25	75	3 Hrs	100
MPB103T	Bioprocess Engineering and Technology	10	15	1 Hr	25	75	3 Hrs	100
MPB104T	Advanced Pharmaceutical Biotechnology	10	15	1 Hr	25	75	3 Hrs	100
MPB105P	Pharmaceutical Biotechnology Practical I	20	30	6 Hrs	50	100	6 Hrs	150
-	Seminar /Assignment	-	-	-	-	-	-	100
Total								650
SEMESTER II								
MPB201T	Proteins and protein Formulation	10	15	1 Hr	25	75	3 Hrs	100
MPB202T	Immunotechnology	10	15	1 Hr	25	75	3 Hrs	100
MPB203T	Bioinformatics and Computer Technology	10	15	1 Hr	25	75	3 Hrs	100
MPB204T	Biological Evaluation of Drug Therapy	10	15	1 Hr	25	75	3 Hrs	100
MPB205P	Pharmaceutical Biotechnology Practical II	20	30	6 Hrs	50	100	6 Hrs	150
-	Seminar /Assignment	-	-	-	-	-	-	100
Total								650

Tables – 23: Schemes for internal assessments and end semester examinations (Pharmacy Practice-MPP)

Course Code	Course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
SEMESTER I								
MPP101T	Clinical Pharmacy Practice	10	15	1 Hr	25	75	3 Hrs	100
MPP102T	Pharmacotherapeutics-I	10	15	1 Hr	25	75	3 Hrs	100
MPP103T	Hospital & Community Pharmacy	10	15	1 Hr	25	75	3 Hrs	100
MPP104T	Clinical Research	10	15	1 Hr	25	75	3 Hrs	100
MPP105P	Pharmacy Practice Practical I	20	30	6 Hrs	50	100	6 Hrs	150
-	Seminar /Assignment	-	-	-	-	-	-	100
Total								650
SEMESTER II								
MPP201T	Principles of Quality Use of Medicines	10	15	1 Hr	25	75	3 Hrs	100
MPP102T	Pharmacotherapeutics II	10	15	1 Hr	25	75	3 Hrs	100
MPP203T	Clinical Pharmacokinetics and Therapeutic Drug Monitoring	10	15	1 Hr	25	75	3 Hrs	100
MPP204T	Pharmacoepidemiology & Pharmacoeconomics	10	15	1 Hr	25	75	3 Hrs	100
MPP205P	Pharmacy Practice Practical II	20	30	6 Hrs	50	100	6 Hrs	150
-	Seminar /Assignment	-	-	-	-	-	-	100
Total								650

Tables – 24: Schemes for internal assessments and end semester examinations (Pharmacology-MPL)

Course Code	Course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
SEMESTER I								
MPL101T	Modern Pharmaceutical Analytical Techniques	10	15	1 Hr	25	75	3 Hrs	100
MPL102T	Advanced Pharmacology-I	10	15	1 Hr	25	75	3 Hrs	100
MPL103T	Pharmacological and Toxicological Screening Methods-I	10	15	1 Hr	25	75	3 Hrs	100
MPL104T	Cellular and Molecular Pharmacology	10	15	1 Hr	25	75	3 Hrs	100
MPL105P	Experimental Pharmacology - I	20	30	6 Hrs	50	100	6 Hrs	150
-	Seminar /Assignment	-	-	-	-	-	-	100
Total								650
SEMESTER II								
MPL201T	Advanced Pharmacology II	10	15	1 Hr	25	75	3 Hrs	100
MPL102T	Pharmacological and Toxicological Screening Methods-II	10	15	1 Hr	25	75	3 Hrs	100
MPL203T	Principles of Drug Discovery	10	15	1 Hr	25	75	3 Hrs	100
MPL204T	Clinical research and pharmacovigilance	10	15	1 Hr	25	75	3 Hrs	100
MPL205P	Experimental Pharmacology - II	20	30	6 Hrs	50	100	6 Hrs	150
-	Seminar /Assignment	-	-	-	-	-	-	100
Total								650

Tables – 25: Schemes for internal assessments and end semester examinations (Pharmacognosy-MPG)

Course Code	Course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
SEMESTER I								
MPG101T	Modern Pharmaceutical Analytical Techniques	10	15	1 Hr	25	75	3 Hrs	100
MPG102T	Advanced Pharmacognosy-1	10	15	1 Hr	25	75	3 Hrs	100
MPG103T	Phytochemistry	10	15	1 Hr	25	75	3 Hrs	100
MPG104T	Industrial Pharmacognostical Technology	10	15	1 Hr	25	75	3 Hrs	100
MPG105P	Pharmacognosy Practical I	20	30	6 Hrs	50	100	6 Hrs	150
-	Seminar /Assignment	-	-	-	-	-	-	100
Total								650
SEMESTER II								
MPG201T	Medicinal Plant biotechnology	10	15	1 Hr	25	75	3 Hrs	100
MPG102T	Advanced Pharmacognosy-II	10	15	1 Hr	25	75	3 Hrs	100
MPG203T	Indian system of medicine	10	15	1 Hr	25	75	3 Hrs	100
MPG204T	Herbal cosmetics	10	15	1 Hr	25	75	3 Hrs	100
MPG205P	Pharmacognosy Practical II	20	30	6 Hrs	50	100	6 Hrs	150
-	Seminar /Assignment	-	-	-	-	-	-	100
Total								650

Tables – 26: Schemes for internal assessments and end semester examinations (Semester III& IV)

Course Code	Course	Internal Assessment				End Semester Exams		Total Marks
		Continuous Mode	Sessional Exams		Total	Marks	Duration	
			Marks	Duration				
SEMESTER III								
MRM301T	Research Methodology and Biostatistics*	10	15	1 Hr	25	75	3 Hrs	100
-	Journal club	-	-	-	25	-	-	25
-	Discussion / Presentation (Proposal Presentation)	-	-	-	50	-	-	50
-	Research work*	-	-	-	-	350	1 Hr	350
Total								525
SEMESTER IV								
-	Journal club	-	-	-	25	-	-	25
-	Discussion / Presentation (Proposal Presentation)	-	-	-	75	-	-	75
-	Research work and Colloquium	-	-	-	-	400	1 Hr	400
Total								500

*Non University Examination

11.2. Internal assessment: Continuous mode

The marks allocated for Continuous mode of Internal Assessment shall be awarded as per the scheme given below.

Table – 27: Scheme for awarding internal assessment: Continuous mode

Theory	
Criteria	Maximum Marks
Attendance (Refer Table – 28)	8
Student – Teacher interaction	2
Total	10
Practical	
Attendance (Refer Table – 28	10
Based on Practical Records, Regular viva voce, etc.	10
Total	20

Table – 28: Guidelines for the allotment of marks for attendance

Percentage of Attendance	Theory	Practical
95 – 100	8	10
90 – 94	6	7.5
85 – 89	4	5
80 – 84	2	2.5
Less than 80	0	0

11.2.1. Sessional Exams

Two sessional exams shall be conducted for each theory / practical course as per the schedule fixed by the college(s). The scheme of question paper for theory and practical sessional examinations is given in the table. The average marks of two sessional exams shall be computed for internal assessment as per the requirements given in tables.

12. Promotion and award of grades

A student shall be declared PASS and eligible for getting grade in a course of M.Pharm.programme if he/she secures at least 50% marks in that particular courseincluding internal assessment.

13. Carry forward of marks

In case a student fails to secure the minimum 50% in any Theory or Practical course as specified in 12, then he/she shall reappear for the end semester examination of that course. However his/her marks of the Internal Assessment shall be carried over and he/she shall be entitled for grade obtained by him/her on passing.

14. Improvement of internal assessment

A student shall have the opportunity to improve his/her performance only once in the sessional exam component of the internal assessment. The re-conduct of the sessional exam shall be completed before the commencement of next end semester theory examinations.

15. Reexamination of end semester examinations

Reexamination of end semester examination shall be conducted as per the schedule given in table 29. The exact dates of examinations shall be notified from time to time.

Table – 29: Tentative schedule of end semester examinations

Semester	For Regular Candidates	For Failed Candidates
I and III	November / December	May / June
II and IV	May / June	November / December

16. Allowed to keep terms (ATKT):

No student shall be admitted to any examination unless he/she fulfills the norms given in 6. ATKT rules are applicable as follows:

A student shall be eligible to carry forward all the courses of I and IIsemesters till the III semester examinations. However, he/she shall not be eligible to attend the courses of IV semester until all the courses of I, II and III semesters are successfully completed.

A student shall be eligible to get his/her CGPA upon successful completion of the courses of I to IV semesters within the stipulated time period as per the norms.

Note: Grade AB should be considered as failed and treated as one head for deciding ATKT. Such rules are also applicable for those students who fail to register for examination(s) of any course in any semester.

17. Grading of performances

17.1. Letter grades and grade points allocations:

Based on the performances, each student shall be awarded a final letter grade at the end of the semester for each course.The letter grades and their corresponding grade points are given in Table – 30.

Table – 30: Letter grades and grade points equivalent to Percentage of marks and performances

Percentage of Marks Obtained	Letter Grade	Grade Point	Performance
90.00 – 100	O	10	Outstanding
80.00 – 89.99	A	9	Excellent
70.00 – 79.99	B	8	Good
60.00 – 69.99	C	7	Fair
50.00 – 59.99	D	6	Average
Less than 50	F	0	Fail
Absent	AB	0	Fail

A learner who remains absent for any end semester examination shall be assigned a letter grade of AB and a corresponding grade point of zero. He/she should reappear for the said evaluation/examination in due course.

18. The Semester grade point average (SGPA)

The performance of a student in a semester is indicated by a number called 'Semester Grade Point Average' (SGPA). The SGPA is the weighted average of the grade points obtainedin all the courses by the student during the semester. For example, if a student takes five courses (Theory/Practical) in a semester with credits C1, C2, C3 and C4 and the student's grade points in these courses are G1, G2, G3 and G4, respectively, and then students' SGPA is equal to:

$$SGPA = \frac{C_1G_1 + C_2G_2 + C_3G_3 + C_4G_4}{C_1 + C_2 + C_3 + C_4}$$

The SGPA is calculated to two decimal points. It should be noted that, the SGPA for any semester shall take into consideration the F and ABS grade awarded in that semester. For example if a learner has a F or ABS grade in course 4, theSGPA shall then be computed as:

$$SGPA = \frac{C_1G_1 + C_2G_2 + C_3G_3 + C_4 * ZERO}{C_1 + C_2 + C_3 + C_4}$$

19. Cumulative Grade Point Average (CGPA)

The CGPA is calculated with the SGPA of all the IV semesters to two decimal points and is indicated in final grade report card/final transcript showing the grades of all IV semesters and their courses. The CGPA shall reflect the failed statusin case of F grade(s), till the course(s) is/are passed. When the course(s) is/are passedby obtaining a pass grade on subsequent examination(s) theCGPA

shall only reflect the new grade and not the fail grades earned earlier.The CGPA is calculated as:

$$CGPA = \frac{C_1S_1 + C_2S_2 + C_3S_3 + C_4S_4}{C_1 + C_2 + C_3 + C_4}$$

where C_1, C_2, C_3,.... is the total number of credits for semester I,II,III,.... and S_1,S_2, S_3,....is the SGPA of semester I,II,III,.... .

20. Declaration of class

The class shall be awarded on the basis of CGPA as follows:

First Class with Distinction	= CGPA of. 7.50 and above
First Class	= CGPA of 6.00 to 7.49
Second Class	= CGPA of 5.00 to 5.99

21. Project work

All the students shall undertake a project under the supervision of a teacher in Semester III to IV and submit a report. 4 copies of the project report shall be submitted (typed & bound copy not less than 75 pages).

The internal and external examiner appointed by the University shall evaluate the project at the time of the Practical examinations of other semester(s). The projects shall be evaluated as per the criteria given below.

Evaluation of Dissertation Book:

Objective(s) of the work done	50 Marks
Methodology adopted	150 Marks
Results and Discussions	250 Marks
Conclusions and Outcomes	50 Marks
Total	500 Marks

Evaluation of Presentation:

Presentation of work	100 Marks
Communication skills	50 Marks
Question and answer skills	100 Marks
Total	250 Marks

22. Award of Ranks

Ranks and Medals shall be awarded on the basis of final CGPA. However, candidates who fail in one or more courses during the M.Pharm program shall not be eligible for award of ranks. Moreover, the candidates should have completed the M. Pharm program in minimum prescribed number of years, (two years) for the award of Ranks.

23. Award of degree

Candidates who fulfill the requirements mentioned above shall be eligible for award of degree during the ensuing convocation.

24. Duration for completion of the program of study

The duration for the completion of the program shall be fixed as double the actual duration of the program and the students have to pass within the said period, otherwise they have to get fresh Registration.

25. Revaluation I Retotaling of answer papers

There is no provision for revaluation of the answer papers in any examination. However, the candidates can apply for retotaling by paying prescribed fee.

26. Re-admission after break of study

Candidate who seeks re-admission to the program after break of study has to get the approval from the university by paying a condonation fee.

PHARMACEUTICS(MPH)

MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES (MPH 101T)

Scope

This subject deals with various advanced analytical instrumental techniques for identification, characterization and quantification of drugs. Instruments dealt are NMR, Mass spectrometer, IR, HPLC, GC etc.

Objectives

After completion of course student is able to know,

- Chemicals and Excipients
- The analysis of various drugs in single and combination dosage forms
- Theoretical and practical skills of the instruments

THEORY 60 HOURS

1. a. UV-Visible spectroscopy: Introduction, Theory, Laws, Instrumentation associated with UV-Visible spectroscopy, Choice of solvents and solvent effect and Applications of UV-Visible spectroscopy. 11 Hrs

   b. IR spectroscopy: Theory, Modes of Molecular vibrations, Sample handling, Instrumentation of Dispersive and Fourier - Transform IR Spectrometer, Factors affecting vibrational frequencies and Applications of IR spectroscopy

   c. Spectroflourimetry: Theory of Fluorescence, Factors affecting fluorescence, Quenchers, Instrumentation and Applications of fluorescence spectrophotometer.

   d. Flame emission spectroscopy and Atomic absorption spectroscopy: Principle, Instrumentation, Interferences and Applications.

2 NMR spectroscopy: Quantum numbers and their role in NMR, Principle, Instrumentation, Solvent requirement in NMR, Relaxation process, NMR signals in various compounds, Chemical shift, Factors influencing chemical shift, Spin-Spin coupling, Coupling constant, Nuclear magnetic double resonance, Brief outline of principles of FT-NMR and 13C NMR. Applications of NMR spectroscopy. 11 Hrs

3	Mass Spectroscopy: Principle, Theory, Instrumentation of Mass Spectroscopy, Different types of ionization like electron impact, chemical, field, FAB and MALDI, APCI, ESI, APPI Analyzers of Quadrupole and Time of Flight, Mass fragmentation and its rules, Meta stable ions, Isotopic peaks and Applications of Mass spectroscopy	11 Hrs
4	Chromatography: Principle, apparatus, instrumentation, chromatographic parameters, factors affecting resolution and applications of the following: a) Paper chromatography b) Thin Layer chromatography c) Ion exchange chromatography d) Column chromatography e) Gas chromatography f) High Performance Liquid chromatography g) Affinity chromatography	11 Hrs
5	a. Electrophoresis: Principle, Instrumentation, Working conditions, factors affecting separation and applications of the following: a) Paper electrophoresis b) Gel electrophoresis c) Capillary electrophoresis d) Zone electrophoresis e) Moving boundary electrophoresis f) Iso electric focusing b. X ray Crystallography: Production of X rays, Different X ray diffraction methods, Bragg's law, Rotating crystal technique, X ray powder technique, Types of crystals and applications of X-ray diffraction.	11 Hrs
6	Immunological assays : RIA (Radio immuno assay), ELISA, Bioluminescence assays.	5 Hrs

REFERENCES

1. Spectrometric Identification of Organic compounds - Robert M Silverstein, Sixth edition, John Wiley & Sons, 2004.
2. Principles of Instrumental Analysis - Doglas A Skoog, F. James Holler, Timothy A. Nieman, 5th edition, Eastern press, Bangalore, 1998.
3. Instrumental methods of analysis – Willards, 7th edition, CBS publishers.
4. Practical Pharmaceutical Chemistry – Beckett and Stenlake, Vol II, 4th edition, CBS Publishers, New Delhi, 1997.
5. Organic Spectroscopy - William Kemp, 3rd edition, ELBS, 1991.
6. Quantitative Analysis of Drugs in Pharmaceutical formulation - P D Sethi, 3rd Edition, CBS Publishers, New Delhi, 1997.
7. Pharmaceutical Analysis- Modern methods – Part B - J W Munson, Volume 11, Marcel Dekker Series

DRUG DELIVERY SYSTEMS
(MPH 102T)

SCOPE

This course is designed to impart knowledge on the area of advances in novel drug delivery systems.

OBJECTIVES

Upon completion of the course, student shall be able to understand

The various approaches for development of novel drug delivery systems.

The criteria for selection of drugs and polymers for the development of delivering system

The formulation and evaluation of Novel drug delivery systems..

THEORY 60 Hrs

1.	Sustained Release(SR) and Controlled Release (CR) formulations: Introduction & basic concepts, advantages/ disadvantages, factors influencing, Physicochemical & biological approaches for SR/CR formulation, Mechanism of Drug Delivery from SR/CR formulation. Polymers: introduction, definition, classification, properties and application Dosage Forms for Personalized Medicine: Introduction, Definition, Pharmacogenetics, Categories of Patients for Personalized Medicines: Customized drug delivery systems, Bioelectronic Medicines, 3D printing of pharmaceuticals, Telepharmacy.	10 Hrs
2	Rate Controlled Drug Delivery Systems: Principles & Fundamentals, Types, Activation; Modulated Drug Delivery Systems;Mechanically activated, pH activated, Enzyme activated, and Osmotic activated Drug Delivery Systems Feedback regulated Drug Delivery Systems; Principles & Fundamentals.	10 Hrs
3	Gastro-Retentive Drug Delivery Systems: Principle, concepts advantages and disadvantages, Modulation of GI transit time approaches to extend GI transit. Buccal Drug Delivery Systems: Principle of muco adhesion, advantages and disadvantages, Mechanism of drug permeation, Methods of formulation and its evaluations.	10 Hrs
4	Occular Drug Delivery Systems: Barriers of drug permeation, Methods to overcome barriers.	06 Hrs

5	Transdermal Drug Delivery Systems: Structure of skin and barriers, Penetration enhancers, Transdermal Drug Delivery Systems, Formulation and evaluation.	10 Hrs
6	Protein and Peptide Delivery: Barriers for protein delivery. Formulation and Evaluation of delivery systems of proteins and other macromolecules.	08 Hrs
7	Vaccine delivery systems: Vaccines, uptake of antigens, single shot vaccines, mucosal and transdermal delivery of vaccines.	06 Hrs

REFERENCES

1. Y W. Chien, Novel Drug Delivery Systems, 2nd edition, revised and expanded,
Marcel Dekker, Inc., New York, 1992.
2. Robinson, J. R., Lee V. H. L, Controlled Drug Delivery Systems, Marcel Dekker,Inc., New York, 1992.
3. Encyclopedia of controlled delivery, Editor- Edith Mathiowitz, Published by WileyInterscience Publication, John Wiley and Sons, Inc, New York! Chichester/Weinheim
4. N.K. Jain, Controlled and Novel Drug Delivery, CBS Publishers & Distributors, New Delhi, First edition 1997 (reprint in 2001).
5. S.P.Vyas and R.K.Khar, Controlled Drug Delivery - concepts and advances, Vallabh Prakashan, New Delhi, First edition 2002

JOURNALS

1. Indian Journal of Pharmaceutical Sciences (IPA)
2. Indian drugs (IDMA)
3. Journal of controlled release (Elsevier Sciences) desirable
4. Drug Development and Industrial Pharmacy (Marcel & Decker) desirable

MODERN PHARMACEUTICS
(MPH 103T)

Scope

Course designed to impart advanced knowledge and skills required to learn various aspects and concepts at pharmaceutical industries

Objectives

Upon completion of the course, student shall be able to understand

- The elements of preformulation studies.
- The Active Pharmaceutical Ingredients and Generic drug Product development
- Industrial Management and GMP Considerations.
- Optimization Techniques & Pilot Plant Scale Up Techniques
- Stability Testing, sterilization process & packaging of dosage forms.

THEORY 60 HRS

1.	a. Preformation Concepts – Drug Excipient interactions - different methods, kinetics of stability, Stability testing. Theories of dispersion and pharmaceutical Dispersion (Emulsion and Suspension, SMEDDS) preparation and stability Large and small volume parental - physiological and formulation consideration, Manufacturing and evaluation.	10 Hrs
	b. Optimization techniques in Pharmaceutical Formulation: Concept and parameters of optimization, Optimization techniques in pharmaceutical formulation and processing. Statistical design, Response surface method, Contour designs, Factorial designs and application in formulation	10 Hrs
2	Validation : Introduction to Pharmaceutical Validation, Scope & merits of Validation, Validation and calibration of Master plan, ICH & WHO guidelines for calibration and validation of equipments, Validation of specific dosage form, Types of validation. Government regulation, Manufacturing Process Model, URS, DQ, IQ, OQ & P.Q. of facilities.	10 Hrs
3	cGMP & Industrial Management: Objectives and policies of current good manufacturing practices, layout of buildings, services, equipments and their maintenance Production management: Production organization, , materials management, handling and transportation, inventory management and control, production and planning control, Sales forecasting, budget and cost control, industrial and personal relationship. Concept of Total Quality Management.	10 Hrs

4	Compression and compaction: Physics of tablet compression, compression, consolidation, effect of friction, distribution of forces, compaction profiles. Solubility.	10 Hrs
5	Study of consolidation parameters; Diffusion parameters, Dissolution parameters and Pharmacokinetic parameters, Heckel plots, Similarity factors – f2 and f1, Higuchi and Peppas plot, Linearity Concept of significance, Standard deviation , Chi square test, students T-test , ANOVA test.	10 Hrs

REFERENCES

1. Theory and Practice of Industrial Pharmacy By Lachmann and Libermann
2. Pharmaceutical dosage forms: Tablets Vol. 1-3 by Leon Lachmann.
3. Pharmaceutical Dosage forms: Disperse systems, Vol, 1-2; By Leon Lachmann.
4. Pharmaceutical Dosage forms: Parenteral medications Vol. 1-2; By Leon Lachmann.
5. Modern Pharmaceutics; By Gillbert and S. Banker.
6. Remington's Pharmaceutical Sciences.
7. Advances in Pharmaceutical Sciences Vol. 1-5; By H.S. Bean & A.H. Beckett.
8. Physical Pharmacy; By Alfred martin
9. Bentley's Textbook of Pharmaceutics – by Rawlins.
10. Good manufacturing practices for Pharmaceuticals: A plan for total quality control, Second edition; By Sidney H. Willig.
11. Quality Assurance Guide; By Organization of Pharmaceutical producers of India.
12. Drug formulation manual; By D.P.S. Kohli and D.H.Shah. Eastern publishers, New Delhi.
13. How to practice GMPs; By P.P.Sharma. Vandhana Publications, Agra.
14. Pharmaceutical Process Validation; By Fra. R. Berry and Robert A. Nash.
15. Pharmaceutical Preformulations; By J.J. Wells.
16. Applied production and operations management; By Evans, Anderson, Sweeney and Williams.
17. Encyclopaedia of Pharmaceutical technology, Vol I – III.

REGULATORY AFFAIRS
(MPH 104T)

Scope

Course designed to impart advanced knowledge and skills required to learn the concept of generic drug and their development, various regulatory filings in different countries, different phases of clinical trials and submitting regulatory documents : filing process of IND, NDA and ANDA

- To know the approval process of
- To know the chemistry, manufacturing controls and their regulatory importance
- To learn the documentation requirements for
- To learn the importance and

Objectives:

Upon completion of the course, it is expected that the students will be able to understand

- The Concepts of innovator and generic drugs, drug development process
- The Regulatory guidance's and guidelines for filing and approval process
- Preparation of Dossiers and their submission to regulatory agencies in different countries
- Post approval regulatory requirements for actives and drug products
- Submission of global documents in CTD/ eCTD formats
- Clinical trials requirements for approvals for conducting clinical trials
- Pharmacovigilence and process of monitoring in clinical trials.

THEORY 60 Hrs

1. a. Documentation in Pharmaceutical industry: Master formula record, DMF (Drug Master File), distribution records. Generic drugs product development Introduction , Hatch-Waxman act and amendments, CFR (CODE OF FEDERAL REGULATION) ,drug product performance, in-vitro, ANDA regulatory approval process, NDA approval process, BE and drug product assessment, in –vivo, scale up process approval changes, post marketing surveillance, outsourcing BA and BE to CRO. 12 Hrs

   b. Regulatory requirement for product approval: API, biologics, novel, therapies obtaining NDA, ANDA for generic drugs ways and means of US registration for foreign drugs

2	CMC, post approval regulatory affairs. Regulation for combination products and medical devices.CTD and ECTD format, industry and FDA liaison. ICH - Guidelines of ICH-Q, S E, M. Regulatory requirements of EU, MHRA, TGA and ROW countries.	12 Hrs
3	Non clinical drug development: Global submission of IND, NDA, ANDA. Investigation of medicinal products dossier, dossier (IMPD) and investigator brochure (IB).	12 Hrs
4	Clinical trials: Developing clinical trial protocols. Institutional review board/ independent ethics committee Formulation and working procedures informed Consent process and procedures. HIPAA- new, requirement to clinical study process, pharmacovigilance safety monitoring in clinical trials.	12 Hrs

REFERENCES

1. Generic Drug Product Development, Solid Oral Dosage forms, Leon Shargel and IsaderKaufer,Marcel Dekker series, Vol.143
2. The Pharmaceutical Regulatory Process, Second Edition Edited by Ira R. Berry and Robert P.Martin, Drugs and the Pharmaceutical Sciences,Vol.185, Informa Health care Publishers.
3. New Drug Approval Process: Accelerating Global Registrations By Richard A Guarino, MD,5th edition, Drugs and the Pharmaceutical Sciences,Vol.190.
4. Guidebook for drug regulatory submissions / Sandy Weinberg. By John Wiley & Sons.Inc.
5. FDA regulatory affairs: a guide for prescription drugs, medical devices, and biologics/edited By Douglas J. Pisano, David Mantus.
6. Clinical Trials and Human Research: A Practical Guide to Regulatory Compliance By Fay A.Rozovsky and Rodney K. Adams
7. www.ich.org/
8. www.fda.gov/
9. europa.eu/index_en.htm
10. https://www.tga.gov.au/tga-basics

PHARMACEUTICS PRACTICALS - I
(MPH 105P)

1. Analysis of pharmacopoeial compounds and their formulations by UV Vis spectrophotometer
2. Simultaneous estimation of multi component containing formulations by UV spectrophotometry
3. Experiments based on HPLC
4. Experiments based on Gas Chromatography
5. Estimation of riboflavin/quinine sulphate by fluorimetry
6. Estimation of sodium/potassium by flame photometry
7. To perform In-vitro dissolution profile of CR/ SR marketed formulation
8. Formulation and evaluation of sustained release matrix tablets
9. Formulation and evaluation osmotically controlled DDS
10. Preparation and evaluation of Floating DDS- hydro dynamically balanced DDS
11. Formulation and evaluation of Muco adhesive tablets.
12. Formulation and evaluation of trans dermal patches.
13. To carry out preformulation studies of tablets.
14. To study the effect of compressional force on tablets disintegration time.
15. To study Micromeritic properties of powders and granulation.
16. To study the effect of particle size on dissolution of a tablet.
17. To study the effect of binders on dissolution of a tablet.
18. To plot Heckal plot, Higuchi and peppas plot and determine similarity factors.

MOLECULAR PHARMACEUTICS (NANO TECHNOLOGY & TARGETED DDS) (NTDS)
(MPH 201T)

Scope

This course is designed to impart knowledge on the area of advances in novel drug delivery systems.

Objectives

Upon completion of the course student shall be able to understand

- The various approaches for development of novel drug delivery systems.
- The criteria for selection of drugs and polymers for the development of NTDS
- The formulation and evaluation of novel drug delivery systems.

THEORY 60 Hrs

1.	Targeted Drug Delivery Systems: Concepts, Events and biological process involved in drug targeting. Tumor targeting and Brain specific delivery.	12 Hrs
2	Targeting Methods: introduction preparation and evaluation. Nano Particles & Liposomes: Types, preparation and evaluation.	12 Hrs
3	Micro Capsules / Micro Spheres: Types, preparation and evaluation , Monoclonal Antibodies ; preparation and application, preparation and application of Niosomes, Aquasomes, Phytosomes, Electrosomes.	12 Hrs
4	Pulmonary Drug Delivery Systems : Aerosols, propellents, ContainersTypes, preparation and evaluation, Intra Nasal Route Delivery systems; Types, preparation and evaluation.	12 Hrs
5	Nucleic acid based therapeutic delivery system : Gene therapy, introduction (ex-vivo & in-vivo gene therapy). Potential target diseases for gene therapy (inherited disorder and cancer). Gene expression systems (viral and nonviral gene transfer). Liposomal gene delivery systems. Biodistribution and Pharmacokinetics. knowledge of therapeutic antisense molecules and aptamers as drugs of future.	12 Hrs

REFERENCES

1. Y W. Chien, Novel Drug Delivery Systems, 2nd edition, revised and expanded,Marcel Dekker, Inc., New York, 1992.
2. S.P.Vyas and R.K.Khar, Controlled Drug Delivery - concepts and advances, VallabhPrakashan, New Delhi, First edition 2002.
3. N.K. Jain, Controlled and Novel Drug Delivery, CBS Publishers & Distributors, NewDelhi, First edition 1997 (reprint in 2001).

ADVANCED BIOPHARMACEUTICS & PHARMACOKINETICS
(MPH 202T)

Scope

This course is designed to impart knowledge and skills necessary for dose calculations, dose adjustments and to apply biopharmaceutics theories in practical problem solving. Basic theoretical discussions of the principles of biopharmaceutics and pharmacokinetics are provided to help the students' to clarify the concepts.

Objectives

Upon completion of this course it is expected that students will be able understand,

- The basic concepts in biopharmaceutics and pharmacokinetics.
- The use raw data and derive the pharmacokinetic models and parameters the best describe the process of drug absorption, distribution, metabolism and elimination.
- The critical evaluation of biopharmaceutic studies involving drug product equivalency.
- The design and evaluation of dosage regimens of the drugs using pharmacokinetic and biopharmaceutic parameters.
- The potential clinical pharmacokinetic problems and application of basics of pharmacokinetic

THEORY 60 Hrs

1. Drug Absorption from the Gastrointestinal Tract: Gastrointestinal tract, Mechanism of drug absorption, Factors affecting drug absorption, pH–partition theory of drug absorption. Formuulation and physicochemical factors: Dissolution rate, Dissolution process, Noyes–Whitney equation and drug dissolution, Factors affecting the dissolution rate. Gastrointestinal absorption: role of the dosage form: Solution (elixir, syrup and solution) as a dosage form ,Suspension as a dosage form, Capsule as a dosage form, Tablet as a dosage form ,Dissolution methods ,Formulation and processing factors, Correlation of in vivo data with in vitro dissolution data.Transport model: Permeability-Solubility-Charge State and the pH Partition Hypothesis, Properties of the Gastrointestinal Tract (GIT), pH Microclimate Intracellular pH Environment, Tight-Junction Complex. 12 Hrs

2	Biopharmaceutic considerations in drug product design and In Vitro Drug Product Performance: Introduction, biopharmaceutic factors affecting drug bioavailability, rate-limiting steps in drug absorption, physicochemical nature of the drug formulation factors affecting drug product performance, in vitro: dissolution and drug release testing, compendial methods of dissolution, alternative methods of dissolution testing,meeting dissolution requirements,problems of variable control in dissolution testingperformance of drug products. In vitro–in vivo correlation, dissolution profile comparisons, drug product stability,considerations in the design of a drug product.	12 Hrs
3	Pharmacokinetics: Basic considerations, pharmacokinetic models, compartment modeling: one compartment model- IV bolus, IV infusion, extra-vascular. Multi compartment model:two compartment - model in brief, non-linear pharmacokinetics: cause of non-linearity, Michaelis – Menten equation, estimation of k_{max} and v_{max}. Drug interactions: introduction, the effect of protein-binding interactions,the effect of tissue-binding interactions,cytochrome p450-based drug interactions,drug interactions linked to transporters.	12 Hrs
4	Drug Product Performance, In Vivo: Bioavailability and Bioequivalence: drug product performance, purpose of bioavailability studies, relative and absolute availability. methods for assessing bioavailability, bioequivalence studies, design and evaluation of bioequivalence studies, study designs, crossover study designs, evaluation of the data, bioequivalence example, study submission and drug review process. biopharmaceutics classification system, methods. Permeability: In-vitro, in-situ and In-vivo methods.generic biologics (biosimilar drug products),clinical significance of bioequivalence studies, special concerns in bioavailability and bioequivalence studies, generic substitution.	12 Hrs
5	Application of Pharmacokinetics: Modified-Release Drug Products, Targeted Drug Delivery Systems and Biotechnological Products. Introduction to Pharmacokinetics and pharmacodynamic, drug interactions. Pharmacokinetics and pharmacodynamics of biotechnology drugs. Introduction, Proteins and peptides, Monoclonal antibodies, Oligonucleotides, Vaccines (immunotherapy), Gene therapies.	12 Hrs

REFERENCES

1. Biopharmaceutics and Clinical Pharmacokinetics by Milo Gibaldi, 4th edition,Philadelphia, Lea and Febiger, 1991
2. Biopharmaceutics and Pharmacokinetics, A. Treatise, D .M. Brahmankar and Sunil B. Jaiswal., VallabPrakashan, Pitampura, Delhi
3. Applied Biopharmaceutics and Pharmacokinetics by Shargel. Land YuABC, 2nd edition, Connecticut Appleton Century Crofts, 1985
4. Textbook of Biopharmaceutics and Pharmacokinetics, Dr. Shobha Rani R. Hiremath,Prism Book
5. Pharmacokinetics by Milo Gibaldi and D. Perrier, 2nd edition, Marcel Dekker Inc.,New York, 1982
6. Current Concepts in Pharmaceutical Sciences: Biopharmaceutics, Swarbrick. J, Leaand Febiger, Philadelphia, 1970
7. Clinical Pharmacokinetics, Concepts and Applications 3rd edition by MalcolmRowland and Thom~ N. Tozer, Lea and Febiger, Philadelphia, 1995
8. Dissolution, Bioavailability and Bioequivalence, Abdou. H.M, Mack PublishingCompany, Pennsylvania 1989
9. Biopharmaceutics and Clinical Pharmacokinetics, An Introduction, 4th edition,revised and expande by Robert. E. Notari, Marcel Dekker Inc, New York and Basel,1987.
10. Biopharmaceutics and Relevant Pharmacokinetics by John. G Wagner and M.Pemarowski, 1st edition, Drug Intelligence Publications, Hamilton, Illinois, 1971.
11. Encyclopedia of Pharmaceutical Technology, Vol 13, James Swarbrick, James. G.Boylan, Marcel Dekker Inc, New York, 1996.
12. Basic Pharmacokinetics,1 st edition,Sunil S JambhekarandPhilip J Breen,pharmaceutical press, RPS Publishing,2009.
13. Absorption and Drug Development- Solubility, Permeability, and Charge State, Alex Avdeef, John Wiley & Sons, Inc,2003.

COMPUTER AIDED DRUG DEVELOPMENT
(MPH 203T)

Scope

This course is designed to impart knowledge and skills necessary for computer Applications in pharmaceutical research and development who want to understand the application of computers across the entire drug research and development process. Basic theoretical discussions of the principles of more integrated and coherent use of computerized information (informatics) in the drug development process are provided to help the students to clarify the concepts.

Objectives

Upon completion of this course it is expected that students will be able to understand,

- History of Computers in Pharmaceutical Research and Development
- Computational Modeling of Drug Disposition
- Computers in Preclinical Development
- Optimization Techniques in Pharmaceutical Formulation
- Computers in Market Analysis
- Computers in Clinical Development
- Artificial Intelligence (AI) and Robotics
- Computational fluid dynamics(CFD)

THEORY		60 Hrs
1.	a. Computers in Pharmaceutical Research and Development: A General Overview: History of Computers in Pharmaceutical Research and Development. Statistical modeling in Pharmaceutical research and development: Descriptive versus Mechanistic Modeling, Statistical Parameters, Estimation, Confidence Regions, Nonlinearity at the Optimum, Sensitivity Analysis, Optimal Design, Population Modeling b. Quality-by-Design In Pharmaceutical Development: Introduction, ICH Q8 guideline, Regulatory and industry views on QbD, Scientifically based QbD - examples of application.	12 Hrs
2	Computational Modeling Of Drug Disposition: Introduction ,Modeling Techniques: Drug Absorption, Solubility, Intestinal Permeation, Drug Distribution ,Drug Excretion, Active Transport; P-gp, BCRP, Nucleoside Transporters, hPEPT1, ASBT, OCT, OATP, BBB-Choline Transporter.	12 Hrs

3	Computer-aided formulation development:: Concept of optimization, Optimization parameters, Factorial design, Optimization technology & Screening design. Computers in Pharmaceutical Formulation: Development of pharmaceutical emulsions, microemulsion drug carriers Legal Protection of Innovative Uses of Computers in R&D, The Ethics of Computing in Pharmaceutical Research, Computers in Market analysis	12 Hrs
4	a. Computer-aided biopharmaceutical characterization: Gastrointestinal absorption simulation. Introduction, Theoretical background, Model construction, Parameter sensitivity analysis, Virtual trial, Fed vs. fasted state, In vitro dissolution and in vitro-in vivo correlation, Biowaiver considerations b. Computer Simulations in Pharmacokinetics and Pharmacodynamics: Introduction, Computer Simulation: Whole Organism, Isolated Tissues, Organs, Cell, Proteins and Genes. c. Computers in Clinical Development: Clinical Data Collection and Management, Regulation of Computer Systems	12 Hrs
5	Artificial Intelligence (AI), Robotics and Computational fluid dynamics: General overview, Pharmaceutical Automation, Pharmaceutical applications, Advantages and Disadvantages. Current Challenges and Future Directions.	12 Hrs

REFERENCES

1. Computer Applications in Pharmaceutical Research and Development, Sean Ekins, 2006, John Wiley & Sons.
2. Computer-Aided Applications in Pharmaceutical Technology, 1st Edition, Jelena Djuris, Woodhead Publishing
3. Encyclopedia of Pharmaceutical Technology, Vol 13, James Swarbrick, James. G.Boylan, Marcel Dekker Inc, New York, 1996.

COSMETICS AND COSMECEUTICALS
(MPH 204T)

Scope

This course is designed to impart knowledge and skills necessary forthefundamental need for cosmetic and cosmeceutical products.

Objectives

Upon completion of the course, the students shall be able to understand

- Key ingredients used in cosmetics and cosmeceuticals.
- Key building blocks for various formulations.
- Current technologies in the market
- Various key ingredients and basic science to develop cosmetics and cosmeceuticals
- Scientific knowledge to develop cosmetics and cosmeceuticals with desired Safety, stability, and efficacy.

THEORY 60 Hrs

1. Cosmetics – Regulatory : Definition of cosmetic products as per Indian regulation. Indian regulatory requirements for labeling of cosmetics Regulatory provisions relating to import of cosmetics., Misbranded and spurious cosmetics. Regulatory provisions relating to manufacture of cosmetics - Conditions for obtaining license, prohibition of manufacture and sale of certain cosmetics, loan license, offences and penalties. 12 Hrs

2 Cosmetics - Biological aspects : Structure of skin relating to problems like dry skin, acne, pigmentation, prickly heat, wrinkles and body odor. Structure of hair and hair growth cycle. Common problems associated with oral cavity. Cleansing and care needs for face, eye lids, lips, hands, feet, nail, scalp, neck, body and under-arm. 12 Hrs

3 Formulation Building blocks: Building blocks for different product formulations of cosmetics/cosmeceuticals. Surfactants – Classification and application. Emollients, rheological additives: classification and application. Antimicrobial used as preservatives, their merits and demerits. Factors affecting microbial preservative efficacy. Building blocks for formulation of a moisturizing cream, vanishing cream, cold cream, shampoo and toothpaste. Soaps and syndetbars. 12 Hrs

Perfumes; Classification of perfumes. Perfume ingredients listed as allergens in EU regulation.

	Controversial ingredients: Parabens, formaldehyde liberators, dioxane.	
4	Design of cosmeceutical products: Sun protection, sunscreens classification and regulatory aspects. Addressing dry skin, acne, sun-protection, pigmentation, prickly heat, wrinkles, body odor., dandruff, dental cavities, bleeding gums, mouth odor and sensitive teeth through cosmeceutical formulations.	12 Hrs
5	Herbal Cosmetics : Herbal ingredients used in Hair care, skin care and oral care. Review of guidelines for herbal cosmetics by private bodies like cosmos with respect to preservatives, emollients, foaming agents, emulsifiers and rheology modifiers. Challenges in formulating herbal cosmetics.	12 Hrs

REFERENCES

1. Harry's Cosmeticology. 8th edition.
2. Poucher'sperfumecosmeticsandSoaps,10th edition.
3. Cosmetics - Formulation, Manufacture and quality control, PP.Sharma,4th edition
4. Handbook of cosmetic science and Technology A.O.Barel, M.Paye and H.I. Maibach. 3rd edition
5. Cosmetic and Toiletries recent suppliers catalogue.
6. CTFA directory.

PHARMACEUTICS PRACTICALS - II
(MPH 205P)

1. To study the effect of temperature change , non solvent addition, incompatible polymer addition in microcapsules preparation
2. Preparation and evaluation of Alginate beads
3. Formulation and evaluation of gelatin /albumin microspheres
4. Formulation and evaluation of liposomes/niosomes
5. Formulation and evaluation of spherules
6. Improvement of dissolution characteristics of slightly soluble drug by Solid dispersion technique.
7. Comparison of dissolution of two different marketed products /brands
8. Protein binding studies of a highly protein bound drug & poorly protein bound drug
9. Bioavailability studies of Paracetamol in animals.
10. Pharmacokinetic and IVIVC data analysis by Winnoline^{R} software
11. In vitro cell studies for permeability and metabolism
12. DoE Using Design Expert® Software
13. Formulation data analysis Using Design Expert® Software
14. Quality-by-Design in Pharmaceutical Development
15. Computer Simulations in Pharmacokinetics and Pharmacodynamics
16. Computational Modeling Of Drug Disposition
17. To develop Clinical Data Collection manual
18. To carry out Sensitivity Analysis, and Population Modeling.
19. Development and evaluation of Creams
20. Development and evaluation of Shampoo and Toothpaste base
21. To incorporate herbal and chemical actives to develop products
22. To address Dry skin, acne, blemish, Wrinkles, bleeding gums and dandruff

INDUSTRIALPHARMACY(MIP)

MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES

(MIP 101T)

Scope

This subject deals with various advanced analytical instrumental techniques for identification, characterization and quantification of drugs. Instruments dealt are NMR, Mass spectrometer, IR, HPLC, GC etc.

Objectives

After completion of course student is able to know,

- The analysis of various drugs in single and combination dosage forms
- Theoretical and practical skills of the instruments

THEORY 60 HOURS

1. UV-Visible spectroscopy: Introduction, Theory, Laws, Instrumentation associated with UV-Visible spectroscopy, Choice of solvents and solvent effect and Applications of UV-Visible spectroscopy. 11 Hrs

   IR spectroscopy: Theory, Modes of Molecular vibrations, Sample handling, Instrumentation of Dispersive and Fourier - Transform IR Spectrometer, Factors affecting vibrational frequencies and Applications of IR spectroscopy

   Spectroflourimetry: Theory of Fluorescence, Factors affecting fluorescence, Quenchers, Instrumentation and Applications of fluorescence spectrophotometer.

   Flame emission spectroscopy and Atomic absorption spectroscopy: Principle, Instrumentation, Interferences and Applications.

2 NMR spectroscopy: Quantum numbers and their role in NMR, Principle, Instrumentation, Solvent requirement in NMR, Relaxation process, NMR signals in various compounds, Chemical shift, Factors influencing chemical shift, Spin-Spin coupling, Coupling constant, Nuclear magnetic double resonance, Brief outline of principles of FT-NMR and 13C NMR. Applications of NMR spectroscopy. 11 Hrs

3	Mass Spectroscopy: Principle, Theory, Instrumentation of Mass Spectroscopy, Different types of ionization like electron impact, chemical, field, FAB and MALDI, APCI, ESI, APPI Analyzers of Quadrupole and Time of Flight, Mass fragmentation and its rules, Meta stable ions, Isotopic peaks and Applications of Mass spectroscopy	11 Hrs
4	Chromatography: Principle, apparatus, instrumentation, chromatographic parameters, factors affecting resolution and applications of the following: a) Paper chromatography b) Thin Layer chromatography c) Ion exchange chromatography d) Column chromatography e) Gas chromatography f) High Performance Liquid chromatography g) Affinity chromatography	11 Hrs
5	Electrophoresis: Principle, Instrumentation, Working conditions, factors affecting separation and applications of the following: a) Paper electrophoresis b) Gel electrophoresis c) Capillary electrophoresis d) Zone electrophoresis e) Moving boundary electrophoresis f) Iso electric focusing X ray Crystallography: Production of X rays, Different X ray methods, Bragg's law, Rotating crystal technique, X ray powder technique, Types of crystals and applications of X-ray diffraction.	11 Hrs
6.	Immunological Assays: Radioimmunology assay (RIA), ELISA (Theory & practical) and knowledge on Bioluminescence assays.	5 Hrs

REFERENCES

1. Spectrometric Identification of Organic compounds - Robert M Silverstein, 6th edition, John Wiley & Sons, 2004.
2. Principles of Instrumental Analysis - Doglas A Skoog, F. James Holler, Timothy A. Nieman, 5th edition, Eastern press, Bangalore, 1998.
3. Instrumental methods of analysis – Willards, 7th edition, CBS publishers.
4. Practical Pharmaceutical Chemistry – Beckett and Stenlake, Vol II, 4th edition, CBS Publishers, New Delhi, 1997.
5. Organic Spectroscopy - William Kemp, 3rd edition, ELBS, 1991.
6. Quantitative Analysis of Drugs in Pharmaceutical formulation - P D Sethi, 3rd Edition, CBS Publishers, New Delhi, 1997.
7. Pharmaceutical Analysis- Modern methods – Part B - J W Munson, Volume 11, Marcel Dekker Series

PHARMACEUTICAL FORMULATION DEVELOPMENT
(MIP 102T)

Scope

This course is designed to impart knowledge and skills necessary to train the students on par with the routine of Industrial activities in R&D and F&D.

Objectives

On completion of this course it is expected that students will be able to understand-

- The scheduled activities in a Pharmaceutical firm.
- The pre formulation studies of pilot batches of pharmaceutical industry.
- The significance of dissolution and product stability

THEORY 60 Hrs

1. Preformulation Studies: Molecular optimization of APIs (drug substances), crystal morphology and variations, powder flow, structure modification, drug-excipient compatibility studies, methods of determination. 12 Hrs

2 Formulation Additives: Study of different formulation additives, factors influencing their incorporation, role of formulation development and processing, new developments in excipient science. Design of experiments – factorial design for product and process development. 12 Hrs

3 Solubility: Importance, experimental determination, phase-solubility analysis, pH-solubility profile, solubility techniques to improve solubility and utilization of analytical methods – cosolvency, salt formation, complexation, solid dispersion, micellar solubilization and hydrotropy. 12 Hrs

4 Dissolution: Theories, mechanisms of dissolution, in-vitro dissolution testing models – sink and non-sink. Factors influencing dissolution and intrinsic dissolution studies. Dissolution test apparatus – designs, dissolution testing for conventional and controlled release products. Data handling and correction factor. Biorelevent media, in-vitro and in-vivo correlations, levels of correlations. 12 Hrs

5 Product Stability: Degradation kinetics, mechanisms, stability testing of drugs and pharmaceuticals, factors influencing-media effects and pH effects, accelerated stability studies, interpretation of kinetic data (API & tablets). Solid state stability and shelf life assignment. Stability protocols, reports and ICH guidelines. 12 Hrs

REFERENCES

1. Lachman L, Lieberman HA, Kanig JL. The Theory and Practice Of Industrial Pharmacy, 3rd ed., Varghese Publishers, Mumbai 1991.
2. Sinko PJ. Martin's physical pharmacy and pharmaceutical sciences, 5th ed., B.I. Publications Pvt. Ltd, Noida, 2006.
3. Lieberman HA, Lachman L, Schwartz JB. Pharmaceutical dosage forms: tablets Vol. I-III, 2nd ed., CBS Publishers & distributors, New Delhi, 2005.
4. Conners KA. A Text book of pharmaceutical analysi Wells JI. Pharmaceutical preformulation: The physicochemical properties of drug substances. Ellis Horwood Ltd., England, 1998.
5. Yalkowsky SH. Techniques of solubilization of drugs. Vol-12. Marcel Dekker Inc., New York, 1981
6. Dressman J, Kramer J. Pharmaceutical dissolution testing. Saurah printer pvt. Ltd., New Delhi,2005.
7. Sethi PD. Quantitative analysis of drugs in pharmaceutical formulations, 3rd ed., CBS publications, New Delhi, 2008.
8. Carstensen JT, Rhodes CT. Drug stability principles and practices, 3rd ed., CBS Publishers & distributors, New Delhi, 2005.
9. Yoshioka S, Stella VJ. Stability of drugs and dosage forms, Springer (India) Pvt. Ltd., New Delhi, 2006.
10. Banker GS, Rhodes CT. Modern Pharmaceutics, 4th ed., Marcel Dekker Inc, New York, 2005.
11. W. Grimm - Stability testing of drug products.
12. Mazzo DJ. International stability testing. Eastern Press Pvt. Ltd., Bangalore, 1999. 13. Beckett AH, Stenlake JB. Practical pharmaceutical chemistry, Part I & II., 4th ed., CBS Publishers & distributors, New Delhi, 2004.
14. Indian Pharmacopoeia. Controller of Publication. Delhi, 1996.
15. British Pharmacopoeia. British Pharmacopoeia Commission Office, London, 2008.
16. United States Pharmacopoeia. United States Pharmacopeial Convention, Inc, USA, 2003.
17. Encyclopaedia of Pharm. Technology, Vol I – III.
18. Wells J. I. Pharmaceutical Preformulation : The physicochemical properties of drug substances, Ellis Horwood Ltd. England, 1988.

NOVEL DRUG DELIVERY SYSTEMS
(MIP 103T)

Scope

This course is designed to impart knowledge and skills necessary to train the students in the area of novel drug delivery systems.

Objective

On completion of this course it is expected that students will be able to understand,

- The need, concept, design and evaluation of various customized, sustained and controlled release dosage forms.
- To formulate and evaluate various novel drug delivery systems

THEORY 60 Hrs

1.	Concept & Models for NDDS: Classification of rate controlled drug delivery systems (DDS), rate programmed release, activation modulated & feedback regulated DDS, effect of system parameters in controlled drug delivery, computation of desired release rate and dose for controlled release DDS, pharmacokinetic design for DDS – intermittent, zero order & first order release. Carriers for Drug Delivery: Polymers / co-polymers-introduction, classification, characterization, polymerization techniques, application in CDDS / NDDS, biodegradable & natural polymers.	12 Hrs
2	Study of Various DDS: Concepts, design, formulation & evaluation of controlled release oral DDS, Mucoadhesive DDS (buccal, nasal, pulmonary) Pulsatile, colon specific, liquid sustained release systems, Ocular delivery systems	12 Hrs
3	Transdermal Drug Delivery Systems: Theory, design, formulation & evaluation including iontophoresis and other latest developments in skin delivery systems.	08 Hrs
4	Sub Micron Cosmeceuticals: Biology, formulation science and evaluation of various cosmetics for skin, hair, nail, eye etc and it's regulatory aspects.	04 Hrs

5	Targeted Drug Delivery Systems: Importance, concept, biological process and events involved in drug targeting, design, formulation & evaluation, methods in drug targeting – nanoparticles, liposomes, niosomes, pharmacosomes, resealed erythrocytes, microspheres, magnetic microspheres. Specialized pharmaceutical emulsions – multiple emulsions, micro-emulsions.	12 Hrs
6	Protein / Peptide Drug Delivery Systems: Concepts, delivery techniques, formulation, stability testing, causes of protein destabilization, stabilization methods.	
7	Biotechnology in Drug Delivery Systems: Brief review of major areas-recombinant DNA technology, monoclonal antibodies, gene therapy.	06 Hrs
8	New trends for Personalized Medicine: Introduction, Definition, Pharmacogenetics, Categories of Patients for Personalized Medicines: Customized drug delivery systems, Bioelectronic Medicines, 3D printing of pharmaceuticals, Telepharmacy.	06 Hrs

REFERENCES

1. Novel Drug Delivery System, Y.W. Chein, Vol 50, Marcel Dekker, NY.
2. Controlled Drug Delivery Systems, Robinson, Vol 29, Marcel Dekker, NY.
3. Transdermal Controlled Systemic Medications, YW Chein, Vol 31, Marcel Dekker, NY.
4. Bioadhesive DDS, E. Mathiowitz, Vol 98, Marcel Dekker, NY.
5. Nasal System Drug Delivery, K.S.E. Su, Vol 39, Marcel Dekker, NY.
6. Drug Delivery Devices, Vol 32, P Tyle Marcel Dekker, NY.
7. Polymers for Controlled Drug Delivery, P.J. Tarcha, CRC Press.
8. Pharmaceutical Biotechnology, Vyas, CBS, Delhi.
9. Biotechnology of Industrial Antibiotics, E.J. Vandamme, Marcel Dekker, NY.
10. Protein Formulation & Delivery, E.J. McNally, Vol 99, Marcel Dekker, NY.
11. Drug Targeting, M.H. Rubinstein, John Wiley, NY.

INTELLECTUAL PROPERTY RIGHTS
(MIP 104T)

Scope

This course is designed to impart knowledge and skills necessary to train the students to be on par with the routine of Industrial activities in drug regulatory affairs

Objectives

On completion of this course it is expected that students will be able to understand,

- Assist in Regulatory Audit process.
- Establish regulatory guidelines for drug and drug products
- The Regulatory requirements for contract research organization

THEORY		60 Hrs
1.	Definition, Need for patenting, Types of Patents, Conditions to be satisfied by an invention to be patentable, Introduction to patent search. Parts of patents. Filling of patents. The essential elements of patent; Guidelines for preparation of laboratory note book, Non-obviousness in Patent.	12 Hrs
2	Role of GATT, TRIPS, and WIPO	12 Hrs
3	Brief introduction to Trademark protection and WHO Patents. IPR's and its types, Major bodies regulating Indian Pharmaceutical sector.	12 Hrs
4	Brief introduction to CDSCO. WHO, USFDA, EMEA, TGA, MHRA, MCC, ANVISA	12 Hrs
5	Regulatory requirements for contract research organization. Regulations for Biosimilars.	12 Hrs

REFERENCES :

1. Pharmaceutical Process Validation: By Fra R. Berry and Robert A. Nash, Vol 57, 2nd Edition
2. Applied Production and Operation Management By Evans, Anderson and Williams
3. GMP for pharmaceuticals Material Management by K.K. Ahuja Published by CBS publishers
4. ISO 9000-Norms and explanations
5. GMP for pharmaceuticals- Willing S.H. Marcel and Dekker

INDUSTRIAL PHARMACY PRACTICAL - I
(MIP 105P)

1. Analysis of pharmacopoeial compounds and their formulations by UV Vis spectrophotometer
2. Simultaneous estimation of multi component containing formulations by UV spectrophotometry
3. Experiments based on HPLC / GC
4. Estimation of riboflavin/quinine sulphate by fluorimetry
5. Estimation of sodium/potassium by flame photometry
6. Effect of surfactants on the solubility of drugs.
7. Effect of pH on the solubility of drugs.
8. Stability testing of solution and solid dosage forms for photo degradation..
9. Stability studies of drugs in dosage forms at 25 ^{o}C, 60% RH and 40 ^{o}C, 75% RH.
10. Compatibility evaluation of drugs and excipients (DSC & FTIR).
11. Preparation and evaluation of different polymeric membranes.
12. Formulation and evaluation of sustained release oral matrix tablet/ oral reservoir system.
13. Formulation and evaluation of microspheres / microcapsules.
14. Formulation and evaluation of transdermal drug delivery systems.
15. Design and evaluation of face wash, body- wash, creams, lotions, shampoo, toothpaste, lipstick.
16. Electrophoresis of protein solution.
17. Preparation and evaluation of Liposome delivery system.

ADVANCED BIOPHARMACEUTICS & PHARMACOKINETICS
(MIP 201T)

Scope

This course is designed to impart knowledge and skills necessary for dose calculations, dose adjustments and to apply Biopharmaceutics theories in practical problem solving.

Objectives

On completion of this course it is expected that students will be able to understand,

- The basic concepts in Biopharmaceutics and pharmacokinetics.
- The use of raw data and derive the pharmacokinetic models and parameters the best describe the process of drug absorption, distribution, metabolism and elimination.
- To critically evaluate Biopharmaceutics studies involving drug product equivalency.
- To design and evaluate dosage regimens of the drugs using pharmacokinetic and biopharmaceutic parameters.

THEORY 60 Hrs

1. Drug Absorption From The Gastrointestinal Tract: Gastrointestinal tract, Mechanism of drug absorption, Factors affecting, pH–partition theory, Formulation and physicochemical factors: Dissolution rate, Dissolution process, Noyes–Whitney equation and drug dissolution, Factors affecting the dissolution rate. Gastrointestinal absorption: role of the dosage form: Solution (elixir, syrup and solution) as a dosage form ,Suspension as a dosage form, Capsule as a dosage form, Tablet as a dosage form ,Dissolution methods ,Formulation and processing factors, Correlation of in vivo data with in vitro dissolution data. Transport model: Permeability-Solubility-Charge State and the pH Partition Hypothesis, Properties of the Gastrointestinal Tract (GIT), pH Microclimate Intracellular pH Environment, Tight-Junction Complex. Solubility: Experimental methods. Permeability: In-vitro, in-situ and In-vivo methods. 12 Hrs

2 Biopharmaceutic Considerations in Drug Product Design and In Vitro Drug Product Performance: Introduction, Biopharmaceutic Factors Affecting Drug Bioavailability, Rate-Limiting Steps in Drug Absorption, Physicochemical Nature of the 12 Hrs

	Drug Formulation Factors Affecting Drug Product Performance, In Vitro: Dissolution and Drug Release Testing, Compendial Methods of Dissolution, Alternative Methods of Dissolution Testing, Meeting Dissolution Requirements, Problems of Variable Control in Dissolution Testing Performance of Drug Products: In Vitro–In Vivo Correlation, Dissolution Profile Comparisons, Drug Product Stability, Considerations in the Design of a Drug Product.	
3	Pharmacokinetics: Basic considerations, Pharmacokinetic models, Compartment modeling: One compartment model- IV bolus, IV infusion, Extra-vascular; Multi Compartment model: Two compartment - model in brief, Non-Linear Pharmacokinetics: Cause of non-linearity, Michaelis – Menten equation, Estimation Kmax and Vmax. Drug interactions: Introduction, The effect of protein-binding interactions, The effect of tissue-binding interactions, Cytochrome P450-based drug interactions, Drug interactions linked to transporters.	12 Hrs
4	Drug Product Performance, In Vivo: Bioavailability and Bioequivalence: Drug Product Performance, Purpose of Bioavailability Studies, Relative and Absolute Availability, , Methods for Assessing Bioavailability, Bioequivalence Studies, Design and Evaluation of Bioequivalence Studies, Study Designs, Crossover Study Designs, Evaluation of the Data, Bioequivalence Example, Study Submission and Drug Review Process, The Biopharmaceutics Classification System, Generic Biologics (Biosimilar Drug Products),Clinical Significance of Bioequivalence Studies, Special Concerns in Bioavailability and Bioequivalence Studies, Generic Substitution.	12 Hrs
5	Application of Pharmacokinetics: Modified-Release Drug Products, Targeted Drug Delivery Systems and Biotechnological Products. Relationship between Pharmacokinetics including Pharmacodynamics: Generation of a pharmacokinetic-pharmacodynamic (PKPD) equation, Pharmacokinetic and pharmacodynamic, interactions. Pharmacokinetics and pharmacodynamics of biotechnology drugs: Introduction, Proteins and peptides, Monoclonal antibodies, Oligonucleotides, Vaccines (immunotherapy),Gene therapies.	12 Hrs

REFERENCES

1. Biopharmaceutics and Clinical Pharmacokinetics by Milo Gibaldi, 4th edition,Philadelphia, Lea and Febiger, 1991
2. Biopharmaceutics and Pharmacokinetics, A. Treatise, D .M. Brahmankar and Sunil B.J aiswal., Vallab Prakashan, Pitampura, Delhi
3. Applied Biopharmaceutics and Pharmacokinetics by Shargel. Land YuABC, 2nd edition, Connecticut Appleton Century Crofts, 1985
4. Textbook of Biopharmaceutics and Pharmacokinetics, Dr. Shobha Rani R. Hiremath,Prism Book
5. Pharmacokinetics by Milo Gibaldi and D. Perrier, 2nd edition, Marcel Dekker Inc.,New York, 1982
6. Current Concepts in Pharmaceutical Sciences: Biopharmaceutics, Swarbrick. J, Lea and Febiger, Philadelphia, 1970
7. Clinical Pharmacokinetics, Concepts and Applications 3rd edition by Malcolm Rowland and Thom~ N. Tozer, Lea and Febiger, Philadelphia, 1995
8. Dissolution, Bioavailability and Bioequivalence, Abdou. H.M, Mack Publishing Company, Pennsylvania 1989
9. Biopharmaceutics and Clinical Pharmacokinetics, An Introduction, 4th edition, revised and expande by Robert. E. Notari, Marcel Dekker Inc, New York and Basel,1987.
10. Biopharmaceutics and Relevant Pharmacokinetics by John. G Wagner and M.Pemarowski, 1st edition, Drug Intelligence Publications, Hamilton, Illinois, 1971.
11. Encyclopedia of Pharmaceutical Technology, Vol 13, James Swarbrick, James. G.Boylan, Marcel Dekker Inc, New York, 1996.
12. Basic Pharmacokinetics,1 st edition, Sunil S Jambhekar and Philip J Breen,pharmaceutical press, RPS Publishing,2009.
13. Absorption and Drug Development- Solubility, Permeability, and Charge State, Alex Avdeef, John Wiley & Sons, Inc,2003.

SCALE UP AND TECHNOLOGY TRANSFER
(MIP 202T)

Scope

This course is designed to impart knowledge and skills necessary to train the students to be on scale up, technology transfer process and industrial safety issues.

Objectives:

On completion of this course it is expected that students will be able to understand,

- Manage the scale up process in pharmaceutical industry.
- Assist in technology transfer.
- To establish safety guidelines, which prevent industrial hazards.

THEORY 60 Hrs

1.	Pilot plant design: Basic requirements for design, facility, equipment selection, for tablets, capsules, liquid orals, parentral and semisolid preparations. Scale up: Importance, Technology transfer from R & D to pilot plant to plant scale, process scale up for tablets, capsules, liquid orals, semisolids, parentral, NDDS products – stress on formula, equipments, product uniformity, stability, raw materials, physical layout, input, in-process and finished product specifications, problems encountered during transfer of technology	12 Hrs
2	Validation: General concepts, types, procedures & protocols, documentation, VMF. Analytical method validation, cleaning validation and vender qualification.	12 Hrs
3	Equipment Qualification: Importance, IQ, OQ, PQ for equipments – autoclave, DHS, membrane filter, rapid mixer granulator, cone blender, FBD, tablet compression machine, liquid filling and sealing machine. Aseptic room validation.	12 Hrs
4	Process validation: Importance, validation of mixing, granulation, drying, compression, tablet coating, liquid filling and sealing, sterilization, water process systems, environmental control.	12 Hrs

5	Industrial safety: Hazards – fire, mechanical, electrical, chemical and pharmaceutical, Monitoring & prevention systems, industrial effluent testing & treatment. Control of environmental pollution.	12 Hrs

REFERENCES

1. Pharmaceutical process validation, JR Berry, Nash, Vol 57, Marcel Dekker, NY.
2. Pharmaceutical Production facilities, design and applications, by GC Cole, Taylor and Francis.
3. Pharmaceutical project management, T.Kennedy, Vol 86, Marcel Dekker, NY.
4. The theory & Practice of Industrial Pharmacy, L.Lachman, H.A.Lieberman, Varghese Publ. Bombay.
5. Tablet machine instruments in pharmaceuticals, PR Watt, John Wiloy.
6. Pharmaceutical dosage forms, Tablets, Vol 1, 2, 3 by Lachman, Lieberman, Marcel Dekker, NY.
7. Pharmaceutical dosage forms, Parentral medications, Vol 1, 2 by K.E. Avis, Marcel Dekker, NY.
8. Dispersed system Vol 1, 2, 3 by Lachman, Lieberman, Marcel Dekker, NY.
9. Subrahmanyam, CVS, Pharmaceutical production and Management, 2007, Vallabh Prakashan,Dehli.

PHARMACEUTICAL PRODUCTION TECHNOLOGY
(MIP 203T)

Scope

This course is designed to impart knowledge and skills necessary to train the students to be on par with the routine of Industrial activities in Production

Objectives

On completion of this course it is expected that students will be able to understand,

Handle the scheduled activities in a Pharmaceutical firm.
Manage the production of large batches of pharmaceutical formulations.

THEORY 60 Hrs

1.	Improved Tablet Production: Tablet production process, unit operation improvements, granulation and pelletization equipments, continuous and batch mixing, rapid mixing granulators, rota granulators, spheronizers and marumerisers, and other specialized granulation and drying equipments. Problems encountered. Coating Technology: Process, equipments, particle coating, fluidized bed coating, application techniques. Problems encountered.	12 Hrs
2	Parenteral Production: Area planning & environmental control, wall and floor treatment, fixtures and machineries, change rooms, personnel flow, utilities & utilities equipment location, engineering and maintenance.	12 Hrs
3	Lyophilization & Spray drying Technology: Principles, process, freeze-drying and spray drying equipments.	12 Hrs
4	Capsule Production: Production process, improved capsule manufacturing and filling machines for hard and soft gelatin capsules. Layout and problems encountered. Disperse Systems Production: Production processes, applications of mixers, mills, disperse equipments including fine solids dispersion, problems encountered.	12 Hrs

Packaging Technology: Types of packaging materials, machinery, labeling, package printing for different dosage forms.

5 Air Handling Systems: Study of AHUs, humidity & temperature control, air filtration systems, dust collectors. Water Treatment Process: Techniques and maintenance – RO, DM, ultra – filtration, WFI. 12 Hrs

REFERENCES

1. The Theory & Practice of Industrial Pharmacy, L. Lachman, Varghese Publ, Bombay.
2. Modern Pharmaceutics by Banker, Vol 72, Marcel Dekker, NY.
3. Pharmaceutical Dosage Forms, Vol 1, 2, 3 by Lachman, Lieberman, Marcel Dekker, NY.
4. Pharmaceutical Dosage Forms, Parentral medications, Vol 1, 2 by K.E. Avis, Marcel Dekker, NY.
5. Pharmaceutical Production Facilities, design and applications, by G.C. Cole, Taylor and Francis.
6. Dispersed System Vol 1, 2, 3 by Lachman, Lieberman, Marcel Dekker, NY.
7. Product design and testing of polymeric materials by N.P. Chezerisionoff.
8. Pharmaceutical Project Management, T.Kennedy, Vol 86, Marcel Dekker, NY.
9. Packaging Pharmaceutical and Health Care, H.Lockhard.
10. Quality Control of Packaging Materials in Pharmaceutical Industy, .Kharburn, Marcel Dekker, NY.
11. Freeze drying / Lyophilization of Pharmaceuticals & Biological Products, L. Ray, Vol 96, Marcel Dekker, NY.
12. Tablet Machine Instrumentation In Pharmaceuticals, PR Watt, Ellis Horwoods, UK.

ENTREPRENEURSHIP MANAGEMENT
(MIP 204T)

Scope

This course is designed to impart knowledge and skills necessary to train the students on entrepreneurship management.

Objectives:

On completion of this course it is expected that students will be able to understand,

- The Role of enterprise in national and global economy
- Dynamics of motivation and concepts of entrepreneurship
- Demands and challenges of Growth Strategies And Networking

THEORY 60 Hrs

1.	Conceptual Frame Work: Concept need and process in entrepreneurship development. Role of enterprise in national and global economy. Types of enterprise – Merits and Demerits. Government policies and schemes for enterprise development. Institutional support in enterprise development and management.	12 Hrs
2	Entrepreneur: Entrepreneurial motivation – dynamics of motivation. Entrepreneurial competency –Concepts. Developing Entrepreneurial competencies - requirements and understanding the process of entrepreneurship development, self-awareness, interpersonal skills, creativity, assertiveness, achievement, factors affecting entrepreneur role.	12 Hrs
3	Launching And Organising An Enterprise: Environment scanning – Information, sources, schemes of assistance, problems. Enterprise selection, market assessment, enterprise feasibility study, SWOT Analysis. Resource mobilisation - finance, technology, raw material, site and manpower. Costing and marketing management and quality control. Feedback, monitoring and evaluation.	12 Hrs
4	Growth Strategies And Networking: Performance appraisal and assessment. Profitability and control measures, demands and challenges. Need for diversification. Future Growth – Techniques of expansion and diversification, vision strategies. Concept and dynamics. Methods, Joint venture, co-ordination and feasibility study.	12 Hrs

5	Preparing Project Proposal To Start On New Enterprise Project work – Feasibility report; Planning, resource mobilisation and implementation.	12 Hrs

REFERENCES

1. Akhauri, M.M.P.(1990): Entrepreneurship for Women in India, NIESBUD, New Delhi.
2. Hisrich, R.D & Brush, C.G.(1996) The Women Entrepreneurs, D.C. Health & Co., Toranto.
3. Hisrich, R.D. and Peters, M.P. (1995): Entrepreneurship – Starting, Developing and Managing a New Enterprise, Richard D., Inwin, INC, USA.
4. Meredith, G.G. etal (1982): Practice of Entrepreneurship, ILO, Geneva.
5. Patel, V.C. (1987): Women Entrepreneurship – Developing New Entrepreneurs, Ahmedabad EDII.

INDUSTRIAL PHARMACY PRACTICAL - II
(MIP 205P)

1. Improvement of dissolution characteristics of slightly soluble drug by Solid dispersion technique.
2. Comparison of dissolution of two different marketed products /brands
3. Protein binding studies of a highly protein bound drug & poorly protein bound drug
4. Bioavailability studies of Paracetamol (Animal).
5. Pharmacokinetic and IVIVC data analysis by WinnolineR software
6. In vitro cell studies for permeability and metabolism
7. Formulation and evaluation of tablets
8. Formulation and evaluation of capsules
9. Formulation and evaluation of injections
10. Formulation and evaluation of emulsion
11. Formulation and evaluation of suspension.
12. Formulation and evaluation of enteric coating tablets.
13. Preparation and evaluation of a freeze dried formulation.
14. Preparation and evaluation of a spray dried formulation.

PHARMACEUTICALCHEMISTRY(MPC)

MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES
(MPC 101T)

Scope

This subject deals with various advanced analytical instrumental techniques for identification, characterization and quantification of drugs. Instruments dealt are NMR, Mass spectrometer, IR, HPLC, GC etc.

Objectives

After completion of course student is able to know about chemicals and excipients

- The analysis of various drugs in single and combination dosage forms
- Theoretical and practical skills of the instruments

THEORY 60 Hrs

1. a. UV-Visible spectroscopy: Introduction, Theory, Laws, Instrumentation associated with UV-Visible spectroscopy, Choice of solvents and solvent effect and Applications of UV-Visible spectroscopy, Difference/ Derivative spectroscopy. — 10 Hrs

   b. IR spectroscopy: Theory, Modes of Molecular vibrations, Sample handling, Instrumentation of Dispersive and Fourier - Transform IR Spectrometer, Factors affecting vibrational frequencies and Applications of IR spectroscopy, Data Interpretation.

   c. Spectroflourimetry: Theory of Fluorescence, Factors affecting fluorescence (Characterestics of drugs that can be analysed by flourimetry), Quenchers, Instrumentation and Applications of fluorescence spectrophotometer.

   d. Flame emission spectroscopy and Atomic absorption spectroscopy: Principle, Instrumentation, Interferences and Applications.

2 NMR spectroscopy: Quantum numbers and their role in NMR, Principle, Instrumentation, Solvent requirement in NMR, Relaxation process, NMR signals in various compounds, Chemical shift, Factors influencing chemical shift, Spin-Spin coupling, Coupling constant, Nuclear magnetic double resonance, Brief outline of principles of FT-NMR and 13C NMR. Applications of NMR spectroscopy. — 10 Hrs

3	Mass Spectroscopy: Principle, Theory, Instrumentation of Mass Spectroscopy, Different types of ionization like electron impact, chemical, field, FAB and MALDI, APCI, ESI, APPI Analyzers of Quadrupole and Time of Flight, Mass fragmentation and its rules, Meta stable ions, Isotopic peaks and Applications of Mass spectroscopy.	10 Hrs
4	Chromatography: Principle, apparatus, instrumentation, chromatographic parameters, factors affecting resolution, isolation of drug from excipients, data interpretation and applications of the following: a) Thin Layer chromatography b) High Performance Thin Layer Chromatography c) Ion exchange chromatography d) Column chromatography e) Gas chromatography f) High Performance Liquid chromatography g) Ultra High Performance Liquid chromatography h) Affinity chromatography i) Gel Chromatography	10 Hrs
5	a. Electrophoresis: Principle, Instrumentation, Working conditions, factors affecting separation and applications of the following: a) Paper electrophoresis b) Gel electrophoresis c) Capillary electrophoresis d) Zone electrophoresis e) Moving boundary electrophoresis f) Iso electric focusing b. X ray Crystallography: Production of X rays, Different X ray methods, Bragg's law, Rotating crystal technique, X ray powder technique, Types of crystals and applications of X-ray diffraction.	10 Hrs
6	a. Potentiometry: Principle, working, Ion selective Electrodes and Application of potentiometry. b. Thermal Techniques: Principle, thermal transitions and Instrumentation (Heat flux and power-compensation and designs), Modulated DSC, Hyper DSC, experimental parameters (sample preparation, experimental conditions, calibration, heating and cooling rates, resolution, source of errors) and their influence, advantage and disadvantages, pharmaceutical applications. Differential Thermal Analysis (DTA): Principle, instrumentation	10 Hrs

and advantage and disadvantages, pharmaceutical applications, derivative differential thermal analysis (DDTA). TGA: Principle, instrumentation, factors affecting results, advantage and disadvantages, pharmaceutical applications.

REFERENCES

1. Spectrometric Identification of Organic compounds - Robert M Silverstein, Sixth edition, John Wiley & Sons, 2004.
2. Principles of Instrumental Analysis - Doglas A Skoog, F. James Holler, Timothy A. Nieman, 5th edition, Eastern press, Bangalore, 1998.
3. Instrumental methods of analysis - Willards, 7th edition, CBS publishers.
4. Practical Pharmaceutical Chemistry - Beckett and Stenlake, Vol II, 4th edition, CBS Publishers, New Delhi, 1997.
5. Organic Spectroscopy - William Kemp, 3rd edition, ELBS, 1991.
6. Quantitative Analysis of Drugs in Pharmaceutical formulation - P D Sethi, 3rd Edition, CBS Publishers, New Delhi, 1997.
7. Pharmaceutical Analysis - Modern Methods - Part B - J W Munson, Vol 11, Marcel. Dekker Series
8. Spectroscopy of Organic Compounds, 2nd edn., P.S/Kalsi, Wiley estern Ltd., Delhi.
9. Textbook of Pharmaceutical Analysis, KA.Connors, 3rd Edition, John Wiley & Sons, 1982.

ADVANCED ORGANIC CHEMISTRY - I
(MPC 102T)

Scope

The subject is designed to provide in-depth knowledge about advances in organic chemistry, different techniques of organic synthesis and their applications to process chemistry as well as drug discovery.

Objectives

Upon completion of course, the student shall be to understand

- The principles and applications of reterosynthesis
- The mechanism & applications of various named reactions
- The concept of disconnection to develop synthetic routes for small target molecule.
- The various catalysts used in organic reactions
- The chemistry of heterocyclic compounds

THEORY 60 Hrs

1. Basic Aspects of Organic Chemistry: 12 Hrs
   1. Organic intermediates: Carbocations, carbanions, free radicals, carbenes and nitrenes. Their method of formation, stability and synthetic applications.
   2. Types of reaction mechanisms and methods of determining them,
   3. Detailed knowledge regarding the reactions, mechanisms and their relative reactivity and orientations.

   Addition reactions

   a) Nucleophilic uni- and bimolecular reactions (SN1 and SN2)
   b) Elimination reactions (E1 & E2; Hoffman & Saytzeff's rule)
   c) Rearrangement reaction

2 Study of mechanism and synthetic applications of following named Reactions: 12 Hrs

Ugi reaction, Brook rearrangement, Ullmann coupling reactions, Dieckmann Reaction, Doebner-Miller Reaction, Sandmeyer Reaction, Mitsunobu reaction, Mannich reaction, Vilsmeyer-Haack Reaction, Sharpless asymmetric epoxidation, Baeyer-Villiger oxidation, Shapiro & Suzuki reaction, Ozonolysis and Michael addition reaction

3 Synthetic Reagents & Applications: 12 Hrs

Aluminiumisopropoxide, N-bromosuccinamide, diazomethane, dicyclohexylcarbodimide, Wilkinson reagent, Witting reagent. Osmium tetroxide, titanium chloride, diazopropane, diethyl azodicarboxylate, Triphenylphosphine, Benzotriazol-1-yloxy) tris (dimethylamino) phosphonium hexafluoro-phosphate (BOP).

Protecting groups

a. Role of protection in organic synthesis
b. Protection for the hydroxyl group, including 1,2-and1,3-diols: ethers, esters, carbonates, cyclic acetals & ketals
c. Protection for the Carbonyl Group: Acetals and Ketals
d. Protection for the Carboxyl Group: amides and hydrazides, esters
e. Protection for the Amino Group and Amino acids: carbamates and amides

4 Heterocyclic Chemistry: 12 Hrs

Organic Name reactions with their respective mechanism and application involved in synthesis of drugs containing five, six membered and fused hetrocyclics such as Debus-Radziszewski imidazole synthesis, Knorr Pyrazole Synthesis Pinner Pyrimidine Synthesis, Combes Quinoline Synthesis, Bernthsen Acridine Synthesis, Smiles rearrangement and Traube purine synthesis.

Synthesis of few representative drugs containing these hetrocyclic nucleus such as Ketoconazole, Metronidazole, Miconazole, celecoxib, antipyrin, Metamizole sodium, Terconazole, Alprazolam, Triamterene, Sulfamerazine, Trimethoprim, Hydroxychloroquine, Quinine, Chloroquine, Quinacrine, Amsacrine, Prochlorpherazine, Promazine, Chlorpromazine,Theophylline , Mercaptopurine and Thioguanine.

5 Synthon approach and retrosynthesis applications 12 Hrs

i. Basic principles, terminologies and advantages of retrosynthesis; guidelines for dissection of molecules. Functional group interconvertion and addition (FGI and FGA)
ii. C-X disconnections; C-C disconnections – alcohols and carbonyl compounds; 1,2-, 1,3-,1,4-, 1,5-, 1,6-difunctionalized compounds
iii. Strategies for synthesis of three, four, five and six-membered ring.

REFERENCES

1. "Advanced Organic chemistry, Reaction, Mechanisms and Structure", J March, John Wiley and Sons, New York.
2. "Mechanism and Structure in Organic Chemistry", ES Gould, Hold Rinchart and Winston, New York.
3. "Organic Chemistry" Clayden, Greeves, Warren and Woihers., Oxford University Press 2001.
4. "Organic Chemistry" Vol I and II. I.L. Finar. ELBS, Pearson Education Lts, Dorling Kindersley 9India) Pvt. Ltd.,.
5. A guide to mechanisms in Organic Chemistry, Peter Skyes (Orient Longman, New Delhi).
6. Reactive Intermediates in Organic Chemistry, Tandom and Gowel, Oxford & IBH Publishers.
7. Combinational Chemistry – Synthesis and applications – Stephen R Wilson & Anthony W Czarnik, Wiley – Blackwell.
8. Carey, Organic Chemistry, 5th Edition (Viva Books Pvt. Ltd.)
9. Organic Synthesis - The Disconnection Approach, S. Warren, Wily India
10. Principles of Organic Synthesis, ROC Norman and JM Coxan, Nelson Thorns.
11. Organic Synthesis – Special Techniques. VK Ahluwalia and R Agarwal, Narosa Publishers.
12. Organic Reaction Mechanisms IVth Edtn, VK Ahluwalia and RK Parashar, Narosa Publishers.

ADVANCED MEDICINAL CHEMISTRY
(MPC 103T)

Scope

The subject is designed to impart knowledge about recent advances in the field of medicinal chemistry at the molecular level including different techniques for the rational drug design.

Objectives

At completion of this course it is expected that students will be able to understand

- Different stages of drug discovery
- Role of medicinal chemistry in drug research
- Different techniques for drug discovery
- Various strategies to design and develop new drug like molecules for biological targets
- Peptidomimetics

THEORY 60 Hrs

1. Drug discovery: Stages of drug discovery, lead discovery; identification, validation and diversity of drug targets. 12 Hrs

   Biological drug targets: Receptors, types, binding and activation, theories of drug receptor interaction, drug receptor interactions, agonists vs antagonists, artificial enzymes.

2 Prodrug Design and Analog design: 12 Hrs

   a) Prodrug design: Basic concept, Carrier linked prodrugs/ Bioprecursors, Prodrugs of functional group, Prodrugs to improve patient acceptability, Drug solubility, Drug absorption and distribution, site specific drug delivery and sustained drug action. Rationale of prodrug design and practical consideration of prodrug design.

   b) Combating drug resistance: Causes for drug resistance, strategies to combat drug resistance in antibiotics and anticancer therapy, Genetic principles of drug resistance.

   c) Analog Design: Introduction, Classical & Non classical, Bioisosteric replacement strategies, rigid analogs,

alteration of chain branching, changes in ring size, ring position isomers, design of stereo isomers and geometric isomers, fragments of a lead molecule, variation in inter atomic distance.

3 a) Medicinal chemistry aspects of the following class of drugs 12 Hrs

Systematic study, SAR, Mechanism of action and synthesis of new generation molecules of following class of drugs:

a) Anti-hypertensive drugs, Psychoactive drugs, Anticonvulsant drugs, H1 & H2 receptor antagonist, COX1 & COX2 inhibitors, Adrenergic & Cholinergic agents, Antineoplastic and Antiviral agents.

b) Stereochemistry and Drug action: Realization that stereo selectivity is a pre-requisite for evolution. Role of chirality in selective and specific therapeutic agents. Case studies, Enantio selectivity in drug adsorption, metabolism, distribution and elimination.

4 Rational Design of Enzyme Inhibitors 12 Hrs

Enzyme kinetics & Principles of Enzyme inhibitors, Enzyme inhibitors in medicine, Enzyme inhibitors in basic research, rational design of non-covalently and covalently binding enzyme inhibitors.

5 Peptidomimetics 12 Hrs

Therapeutic values of Peptidomimetics, design of peptidomimetics by manipulation of the amino acids, modification of the peptide backbone, incorporating conformational constraints locally or globally. Chemistry of prostaglandins, leukotrienes and thromboxones.

REFERENCES

1. Medicinal Chemistry by Burger, Vol I –VI.
2. Wilson and Gisvold's Text book of Organic Medicinal and Pharmaceutical Chemistry, 12th Edition, Lppincott Williams & Wilkins, Woltess Kluwer (India) Pvt.Ltd, New Delhi.
3. Comprehensive Medicinal Chemistry – Corwin and Hansch.
4. Computational and structural approaches to drug design edited by Robert M Stroud and Janet. F Moore

5. Introduction to Quantitative Drug Design by Y.C. Martin.
6. Principles of Medicinal Chemistry by William Foye, 7th Edition, Ippincott Williams & Wilkins, Woltess Kluwer (India) Pvt.Ltd, New Delhi.
7. Drug Design Volumes by Arienes, Academic Press, Elsevier Publishers, Noida, Uttar Pradesh..
8. Principles of Drug Design by Smith.
9. The Organic Chemistry of the Drug Design and Drug action by Richard B.Silverman, II Edition, Elsevier Publishers, New Delhi.
10. An Introduction to Medicinal Chemistry, Graham L.Patrick, III Edition, Oxford University Press, USA.
11. Biopharmaceutics and pharmacokinetics, DM.Brahmankar, Sunil B. Jaiswal II Edition, 2014, Vallabh Prakashan, New Delhi.
12. Peptidomimetics in Organic and Medicinal Chemistry by Antonio Guarna and Andrea Trabocchi, First edition, Wiley publishers.

CHEMISTRY OF NATURAL PRODUCTS
(MPC 104T)

Scope

The subject is designed to provide detail knowledge about chemistry of medicinal compounds from natural origin and general methods of structural elucidation of such compounds. It also emphasizes on isolation, purification and characterization of medicinal compounds from natural origin.

Objectives

At completion of this course it is expected that students will be able to understand-

- Different types of natural compounds and their chemistry and medicinal importance
- The importance of natural compounds as lead molecules for new drug discovery
- The concept of rDNA technology tool for new drug discovery
- General methods of structural elucidation of compounds of natural origin
- Isolation, purification and characterization of simple chemical constituents from natural source

THEORY 60 Hrs

1. Study of Natural products as leads for new pharmaceuticals for the following class of drugs — 12 Hrs
   a) Drugs Affecting the Central Nervous System: Morphine Alkaloids
   b) Anticancer Drugs: Paclitaxel and Docetaxel, Etoposide, and Teniposide
   c) Cardiovascular Drugs: Lovastatin, Teprotide and Dicoumarol
   d) Neuromuscular Blocking Drugs: Curare alkaloids
   e) Anti-malarial drugs and Analogues
   f) Chemistry of macrolid antibiotics (Erythromycin, Azithromycin, Roxithromycin, and Clarithromycin) and β - Lactam antibiotics (Cephalosporins and Carbapenem)
2. a) Alkaloids — 12 Hrs
   General introduction, classification, isolation, purification, molecular modification and biological activity of alkaloids, general methods of structural determination of alkaloids, structural elucidation and stereochemistry of ephedrine, morphine, ergot, emetine and reserpine.

b) Flavonoids

Introduction, isolation and purification of flavonoids, General methods of structural determination of flavonoids; Structural elucidation of quercetin.

c) Steroids

General introduction, chemistry of sterols, sapogenin and cardiac glycosides. Stereochemistry and nomenclature of steroids, chemistry of contraceptive agents male & female sex hormones (Testosterone, Estradiol, Progesterone), adrenocorticoids (Cortisone), contraceptive agents and steroids (Vit – D).

3 a) Terpenoids — 12 Hrs

Classification, isolation, isoprene rule and general methods of structural elucidation of Terpenoids; Structural elucidation of drugs belonging to mono (citral, menthol, camphor), di(retinol, Phytol, taxol) and tri terpenoids (Squalene,Ginsenoside) carotinoids (β carotene).

b) Vitamins

Chemistry and Physiological significance of Vitamin A, B1, B2, B12, C, E, Folic acid and Niacin.

4 a). Recombinant DNA technology and drug discovery — 12 Hrs

rDNA technology, hybridoma technology, New pharmaceuticals derived from biotechnology; Oligonucleotide therapy. Gene therapy: Introduction, Clinical application and recent advances in gene therapy, principles of RNA & DNA estimation

b). Active constituent of certain crude drugs used in Indigenous system Diabetic therapy – Gymnema sylvestre, Salacia reticulate, Pterocarpus marsupiam, Swertia chirata, Trigonella foenum graccum; Liver dysfunction – Phyllanthus niruri; Antitumor – Curcuma longa Linn.

5 Structural Characterization of natural compounds — 12 Hrs

Structural characterization of natural compounds using IR, 1HNMR, 13CNMR and MS Spectroscopy of specific drugs e.g., Penicillin, Morphine, Camphor, Vit-D, Quercetin and Digitalis glycosides.

REFERENCES

1. Modern Methods of Plant Analysis, Peech and M.V.Tracey, Springer – Verlag, Berlin, Heidelberg.
2. Phytochemistry Vol. I and II by Miller, Jan Nostrant Rein Hld.
3. Recent advances in Phytochemistry Vol. I to IV – Scikel Runeckles, Springer Science & Business Media.
4. Chemistry of natural products Vol I onwards IWPAC.
5. Natural Product Chemistry Nakanishi Gggolo, University Science Books, California.
6. Natural Product Chemistry "A laboratory guide" – Rapheal Khan.
7. The Alkaloid Chemistry and Physiology by RHF Manske, Academic Press.
8. Introduction to molecular Phytochemistry – CHJ Wells, Chapmannstall.
9. Organic Chemistry of Natural Products Vol I and II by Gurdeep and Chatwall, Himalaya Publishing House.
10. Organic Chemistry of Natural Products Vol I and II by O.P. Agarwal, Krishan Prakashan.
11. Organic Chemistry Vol I and II by I.L. Finar, Pearson education.
12. Elements of Biotechnology by P.K. Gupta, Rastogi Publishers.
13. Pharmaceutical Biotechnology by S.P.Vyas and V.K.Dixit, CBS Publishers.
14. Biotechnology by Purohit and Mathur, Agro-Bios, 13th edition.
15. Phytochemical methods of Harborne, Springer, Netherlands.
16. Burger's Medicinal Chemistry.

PHARMACEUTICAL CHEMISTRY PRACTICAL - I
(MPC 105P)

1. Analysis of Pharmacopoeial compounds and their formulations by UV Vis spectrophotometer, RNA & DNA estimation
2. Simultaneous estimation of multi component containing formulations by UV spectrophotometry
3. Experiments based on Column chromatography
4. Experiments based on HPLC
5. Experiments based on Gas Chromatography
6. Estimation of riboflavin/quinine sulphate by fluorimetry
7. Estimation of sodium/potassium by flame photometry

To perform the following reactions of synthetic importance

1. Purification of organic solvents, column chromatography
2. Claisen-schimidt reaction.
3. Benzyllic acid rearrangement.
4. Beckmann rearrangement.
5. Hoffmann rearrangement
6. Mannich reaction
7. Synthesis of medicinally important compounds involving more than one step along with purification and Characterization using TLC, melting point and IR spectroscopy (4 experiments)
8. Estimation of elements and functional groups in organic natural compounds
9. Isolation, characterization like melting point, mixed melting point, molecular weight determination, functional group analysis, co-chromatographic technique for identification of isolated compounds and interpretation of UV and IR data.
10. Some typical degradation reactions to be carried on selected plant constituents

ADVANCED SPECTRAL ANALYSIS
(MPC 201T)

Scope

This subject deals with various hyphenated analytical instrumental techniques for identification, characterization and quantification of drugs. Instruments dealt are LC-MS, GC-MS, ATR-IR, DSC etc.

Objectives

At completion of this course it is expected that students will be able to understand-

- Interpretation of the NMR, Mass and IR spectra of various organic compounds
- Theoretical and practical skills of the hyphenated instruments
- Identification of organic compounds

THEORY 60Hrs

1. UV and IR spectroscopy: 12 Hrs
   Wood ward – Fieser rule for 1,3- butadienes, cyclic dienes and α, β-carbonyl compounds and interpretation compounds of enones. ATR-IR, IR Interpretation of organic compounds.

2 NMR spectroscopy: 12 Hrs
   1-D and 2-D NMR, NOESY and COSY, HECTOR, INADEQUATE techniques, Interpretation of organic compounds.

3 Mass Spectroscopy 12 Hrs
   Mass fragmentation and its rules, Fragmentation of important functional groups like alcohols, amines, carbonyl groups and alkanes, Meta stable ions, Mc Lafferty rearrangement, Ring rule, Isotopic peaks, Interpretation of organic compounds.

4 Chromatography: 12 Hrs
   Principle, Instrumentation and Applications of the following :
   a) GC-MS b) GC-AAS c) LC-MS d) LC-FTIR e) LC-NMR f) CE-MS g) High Performance Thin Layer chromatography h) Super critical fluid chromatography i) Ion Chromatography j) I-EC (Ion-Exclusion Chromatography) k) Flash chromatography

5 a). Thermal methods of analysis 12 Hrs

Introduction, principle, instrumentation and application of DSC, DTA and TGA.

b). Raman Spectroscopy

Introduction, Principle, Instrumentation and Applications.

c). Radio immuno assay

Biological standardization , bioassay, ELISA, Radioimmuno assay of digitalis and insulin.

REFERENCES

1. Spectrometric Identification of Organic compounds - Robert M Silverstein, Sixth edition, John Wiley & Sons, 2004.
2. Principles of Instrumental Analysis - Doglas A Skoog, F. James Holler, Timothy A. Nieman, 5th edition, Eastern press, Bangalore, 1998.
3. Instrumental methods of analysis – Willards, 7th edition, CBS publishers.
4. Organic Spectroscopy - William Kemp, 3rd edition, ELBS, 1991.
5. Quantitative analysis of Pharmaceutical formulations by HPTLC - P D Sethi, CBS Publishers, New Delhi.
6. Quantitative Analysis of Drugs in Pharmaceutical formulation - P D Sethi, 3rd Edition, CBS Publishers, New Delhi, 1997.
7. Pharmaceutical Analysis- Modern methods – Part B - J W Munson, Volume 11, Marcel Dekker Series

ADVANCED ORGANIC CHEMISTRY - II
(MPC 202T)

Scope

The subject is designed to provide in-depth knowledge about advances in organic chemistry, different techniques of organic synthesis and their applications to process chemistry as well as drug discovery.

Objectives

Upon completion of course, the student shall able to understand

- The principles and applications of Green chemistry
- The concept of peptide chemistry.
- The various catalysts used in organic reactions
- The concept of stereochemistry and asymmetric synthesis.

THEORY 60 Hrs

1. Green Chemistry: 12 Hrs
   a. Introduction, principles of green chemistry
   b. Microwave assisted reactions: Merit and demerits of its use, increased reaction rates, mechanism, superheating effects of microwave, effects of solvents in microwave assisted synthesis, microwave technology in process optimization, its applications in various organic reactions and heterocycles synthesis
   c. Ultrasound assisted reactions: Types of sonochemical reactions, homogenous, heterogeneous liquid-liquid and liquid-solid reactions, synthetic applications
   d. Continuous flow reactors: Working principle, advantages and synthetic applications.
2. Chemistry of peptides 12 Hrs
   a. Coupling reactions in peptide synthesis
   b. Principles of solid phase peptide synthesis, t-BOC and FMOC protocols, various solid supports and linkers: Activation procedures, peptide bond formation, deprotection and cleavage from resin, low and high HF cleavage protocols, formation of free peptides and peptide amides, purification and case studies, site-specific chemical modifications of peptides
   c. Segment and sequential strategies for solution phase peptide synthesis with any two case studies
   d. Side reactions in peptide synthesis: Deletion peptides, side

reactions initiated by proton abstraction, protonation, over-activation and side reactions of individual amino acids.

3 Photochemical Reactions 12 Hrs

Basic principles of photochemical reactions. Photo-oxidation, photo-addition and photo-fragmentation.

Pericyclic reactions

Mechanism, Types of pericyclic reactions such as cyclo addition, electrocyclic reaction and sigmatrophic rearrangement reactions with examples

4 Catalysis: 12 Hrs

a. Types of catalysis, heterogeneous and homogenous catalysis, advantages and disadvantages
b. Heterogeneous catalysis – preparation, characterization, kinetics, supported catalysts, catalyst deactivation and regeneration, some examples of heterogeneous catalysis used in synthesis of drugs.
c. Homogenous catalysis, hydrogenation, hydroformylation, hydrocyanation, Wilkinson catalysts, chiral ligands and chiral induction, Ziegler-Natta catalysts, some examples of homogenous catalysis used in synthesis of drugs
d. Transition-metal and Organo-catalysis in organic synthesis: Metal-catalyzed reactions
e. Biocatalysis: Use of enzymes in organic synthesis, immobilized enzymes/cells in organic reaction.
f. Phase transfer catalysis - theory and applications

5 Stereochemistry & Asymmetric Synthesis 12 Hrs

a. Basic concepts in stereochemistry – optical activity, specific rotation, racemates and resolution of racemates, the Cahn, Ingold, Prelog (CIP) sequence rule, meso compounds, pseudo asymmetric centres, axes of symmetry, Fischers D and L notation, cis-trans isomerism, E and Z notation.
b. Methods of asymmetric synthesis using chiral pool, chiral auxiliaries and catalytic asymmetric synthesis, enantiopure separation and Stereo selective synthesis with examples.

REFERENCES

1. "Advanced Organic chemistry, Reaction, mechanisms and structure", J March, John Wiley and sons, New York.
2. "Mechanism and structure in organic chemistry", ES Gould, Hold Rinchart and Winston,NewYork.
3. "Organic Chemistry" Clayden, Greeves, Warren and Woihers., Oxford University Press 2001.
4. "Organic Chemistry" Vol I and II. I.L. Finar. ELBS, Sixth ed., 1995.
5. Carey, Organic chemistry, 5th edition (Viva Books Pvt. Ltd.)
6. Organic synthesis-the disconnection approach, S. Warren, Wily India
7. Principles of organic synthesis, ROCNorman and JMCoxan, Nelson thorns
8. Organic synthesis- Special techniques VK Ahluwalia and R Aggarwal, Narosa Publishers.
9. Organic reaction mechanisms IV edtn, VK Ahluwalia and RK Parashar, Narosa Publishers.

COMPUTER AIDED DRUG DESIGN
(MPC 203T)

Scope

The subject is designed to impart knowledge on the current state of the art techniques involved in computer assisted drug design.

Objectives

At completion of this course it is expected that students will be able to understand

- Role of CADD in drug discovery
- Different CADD techniques and their applications
- Various strategies to design and develop new drug like molecules.
- Working with molecular modeling softwares to design new drug molecules
- The in silico virtual screening protocols

Theory — 60 Hrs

1. Introduction to Computer Aided Drug Design (CADD) — 12 Hrs

   History, different techniques and applications.

   Quantitative Structure Activity Relationships: Basics

   History and development of QSAR: Physicochemical parameters and methods to calculate physicochemical parameters: Hammett equation and electronic parameters (sigma), lipophilicity effects and parameters (log P, pi-substituent constant), steric effects (Taft steric and MR parameters) Experimental and theoretical approaches for the determination of these physicochemical parameters.

2 Quantitative Structure Activity Relationships: Applications — 12 Hrs

   Hansch analysis, Free Wilson analysis and relationship between them, Advantages and disadvantages; Deriving 2D-QSAR equations.

   3D-QSAR approaches and contour map analysis.

   Statistical methods used in QSAR analysis and importance of statistical parameters.

3 Molecular Modeling and Docking — 12 Hrs

   a) Molecular and Quantum Mechanics in drug design.

   b) Energy Minimization Methods: comparison between global

minimum conformation and bioactive conformation

c) Molecular docking and drug receptor interactions: Rigid docking, flexible docking and extra-precision docking. Agents acting on enzymes such as DHFR, HMG-CoA reductase and HIV protease, choline esterase (AchE & BchE)

4 Molecular Properties and Drug Design 12 Hrs

a) Prediction and analysis of ADMET properties of new molecules and its importance in drug design.

b) De novo drug design: Receptor/enzyme-interaction and its analysis, Receptor/enzyme cavity size prediction, predicting the functional components of cavities, Fragment based drug design.

c) Homology modeling and generation of 3D-structure of protein.

5 Pharmacophore Mapping and Virtual Screening 12 Hrs

Concept of pharmacophore, pharmacophore mapping, identification of Pharmacophore features and Pharmacophore modeling; Conformational search used in pharmacophore mapping.

In Silico Drug Design and Virtual Screening Techniques

Similarity based methods and Pharmacophore based screening, structure based In-silico virtual screening protocols.

REFERENCES

1. Computational and structural approaches to drug discovery, Robert M Stroud and Janet. F Moore, RCS Publishers.
2. Introduction to Quantitative Drug Design by Y.C. Martin, CRC Press, Taylor & Francis group..
3. Drug Design by Ariens Volume 1 to 10, Academic Press, 1975, Elsevier Publishers.
4. Principles of Drug Design by Smith and Williams, CRC Press, Taylor & Francis.
5. The Organic Chemistry of the Drug Design and Drug action by Richard B. Silverman, Elsevier Publishers.
6. Medicinal Chemistry by Burger, Wiley Publishing Co.

7. An Introduction to Medicinal Chemistry –Graham L. Patrick, Oxford University Press.
8. Wilson and Gisvold's Text book of Organic Medicinal and Pharmaceutical Chemistry, Ippincott Williams & Wilkins.
9. Comprehensive Medicinal Chemistry – Corwin and Hansch, Pergamon Publishers.
10. Computational and structural approaches to drug design edited by Robert M Stroud and Janet. F Moore

PHARMACEUTICAL PROCESS CHEMISTRY
(MPC 204T)

Scope

Process chemistry is often described as scale up reactions, taking them from small quantities created in the research lab to the larger quantities that are needed for further testing and then to even larger quantities required for commercial production. The goal of a process chemist is to develop synthetic routes that are safe, cost-effective, environmentally friendly, and efficient. The subject is designed to impart knowledge on the development and optimization of a synthetic route/s and the pilot plant procedure for the manufacture of Active Pharmaceutical Ingredients (APIs) and new chemical entities (NCEs) for the drug development phase.

Objectives

At completion of this course it is expected that students will be able to understand

- The strategies of scale up process of apis and intermediates
- The various unit operations and various reactions in process chemistry

THEORY — 60 Hrs

1. Process chemistry — 12 Hrs

Introduction, Synthetic strategy

Stages of scale up process: Bench, pilot and large scale process.

In-process control and validation of large scale process.

Case studies of some scale up process of APIs.

Impurities in API, types and their sources including genotoxic impurities

2 Unit operations — 12 Hrs

a) Extraction: Liquid equilibria, extraction with reflux, extraction with agitation, counter current extraction.
b) Filtration: Theory of filtration, pressure and vacuum filtration, centrifugal filtration,
c) Distillation: azeotropic and steam distillation
d) Evaporation: Types of evaporators, factors affecting evaporation.
e) Crystallization: Crystallization from aqueous, non-aqueous solutions factors affecting crystallization, nucleation. Principle and general methods of Preparation of polymorphs, hydrates, solvates and amorphous APIs.

3 Unit Processes - I 12 Hrs

a) Nitration: Nitrating agents, Aromatic nitration, kinetics and mechanism of aromatic nitration, process equipment for technical nitration, mixed acid for nitration,

b) Halogenation: Kinetics of halogenations, types of halogenations, catalytic halogenations. Case study on industrial halogenation process.

c) Oxidation: Introduction, types of oxidative reactions, Liquid phase oxidation with oxidizing agents. Nonmetallic Oxidizing agents such as H_2O_2, sodium hypochlorite, Oxygen gas, ozonolysis.

4 Unit Processes - II 12 Hrs

a) Reduction: Catalytic hydrogenation, Heterogeneous and homogeneous catalyst; Hydrogen transfer reactions, Metal hydrides. Case study on industrial reduction process.

b) Fermentation: Aerobic and anaerobic fermentation. Production of

i. Antibiotics; Penicillin and Streptomycin,
ii. Vitamins: B2 and B12
iii. Statins: Lovastatin, Simvastatin

c) Reaction progress kinetic analysis

i. Streamlining reaction steps, route selection,
ii. Characteristics of expedient routes, characteristics of cost-effective routes, reagent selection, families of reagents useful for scale-up.

5 Industrial Safety 12 Hrs

a) MSDS (Material Safety Data Sheet), hazard labels of chemicals and Personal Protection Equipment (PPE)

b) Fire hazards, types of fire & fire extinguishers

c) Occupational Health & Safety Assessment Series 1800 (OHSAS-1800) and ISO-14001(Environmental Management System), Effluents and its management

REFERENCES

1. Process Chemistry in the Pharmaceutical Industry: Challenges in an Ever-Changing Climate-An Overview; K. Gadamasetti, CRC Press.
2. Pharmaceutical Manufacturing Encyclopedia, 3rd edition, Volume 2.
3. Medicinal Chemistry by Burger, 6th edition, Volume 1-8.
4. W.L. McCabe, J.C Smith, Peter Harriott. Unit operations of chemical engineering, 7th edition, McGraw Hill
5. Polymorphism in Pharmaceutical Solids .Dekker Series Volume 95 Ed: H G Brittain (1999)
6. Regina M. Murphy: Introduction to Chemical Processes: Principles, Analysis, Synthesis
7. Peter J. Harrington: Pharmaceutical Process Chemistry for Synthesis: Rethinking the Routes to Scale-Up
8. P.H.Groggins: Unit processes in organic synthesis (MGH)
9. F.A.Henglein: Chemical Technology (Pergamon)
10. M.Gopal: Dryden's Outlines of Chemical Technology, WEP East-West Press
11. Clausen,Mattson: Principle of Industrial Chemistry, Wiley Publishing Co.,
12. Lowenheim & M.K. Moran: Industrial Chemicals
13. S.D. Shukla & G.N. Pandey: A text book of Chemical Technology Vol. II, Vikas Publishing House
14. J.K. Stille: Industrial Organic Chemistry (PH)
15. Shreve: Chemical Process, Mc Grawhill.
16. B.K.Sharma: Industrial Chemistry, Goel Publishing House
17. ICH Guidelines
18. United States Food and Drug Administration official website www.fda.gov

PHARMACEUTICAL CHEMISTRY PRACTICALS – II
(MPC 205P)

1. Synthesis of organic compounds by adapting different approaches involving (3 experiments)
   a) Oxidation
   b) Reduction/hydrogenation
   c) Nitration
2. Comparative study of synthesis of APIs/intermediates by different synthetic routes (2 experiments)
3. Assignments on regulatory requirements in API (2 experiments)
4. Comparison of absorption spectra by UV and Wood ward – Fieser rule
5. Interpretation of organic compounds by FT-IR
6. Interpretation of organic compounds by NMR
7. Interpretation of organic compounds by MS
8. Determination of purity by DSC in pharmaceuticals
9. Identification of organic compounds using FT-IR, NMR, CNMR and Mass spectra
10. To carry out the preparation of following organic compounds
11. Preparation of 4-chlorobenzhydrylpiperazine. (an intermediate for cetirizine HCl).
12. Preparation of 4-iodotolene from p-toluidine.
13. $NaBH_4$ reduction of vanillin to vanillyl alcohol
14. Preparation of umbelliferone by Pechhman reaction
15. Preparation of triphenyl imidazole
16. To perform the Microwave irradiated reactions of synthetic importance (Any two)
17. Determination of log P, MR, hydrogen bond donors and acceptors of selected drugs using softwares
18. Calculation of ADMET properties of drug molecules and its analysis using softwares
    Pharmacophore modeling
19. 2D-QSAR based experiments
20. 3D-QSAR based experiments
21. Docking study based experiment
22. Virtual screening based experiment

PHARMACEUTICALANALYSIS(MPA)

MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES (MPA 101T)

Scope

This subject deals with various advanced analytical instrumental techniques for identification, characterization and quantification of drugs. Instruments dealt are NMR, Mass spectrometer, IR, HPLC, GC etc.

Objectives

After completion of course student is able to know about chemicals and excipients

- The analysis of various drugs in single and combination dosage forms
- Theoretical and practical skills of the instruments

	THEORY	60 Hrs
1.	a. UV-Visible spectroscopy: Introduction, Theory, Laws, Instrumentation associated with UV-Visible spectroscopy, Choice of solvents and solvent effect and Applications of UV-Visible spectroscopy, Difference/ Derivative spectroscopy. b. IR spectroscopy: Theory, Modes of Molecular vibrations, Sample handling, Instrumentation of Dispersive and Fourier - Transform IR Spectrometer, Factors affecting vibrational frequencies and Applications of IR spectroscopy, Data Interpretation. c. Spectroflourimetry: Theory of Fluorescence, Factors affecting fluorescence (Characterestics of drugs that can be analysed by flourimetry), Quenchers, Instrumentation and Applications of fluorescence spectrophotometer. d. Flame emission spectroscopy and Atomic absorption spectroscopy: Principle, Instrumentation, Interferences and Applications.	10 Hrs
2	NMR spectroscopy: Quantum numbers and their role in NMR, Principle, Instrumentation, Solvent requirement in NMR, Relaxation process, NMR signals in various compounds, Chemical shift, Factors influencing chemical shift, Spin-Spin coupling, Coupling constant, Nuclear magnetic double resonance, Brief outline of principles of FT-NMR and 13C NMR. Applications of NMR spectroscopy.	10 Hrs
3	Mass Spectroscopy: Principle, Theory, Instrumentation of Mass	10

	Spectroscopy, Different types of ionization like electron impact, chemical, field, FAB and MALDI, APCI, ESI, APPI Analyzers of Quadrupole and Time of Flight, Mass fragmentation and its rules, Meta stable ions, Isotopic peaks and Applications of Mass spectroscopy.	Hrs
4	Chromatography: Principle, apparatus, instrumentation, chromatographic parameters, factors affecting resolution, isolation of drug from excipients, data interpretation and applications of the following: a. Thin Layer chromatography b. High Performance Thin Layer Chromatography c. Ion exchange chromatography d. Column chromatography e. Gas chromatography f. High Performance Liquid chromatography g. Ultra High Performance Liquid chromatography h. Affinity chromatography i. Gel Chromatography	10 Hrs
5	a. Electrophoresis: Principle, Instrumentation, Working conditions, factors affecting separation and applications of the following: a) Paper electrophoresis b) Gel electrophoresis c) Capillary electrophoresis d) Zone electrophoresis e) Moving boundary electrophoresis f) Iso electric focusing b. X ray Crystallography: Production of X rays, Different X ray methods, Bragg's law, Rotating crystal technique, X ray powder technique, Types of crystals and applications of X-ray diffraction	10 Hrs
6	Potentiometry: Principle, working, Ion selective Electrodes and Application of potentiometry. Thermal Techniques: Principle, thermal transitions and Instrumentation (Heat flux and power-compensation and designs), Modulated DSC, Hyper DSC, experimental parameters (sample preparation, experimental conditions, calibration, heating and cooling rates, resolution, source of errors) and their influence, advantage and disadvantages, pharmaceutical applications. Differential Thermal Analysis (DTA): Principle, instrumentation	10 Hrs

and advantage and disadvantages, pharmaceutical applications, derivative differential thermal analysis (DDTA). TGA: Principle, instrumentation, factors affecting results, advantage and disadvantages, pharmaceutical applications.

REFERENCES

1. Spectrometric Identification of Organic compounds - Robert M Silverstein, Sixth edition, John Wiley & Sons, 2004.
2. Principles of Instrumental Analysis - Doglas A Skoog, F. James Holler, Timothy A. Nieman, 5th edition, Eastern press, Bangalore, 1998.
3. Instrumental methods of analysis – Willards, 7th edition, CBS publishers.
4. Practical Pharmaceutical Chemistry – Beckett and Stenlake, Vol II, 4th edition, CBS Publishers, New Delhi, 1997.
5. Organic Spectroscopy - William Kemp, 3rd edition, ELBS, 1991.
6. Quantitative Analysis of Drugs in Pharmaceutical formulation - P D Sethi, 3rd Edition, CBS Publishers, New Delhi, 1997.
7. Pharmaceutical Analysis - Modern Methods – Part B - J W Munson, Vol 11, Marcel. Dekker Series
8. Spectroscopy of Organic Compounds, 2nd edn., P.S/Kalsi, Wiley estern Ltd., Delhi.
9. Textbook of Pharmaceutical Analysis, KA.Connors, 3rd Edition, John Wiley & Sons, 1982.

ADVANCED PHARMACEUTICAL ANALYSIS
(MPA 102T)

Scope

This subject deals with the various aspects of Impurity, Impurities in new drug products, in residual solvents, Elemental impurities, Impurity profiling and characterization of degradents, Stability testing of phytopharmaceuticals and their protocol preparation. It also covers the biological testing of various vaccines and their principle and procedure.

Objective

After completion of the course students shall able to know,

- Appropriate analytical skills required for the analytical method development.
- Principles of various reagents used in functional group analysis that renders necessary support in research methodology and demonstrates its application in the practical related problems.
- Analysis of impurities in drugs, residual solvents and stability studies of drugs and biological products

THEORY 60 Hrs

1. Impurity and stability studies: 10 Hrs

Definition, classification of impurities in drug Substance or Active Pharmaceutical Ingredients and quantification of impurities as per ICH guidelines

Impurities in new drug products:

Rationale for the reporting and control of degradation products, reporting degradation products content of batches, listing of degradation products in specifications, qualification of degradation products

Impurities in residual solvents:

General principles, classification of residual solvents, Analytical procedures, limits of residual solvents, reporting levels of residual solvents

2 Elemental impurities: 10 Hrs

Element classification, control of elemental impurities, Potential Sources of elemental Impurities, Identification of Potential Elemental Impurities, analytical procedures, instrumentation & C, H, N and S analysis

Stability testing protocols:

Selection of batches, container orientation, test parameters, sampling frequency, specification, storage conditions, recording of results, concept of stability, commitment etc. Important mechanistic and stability related information provided by results of study of factors like temperature, pH, buffering species ionic strength and dielectric constant etc. on the reaction rates. With practical considerations.

3	Impurity profiling and degradent characterization: Method development, Stability studies and concepts of validation accelerated stability testing & shelf life calculation, WHO and ICH stability testing guidelines, Stability zones, steps in development, practical considerations. Basics of impurity profiling and degradent characterization with special emphasis. Photostability testing guidelines, ICH stability guidelines for biological products	10 Hrs
4	Stability testing of phytopharmaceuticals: Regulatory requirements, protocols, HPTLC/HPLC finger printing, interactions and complexity.	10 Hrs
5	Biological tests and assays of the following: a. Adsorbed Tetanus vaccine b. Adsorbed Diphtheria vaccine c. Human anti haemophilic vaccine d. Rabies vaccine e. Tetanus Anti toxin f. Tetanus Anti serum g. Oxytocin h. Heparin sodium IP i. Antivenom. PCR, PCR studies for gene regulation, instrumentation (Principle and Procedures)	10 Hrs
6	Immunoassays (IA) Basic principles, Production of antibodies, Separation of bound and unbound drug, Radioimmunoassay, Optical IA, Enzyme IA, Fluoro IA, Luminiscence IA, Quantification and applications of IA.	10 Hrs

REFERENCES

1. Vogel's textbook of quantitative chemical analysis - Jeffery J Bassett, J. Mendham, R. C. Denney, 5th edition, ELBS, 1991.
2. Practical Pharmaceutical Chemistry - Beckett and Stenlake, Vol II, 4th Edition, CBS publishers, New Delhi, 1997.
3. Textbook of Pharmaceutical Analysis - K A Connors, 3rd Edition, John Wiley & Sons, 1982.

4. Pharmaceutical Analysis - Higuchi, Brochmman and Hassen, 2nd Edition, Wiley – Inter science Publication, 1961.
5. Quantitative Analysis of Drugs in Pharmaceutical formulation – P D Sethi, 3rd Edition, CBS Publishers New Delhi, 1997.
6. Pharmaceutical Analysis- Modern methods - J W Munson – Part B, Volume 11, Marcel Dekker Series.
7. The Quantitative analysis of Drugs - D C Carratt, 3rd edition, CBS Publishers, NewDelhi, 1964.
8. Indian Pharmacopoeia Vol I , II & III 2007, 2010, 2014.
9. Methods of sampling and microbiological examination of water, first revision, BIS
10. Practical HPLC method development – Snyder, Kirkland, Glajch, 2nd edition, John Wiley & Sons.
11. Analytical Profiles of drug substances – Klaus Florey, Volume 1 – 20, Elsevier, 2005
12. Analytical Profiles of drug substances and Excipients – Harry G Brittan, Volume 21 – 30, Elsevier, 2005.
13. The analysis of drugs in biological fluids - Joseph Chamberlain, 2nd edition, CRC press, London.
14. ICH Guidelines for impurity profiles and stability studies.

PHARMACEUTICAL VALIDATION
(MPA 103T)

Scope

The main purpose of the subject is to understand about validation and how it can be applied to industry and thus to improve the quality of the products. The subject covers the complete information about validation, types, methodology and application.

Objectives

Upon completion of the subject student shall be able to

- Explain the aspect of validation
- Carryout validation of manufacturing processes
- Apply the knowledge of validation to instruments and equipments
- Validate the manufacturing facilities

THEORY 60 Hrs

1.	Introduction: Definition of Qualification and Validation, Advantage of Validation, Streamlining of Qualification & Validation process and Validation Master Plan. Qualification: User Requirement Specification, Design Qualification, Factory Acceptance Test (FAT)/ Site Acceptance Test (SAT), Installation Qualification, Operational Qualification, Performance Qualification, Re- Qualification (Maintaining status- Calibration Preventive Maintenance, Change management), Qualification of Manufacturing Equipments, Qualification of Analytical Instruments and Laboratory equipments.	12 Hrs
2	Qualification of analytical instruments: Electronic balance, pH meter, UV-Visible spectrophotometer, FTIR, GC, HPLC, HPTLC Qualification of Glassware: Volumetric flask, pipette, Measuring cylinder, beakers and burette.	12 Hrs
3	Validation of Utility systems: Pharmaceutical Water System & pure steam, HVAC system, Compressed air and nitrogen. Cleaning Validation: Cleaning Validation - Cleaning Method development, Validation and validation of analytical method used in cleaning. Cleaning of Equipment, Cleaning of Facilities. Cleaning in place (CIP).	12 Hrs
4	Analytical method validation: General principles, Validation of analytical method as per ICH guidelines and USP.	12 Hrs

Computerized system validation: Electronic records and digital significance-21 CFR part 11 and GAMP 5.

5	General Principles of Intellectual Property: Concepts of Intellectual Property (IP), Intellectual Property Protection (IPP), Intellectual Property Rights (IPR); Economic importance, mechanism for protection of Intellectual Property –patents, Copyright, Trademark; Factors affecting choice of IP protection; Penalties for violation; Role of IP in pharmaceutical industry; Global ramification and financial implications. Filing a patent applications; patent application forms and guidelines. Types patent applications-provisional and non-provisional, PCT and convention patent applications; International patenting requirement procedures and costs; Rights and responsibilities of a patentee; Practical aspects regarding maintaining of a Patent file; Patent infringement meaning and scope. Significance of transfer technology (TOT), IP and ethics-positive and negative aspects of IPP; Societal responsibility, avoiding unethical practices.	12 Hrs

REFERENCES

1. B. T. Loftus & R. A. Nash, "Pharmaceutical Process Validation", Drugs and Pharm Sci. Series, Vol. 129, 3rd Ed., Marcel Dekker Inc., N.Y.
2. The Theory & Practice of Industrial Pharmacy, 3rd edition, Leon Lachman, Herbert A. Lieberman, Joseph. L. Karig, Varghese Publishing House, Bombay.
3. Validation Master plan by Terveeks or Deeks, Davis Harwood International publishing.
4. Validation of Aseptic Pharmaceutical Processes, 2nd Edition, by Carleton & Agalloco, (Marcel Dekker).
5. Michael Levin, Pharmaceutical Process Scale-Up‖, Drugs and Pharm. Sci. Series, Vol. 157,2nd Ed., Marcel Dekker Inc., N.Y.
6. Validation Standard Operating Procedures: A Step by Step Guide for Achieving Compliance in the Pharmaceutical, Medical Device, and Biotech Industries, Syed Imtiaz Haider
7. Pharmaceutical Equipment Validation: The Ultimate Qualification Handbook, Phillip A. Cloud, Interpharm Press
8. Validation of Pharmaceutical Processes: Sterile Products, Frederick J. Carlton (Ed.) and James Agalloco (Ed.), Marcel Dekker, 2nd Ed.
9. Analytical Method validation and Instrument Performance Verification by Churg Chan, Heiman Lam, Y.C. Lee, Yue. Zhang, Wiley Inter Science.

FOOD ANALYSIS
(MPA 104T)

Scope

This course is designed to impart knowledge on analysis of food constituents and finished food products. The course includes application of instrumental analysis in the determination of pesticides in variety of food products.

Objectives

At completion of this course student shall be able to understand various analytical techniques in the determination of

- Food constituents
- Food additives
- Finished food products
- Pesticides in food
- And also student shall have the knowledge on food regulations and legislations

THEORY 60 Hrs

1. Carbohydrates: classification and properties of food carbohydrates, General methods of analysis of food carbohydrates, Changes in food carbohydrates during processing, Digestion, absorption and metabolism of carbohydrates, Dietary fibre, Crude fibre and application of food carbohydrates 12 Hrs
   Proteins: Chemistry and classification of amino acids and proteins, Physico-Chemical properties of protein and their structure, general methods of analysis of proteins and amino acids, Digestion, absorption and metabolism of proteins.

2 Lipids: Classification, general methods of analysis, refining of fats and oils; hydrogenation of vegetable oils, Determination of adulteration in fats and oils, Various methods used for measurement of spoilage of fats and fatty foods. 12 Hrs
   Vitamins: classification of vitamins, methods of analysis of vitamins, Principles of microbial assay of vitamins of B-series.

3 Food additives: Introduction, analysis of Preservatives, antioxidants, artificial sweeteners, flavors, flavor enhancers, stabilizers, thickening and jelling agents. 12 Hrs
   Pigments and synthetic dyes: Natural pigments, their occurrence and characteristic properties, permitted synthetic

dyes, Non-permitted synthetic dyes used by industries, Method of detection of natural, permitted and non-permitted dyes.

4	General Analytical methods for milk, milk constituents and milk products like ice cream, milk powder, butter, margarine, cheese including adulterants and contaminants of milk. Analysis of fermentation products like wine, spirits, beer and vinegar.	12 Hrs
5	Pesticide analysis: Effects of pest and insects on various food, use of pesticides in agriculture, pesticide cycle, organophosphorus and organochlorine pesticides analysis, determination of pesticide residues in grain, fruits, vegetables, milk and milk products. Legislation regulations of food products with special emphasis on BIS, Agmark, FDA and US-FDA.	12 Hrs

REFERENCES

1. The chemical analysis of foods – David Pearson, Seventh edition, Churchill Livingstone, Edinburgh London, 1976
2. Introduction to the Chemical analysis of foods – S. Nielsen, Jones & Bartlett publishers, Boston London, 1994.
3. Official methods of analysis of AOAC International, sixth edition, Volume I & II, 1997.
4. Analysis of Food constituents – Multon, Wiley VCH.
5. Dr. William Horwitz, Official methods of analysis of AOAC International, 18th edition, 2005.

PHARMACEUTICAL ANALYSIS PRACTICALS - II
(MPA 105P)

1. Analysis of Pharmacopoeial compounds and their formulations by UV Vis spectrophotometer
2. Simultaneous estimation of multi component containing formulations by UV spectrophotometry
3. Experiments based on HPLC
4. Experiments based on Gas Chromatography
5. Estimation of riboflavin/quinine sulphate by fluorimetry
6. Estimation of sodium/potassium by flame photometry
7. Assay of official compounds by different titrations
8. Assay of official compounds by instrumental techniques.
9. Quantitative determination of hydroxyl group.
10. Quantitative determination of amino group
11. Colorimetric determination of drugs by using different reagents
12. Imupurity profiling of drugs
13. Calibration of glasswares
14. Calibration of pH meter
15. Calibration of UV-Visible spectrophotometer
16. Calibration of FTIR spectrophotometer
17. Calibration of GC instrument
18. Calibration of HPLC instrument
19. Cleaning validation of any one equipment
20. Determination of total reducing sugar
21. Determination of proteins
22. Determination of saponification value, Iodine value, Peroxide value, Acid value in food products
23. Determination of fat content and rancidity in food products
24. Analysis of natural and synthetic colors in food
25. Determination of preservatives in food
26. Determination of pesticide residue in food products
27. Analysis of vitamin content in food products
28. Determination of density and specific gravity of foods
29. Determination of food additives

ADVANCED INSTRUMENTAL ANALYSIS
(MPA 201T)

Scope

This subject deals with various hyphenated analytical instrumental techniques for identification, characterization and quantification of drugs. Instruments dealt are LC-MS, GC-MS, and hyphenated techniques.

Objectives

After completion of course student is able to know,

- interpretation of the NMR, Mass and IR spectra of various organic compounds
- theoretical and practical skills of the hyphenated instruments
- identification of organic compounds

THEORY 60 Hrs

1. HPLC: Principle, instrumentation, pharmaceutical applications, peak shapes, capacity factor, selectivity, plate number, plate height, resolution, band broadening, pumps, injector, detectors, columns, column problems, gradient HPLC, HPLC solvents, trouble shooting, sample preparation, method development, New developments in HPLC-role and principles of ultra, nano liquid chromatography in pharmaceutical analysis. Immobilized polysaccharide CSP's: Advancement in enantiomeric separations, revised phase Chiral method development and HILIC approaches. HPLC in Chiral analysis of pharmaceuticals. Preparative HPLC, practical aspects of preparative HPLC. — 12 Hrs

2 Biochromatography: Size exclusion chromatography, ion exchange chromatography, ion pair chromatography, affinity chromatography general principles, stationary phases and mobile phases. — 12 Hrs

Gas chromatography: Principles, instrumentation, derivatization, head space sampling, columns for GC, detectors, quantification.

High performance Thin Layer chromatography: Principles, instrumentation, pharmaceutical applications.

3 Super critical fluid chromatography: Principles, instrumentation, pharmaceutical applications. — 12 Hrs

Capillary electrophoresis: Overview of CE in pharmaceutical analysis, basic configuration, CE characteristics, principles of CE, methods and modes of CE. General considerations and method

development in CE, Crown ethers as buffer additives in capillary electrophoresis. CE-MS hyphenation.

4 Mass spectrometry: Principle, theory, instrumentation of mass spectrometry, different types of ionization like electron impact, chemical, field, FAB and MALD, APCI, ESI, APPI mass fragmentation and its rules, meta stable ions, isotopic peaks and applications of mass spectrometry. LC-MS hyphenation and DART MS analysis. Mass analysers (Quadrpole, Time of flight, FT-ICR, ion trap and Orbitrap) instruments. MS/MS systems (Tandem: QqQ, TOF-TOF;Q-IT, Q-TOF, LTQ-FT, LTQ-Orbitrap. 12 Hrs

5 NMR spectroscopy: Quantum numbers and their role in NMR, Principle, Instrumentation, Solvent requirement in NMR, Relaxation process, NMR signals in various compounds, Chemical shift, Factors influencing chemical shift, Spin-Spin coupling, Coupling constant, Nuclear magnetic double resonance, Brief outline of principles of FT-NMR with reference to 13CNMR: Spin spin and spin lattice relaxation phenomenon. 13C NMR, 1-D and 2-D NMR, NOESY and COSY techniques, Interpretation and Applications of NMR spectroscopy. LC-NMR hyphenations. 12 Hrs

REFERENCES

1. Spectrometric Identification of Organic compounds - Robert M Silverstein, Sixth edition, John Wiley & Sons, 2004.
2. Principles of Instrumental Analysis - Doglas A Skoog, F. James Holler, Timothy A. Nieman, 5th edition, Eastern press, Bangalore, 1998.
3. Instrumental methods of analysis – Willards, 7th edition, CBS publishers.
4. Organic Spectroscopy - William Kemp, 3rd edition, ELBS, 1991.
5. Quantitative analysis of Pharmaceutical formulations by HPTLC - P D Sethi, CBS Publishers, New Delhi.
6. Quantitative Analysis of Drugs in Pharmaceutical formulation - P D Sethi, 3rd Edition, CBS Publishers, New Delhi, 1997.
7. Pharmaceutical Analysis- Modern methods – Part B - J W Munson, Volume 11, Marcel Dekker Series.
8. Organic Spectroscopy by Donald L. Paviya, 5th Edition.

MODERN BIO-ANALYTICAL TECHNIQUES
(MPA 202T)

Scope

This subject is designed to provide detailed knowledge about the importance of analysis of drugs in biological matrices.

Objectives

Upon completion of the course, the student shall be able to understand

- Extraction of drugs from biological samples
- Separation of drugs from biological samples using different techniques
- Guidelines for BA/BE studies.

THEORY 60 Hrs

1. Extraction of drugs and metabolites from biological matrices: General need, principle and procedure involved in the Bioanalytical methods such as Protein precipitation, Liquid - Liquid extraction and Solid phase extraction and other novel sample preparation approach. Bioanalytical method validation: USFDA and EMEA guidelines. — 12 Hrs

2 Biopharmaceutical Consideration: Introduction, Biopharmaceutical Factors Affecting Drug Bioavailability, In Vitro: Dissolution and Drug Release Testing, Alternative Methods of Dissolution Testing Transport models, Biopharmaceutics Classification System. Solubility: Experimental methods. Permeability: In-vitro, in-situ and In-vivo methods. — 12 Hrs

3 Pharmacokinetics and Toxicokinetics: Basic consideration, Drug interaction (PK-PD interactions), The effect of protein-binding interactions, The effect of tissue-binding interactions, Cytochrome P450-based drug interactions, Drug interactions linked to transporters. Microsomal assays Toxicokinetics-Toxicokinetic evaluation in preclinical studies, Importance and applications of toxicokinetic studies. LC-MS in bioactivity screening and proteomics. — 12 Hrs

4 Cell culture techniques Basic equipments used in cell culture lab. Cell culture media, various types of cell culture, general procedure for cell cultures; isolation of cells, subculture, cryopreservation, characterization of — 12 Hrs

cells and their applications. Principles and applications of cell viability assays (MTT assays), Principles and applications of flow cytometry.

5 Metabolite identification: 12 Hrs

In-vitro / in-vivo approaches, protocols and sample preparation. Microsomal approaches (Rat liver microsomes (RLM) and Human liver microsomes (HLM) in Met –ID. Regulatory perspectives. In-vitro assay of drug metabolites & drug metabolizing enzymes.

Drug Product Performance, In Vivo: Bioavailability and Bioequivalence:

Drug Product Performance, Purpose of Bioavailability Studies, Relative and Absolute Availability. Methods for Assessing Bioavailability, Bioequivalence Studies, Design and Evaluation of Bioequivalence Studies, Study Designs, Crossover Study Designs, Generic Biologics (Biosimilar Drug Products), Clinical Significance of Bioequivalence Studies.

REFERENCES

1. Analysis of drugs in Biological fluids - Joseph Chamberlain, 2nd Edition. CRC Press, Newyork. 1995.
2. Principles of Instrumental Analysis - Doglas A Skoog, F. James Holler, Timothy A. Nieman, 5th edition, Eastern press, Bangalore, 1998.
3. Pharmaceutical Analysis - Higuchi, Brochmman and Hassen, 2nd Edition, Wiley – Interscience Publications, 1961.
4. Pharmaceutical Analysis- Modern methods – Part B - J W Munson, Volume 11, Marcel Dekker Series
5. Practical HPLC method Development – Snyder, Kirkland, Glaich, 2nd Edition, John Wiley & Sons, New Jercy. USA.
6. Chromatographic Analysis of Pharmaceuticals – John A Adamovics, 2nd Edition, Marcel Dekker, Newyork, USA. 1997.
7. Chromatographic methods in clinical chemistry & Toxicology – Roger L Bertholf, Ruth E Winecker, John Wiley & Sons, New Jercy, USA. 2007.
8. Good Laboratory Practice Regulations, 2nd Edition, Sandy Weinberg Vol. 69, Marcel Dekker Series, 1995.
9. Good laboratory Practice Regulations – Allen F. Hirsch, Volume 38, Marcel Dekker Series, 1989.
10. ICH, USFDA & CDSCO Guidelines.
11. Palmer

QUALITY CONTROL AND QUALITY ASSURANCE
(MPA 203T)

Scope

This course deals with the various aspects of quality control and quality assurance aspects of pharmaceutical industries. It covers the important aspects like cGMP, QC tests, documentation, quality certifications, GLP and regulatory affairs.

Objectives

At the completion of this subject it is expected that the student shall be able to know

- the cGMP aspects in a pharmaceutical industry
- to appreciate the importance of documentation
- to understand the scope of quality certifications applicable to Pharmaceutical industries
- to understand the responsibilities of QA & QC departments

THEORY 60 hrs

1. Concept and Evolution of Quality Control and Quality Assurance — 12 Hrs

   Good Laboratory Practice, GMP, Overview of ICH Guidelines - QSEM, with special emphasis on Q-series guidelines.

   Good Laboratory Practices: Scope of GLP, Definitions, Quality assurance unit, protocol for conduct of non clinical testing, control on animal house, report preparation and documentation.

2. cGMP guidelines according to schedule M, USFDA (inclusive of CDER and CBER) Pharmaceutical Inspection Convention (PIC), WHO and EMEA covering: Organization and personnel responsibilities, training, hygiene and personal records, drug industry location, design, construction and plant lay out, maintenance, sanitation, environmental control, utilities and maintenance of sterile areas, control of contamination and Good Warehousing Practice. CPCSEA guidelines. — 12 Hrs

3. Analysis of raw materials, finished products, packaging materials, in process quality control (IPQC), Developing specification (ICH Q6 and Q3) — 12 Hrs

Purchase specifications and maintenance of stores for raw materials. In process quality control and finished products quality control for following formulation in Pharma industry according to Indian, US and British pharmacopoeias: tablets, capsules, ointments, suppositories, creams, parenterals, ophthalmic and surgical products (How to refer pharmacopoeias), Quality control test for containers, closures and secondary packing materials.

4. Documentation in pharmaceutical industry: Three tier documentation, Policy, Procedures and Work instructions, and records (Formats), Basic principles- How to maintain, retention and retrieval etc. Standard operating procedures (How to write), Master Formula Record, Batch Formula Record, Quality audit plan and reports. Specification and test procedures, Protocols and reports. Distribution records. Electronic data. 12 Hrs

5. Manufacturing operations and controls: Sanitation of manufacturing premises, mix-ups and cross contamination, processing of intermediates and bulk products, packaging operations, IPQC, release of finished product, process deviations, charge-in of components, time limitations on production, drug product inspection, expiry date calculation, calculation of yields, production record review, change control, sterile products, aseptic process control, packaging. 12 Hrs

REFERENCES

1. Quality Assurance Guide by organization of Pharmaceutical Procedures of India, 3rd revised edition, Volume I & II, Mumbai, 1996.
2. Good Laboratory Practice Regulations, 2nd Edition, Sandy Weinberg Vol. 69, Marcel Dekker Series, 1995.
3. Quality Assurance of Pharmaceuticals- A compedium of Guide lines and Related materials Vol I & II, 2nd edition, WHO Publications, 1999.
4. How to Practice GMP's – P P Sharma, Vandana Publications, Agra, 1991.
5. The International Pharmacopoeia – vol I, II, III, IV & V - General Methods of Analysis and Quality specification for Pharmaceutical Substances, Excepients and Dosage forms, 3rd edition, WHO, Geneva, 2005.
6. Good laboratory Practice Regulations – Allen F. Hirsch, Volume 38, Marcel Dekker Series, 1989.
7. ICH guidelines
8. ISO 9000 and total quality management

9. The drugs and cosmetics act 1940 – Deshpande, Nilesh Gandhi, 4th edition, Susmit Publishers, 2006.
10. QA Manual – D.H. Shah, 1st edition, Business Horizons, 2000.
11. Good Manufacturing Practices for Pharmaceuticals a plan for total quality control – Sidney H. Willig, Vol. 52, 3rd edition, Marcel Dekker Series.
12. Steinborn L. GMP/ISO Quality Audit Manual for Healthcare Manufacturers and Their Suppliers, Sixth Edition, (Volume 1 - With Checklists and Software Package). Taylor & Francis; 2003.
13. Sarker DK. Quality Systems and Controls for Pharmaceuticals. John Wiley & Sons; 2008.

HERBAL AND COSMETIC ANALYSIS
(MPA 204T)

Scope

This course is designed to impart knowledge on analysis of herbal products. Regulatory requirements, herbal drug interaction with monographs. Performance evaluation of cosmetic products is included for the better understanding of the equipments used in cosmetic industries for the purpose.

Objectives

At completion of this course student shall be able to understand

- Determination of herbal remedies and regulations
- Analysis of natural products and monographs
- Determination of Herbal drug-drug interaction
- Principles of performance evaluation of cosmetic products.

THEORY 60 Hrs

1. Herbal remedies- Toxicity and Regulations: Herbals vs Conventional drugs, Efficacy of herbal medicine products, Validation of Herbal Therapies, Pharmacodynamic and Pharmacokinetic issues. Herbal drug standardization: WHO and AYUSH guidelines. 12 Hrs

2 Adulteration and Deterioration: Introduction, types of adulteration/substitution of herbal drugs, Causes and Measure of adulteration, Sampling Procedures, Determination of Foreign Matter, DNA Finger printing techniques in identification of drugs of natural origin, heavy metals, pesticide residues, phototoxin and microbial contamination in herbal formulations. 12 Hrs

Regulatory requirements for setting herbal drug industry: Global marketing management, Indian and international patent law as applicable herbal drugs and natural products and its protocol.

3 Testing of natural products and drugs: Effect of herbal medicine on clinical laboratory testing, Adulterant Screening using modern analytical instruments, Regulation and dispensing of herbal drugs, Stability testing of natural products, protocol. 12 Hrs

Monographs of Herbal drugs: Study of monographs of herbal drugs and comparative study in IP, USP, Ayurvedic

Pharmacopoeia, American herbal Pharmacopoeia, British herbal Pharmacopoeia, Siddha and Unani Pharmacopoeia, WHO guidelines in quality assessment of herbal drugs.

4 Herbal drug-drug interaction: WHO and AYUSH guidelines for safety monitoring of natural medicine, Spontaneous reporting schemes for bio drug adverse reactions, bio drug-drug and bio drug-food interactions with suitable examples. Challenges in monitoring the safety of herbal medicines. 12 Hrs

5 Evaluation of cosmetic products: Determination of acid value, ester value, saponification value, iodine value, peroxide value, rancidity, moisture, ash, volatile matter, heavy metals, fineness of powder, density, viscosity of cosmetic raw materials and finished products. Study of quality of raw materials and general methods of analysis of raw material used in cosmetic manufacture as per BIS.

Indian Standard specification laid down for sampling and testing of various cosmetics in finished forms such as baby care products, skin care products, dental products, personal hygiene preparations, lips sticks. Hair products and skin creams by the Bureau Indian Standards. 12 Hrs

REFERENCES

1. Pharmacognosy by Trease and Evans
2. Pharmacognosy by Kokate, Purohit and Gokhale
3. Quality Control Methods for Medicinal Plant, WHO, Geneva
4. Pharmacognosy & Pharmacobiotechnology by Ashutosh Kar
5. Essential of Pharmacognosy by Dr.S.H.Ansari
6. Cosmetics – Formulation, Manufacturing and Quality Control, P.P. Sharma, 4th edition, Vandana Publications Pvt. Ltd., Delhi
7. Indian Standard specification, for raw materials, BIS, New Delhi.
8. Indian Standard specification for 28 finished cosmetics BIS, New Delhi
9. Harry's Cosmeticology 8th edition
10. Suppliers catalogue on specialized cosmetic excipients
11. Wilkinson, Moore, seventh edition, George Godwin. Poucher's Perfumes, Cosmetics and Soaps
12. Hilda Butler, 10th Edition, Kluwer Academic Publishers. Handbook of Cosmetic Science and Technology, 3rd Edition,

PHARMACEUTICAL ANALYSIS PRACTICALS - I
(MPA 205P)

1. Comparison of absorption spectra by UV and Wood ward – Fiesure rule
2. Interpretation of organic compounds by FT-IR
3. Interpretation of organic compounds by NMR
4. Interpretation of organic compounds by MS
5. Determination of purity by DSC in pharmaceuticals
6. Identification of organic compounds using FT-IR, NMR, CNMR and Mass spectra
7. Bio molecules separation utilizing various sample preparation techniques and Quantitative analysis of components by gel electrophoresis.
8. Bio molecules separation utilizing various sample preparation techniques and Quantitative analysis of components by HPLC techniques.
9. Isolation of analgesics from biological fluids (Blood serum and urine).
10. Protocol preparation and performance of analytical/Bioanalytical method validation.
11. Protocol preparation for the conduct of BA/BE studies according to guidelines.
12. In process and finished product quality control tests for tablets, capsules, parenterals and creams
13. Quality control tests for Primary and secondary packing materials
14. Assay of raw materials as per official monographs
15. Testing of related and foreign substances in drugs and raw materials
16. Preparation of Master Formula Record.
17. Preparation of Batch Manufacturing Record.
18. Quantitative analysis of rancidity in lipsticks and hair oil
19. Determination of aryl amine content and Developer in hair dye
20. Determination of foam height and SLS content of Shampoo.
21. Determination of total fatty matter in creams (Soap, skin and hair creams)
22. Determination of acid value and saponification value.
23. Determination of calcium thioglycolate in depilatories

PHARMACEUTICALQUALITYASSURANCE(MQA)

MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES (MQA 101T)

Scope

This subject deals with various advanced analytical instrumental techniques for identification, characterization and quantification of drugs. Instruments dealt are NMR, Mass spectrometer, IR, HPLC, GC etc.

Objectives

After completion of course student is able to know about chemicals and excipients

- The analysis of various drugs in single and combination dosage forms
- Theoretical and practical skills of the instruments

THEORY 60 Hrs

1.	a. UV-Visible spectroscopy: Introduction, Theory, Laws, Instrumentation associated with UV-Visible spectroscopy, Choice of solvents and solvent effect and Applications of UV-Visible spectroscopy, Difference/ Derivative spectroscopy. b. IR spectroscopy: Theory, Modes of Molecular vibrations, Sample handling, Instrumentation of Dispersive and Fourier - Transform IR Spectrometer, Factors affecting vibrational frequencies and Applications of IR spectroscopy, Data Interpretation. c. Spectroflourimetry: Theory of Fluorescence, Factors affecting fluorescence (Characterestics of drugs that can be analysed by flourimetry), Quenchers, Instrumentation and Applications of fluorescence spectrophotometer. d. Flame emission spectroscopy and Atomic absorption spectroscopy: Principle, Instrumentation, Interferences and Applications.	12 Hrs
2	NMR spectroscopy: Quantum numbers and their role in NMR, Principle, Instrumentation, Solvent requirement in NMR, Relaxation process, NMR signals in various compounds, Chemical shift, Factors influencing chemical shift, Spin-Spin coupling, Coupling constant, Nuclear magnetic double resonance, Brief outline of principles of FT-NMR and 13C NMR. Applications of NMR spectroscopy.	12 Hrs

3	Mass Spectroscopy: Principle, Theory, Instrumentation of Mass Spectroscopy, Different types of ionization like electron impact, chemical, field, FAB and MALDI, APCI, ESI, APPI Analyzers of Quadrupole and Time of Flight, Mass fragmentation and its rules, Meta stable ions, Isotopic peaks and Applications of Mass spectroscopy.	12 Hrs
4	Chromatography: Principle, apparatus, instrumentation, chromatographic parameters, factors affecting resolution, isolation of drug from excipients, data interpretation and applications of the following: • Thin Layer chromatography • High Performance Thin Layer Chromatography • Ion exchange chromatography • Column chromatography • Gas chromatography • High Performance Liquid chromatography • Ultra High Performance Liquid chromatography • Affinity chromatography • Gel Chromatography	12 Hrs
5	a. Electrophoresis: Principle, Instrumentation, Working conditions, factors affecting separation and applications of the following: a) Paper electrophoresis b) Gel electrophoresis c) Capillary electrophoresis d) Zone electrophoresis e) Moving boundary electrophoresis f) Iso electric focusing b. X ray Crystallography: Production of X rays, Different X ray methods, Bragg's law, Rotating crystal technique, X ray powder technique, Types of crystals and applications of X-ray diffraction.	12 Hrs
6	a. Potentiometry: Principle, working, Ion selective Electrodes and Application of potentiometry. b. Thermal Techniques: Principle, thermal transitions and Instrumentation (Heat flux and power-compensation and designs), Modulated DSC, Hyper DSC, experimental parameters (sample preparation, experimental conditions, calibration, heating and cooling rates, resolution, source of errors) and their influence, advantage and disadvantages, pharmaceutical applications. Differential Thermal Analysis (DTA): Principle, instrumentation	12 Hrs

and advantage and disadvantages, pharmaceutical applications, derivative differential thermal analysis (DDTA). TGA: Principle, instrumentation, factors affecting results, advantage and disadvantages, pharmaceutical applications.

REFERENCES

1. Spectrometric Identification of Organic compounds - Robert M Silverstein, Sixth edition, John Wiley & Sons, 2004.
2. Principles of Instrumental Analysis - Doglas A Skoog, F. James Holler, Timothy A. Nieman, 5th edition, Eastern press, Bangalore, 1998.
3. Instrumental methods of analysis - Willards, 7th edition, CBS publishers.
4. Practical Pharmaceutical Chemistry - Beckett and Stenlake, Vol II, 4th edition, CBS Publishers, New Delhi, 1997.
5. Organic Spectroscopy - William Kemp, 3rd edition, ELBS, 1991.
6. Quantitative Analysis of Drugs in Pharmaceutical formulation - P D Sethi, 3rd Edition, CBS Publishers, New Delhi, 1997.
7. Pharmaceutical Analysis - Modern Methods - Part B - J W Munson, Vol 11, Marcel. Dekker Series
8. Spectroscopy of Organic Compounds, 2nd edn., P.S/Kalsi, Wiley estern Ltd., Delhi.
9. Textbook of Pharmaceutical Analysis, KA.Connors, 3rd Edition, John Wiley & Sons, 1982.
10. Textbook of Pharmaceutical Analysis, KA.Connors, 3rd Edition, John Wiley & Sons, 1982.

QUALITY MANAGEMENT SYSTEMS
(MQA 102T)

Scope

This course is designed to impart fundamental knowledge and concepts about various quality management principles and systems utilized in the manufacturing industry. It also aids in understanding the quality evaluation in the pharmaceutical industries.

Objectives

At completion of this course it is expected that students will be able to understand-

- The importance of quality
- ISO management systems
- Tools for quality improvement
- Analysis of issues in quality
- Quality evaluation of pharmaceuticals
- Stability testing of drug and drug substances
- Statistical approaches for quality

THEORY 60 Hrs

1. Introduction to Quality: Evolution of Quality, Definition of Quality, Dimensions of Quality 12 Hrs

   Quality as a Strategic Decision: Meaning of strategy and strategic quality management, mission and vision statements, quality policy, Quality objectives, strategic planning and implementation, McKinsey 7s model, Competitive analysis, Management commitment to quality

   Customer Focus: Meaning of customer and customer focus, Classification of customers, Customer focus, Customer perception of quality, Factors affecting customer perception, Customer requirements, Meeting customer needs and expectations, Customer satisfaction and Customer delight, Handling customer complaints, Understanding customer behavior, concept of internal and external customers. Case studies.

   Cost of Quality: Cost of quality, Categories of cost of Quality, Models of cost of quality, Optimising costs, Preventing cost of quality.

2	Pharmaceutical quality Management: Basics of Quality Management, Total Quality Management (TQM), Principles of Six sigma, ISO 9001:2008, 9001:2015, ISO 14001:2004, Pharmaceutical Quality Management – ICH Q10, Knowledge management, Quality Metrics, Operational Excellence and Quality Management Review. OSHAS guidelines, NABL certification and accreditation, CFR-21 part 11, WHO-GMP requirements.	12 Hrs
3	Six System Inspection model: Quality Management system, Production system, Facility and Equipment system, Laboratory control system, Materials system, Packaging and labeling system. Concept of self inspection. Quality systems: Change Management/ Change control. Deviations, Out of Specifications (OOS), Out of Trend (OOT), Complaints - evaluation and handling, Investigation and determination of root cause, Corrective & Preventive Actions (CAPA), Returns and Recalls, Vendor Qualification, Annual Product Reviews, Batch Review and Batch Release. Concept of IPQC, area clearance/ Line clearance.	12 Hrs
4	Drug Stability: ICH guidelines for stability testing of drug substances and drug products. Study of ICH Q8, Quality by Design and Process development report Quality risk management: Introduction, risk assessment, risk control, risk review, risk management tools, HACCP, risk ranking and filtering according to ICH Q9 guidelines.	12 Hrs
5	Statistical Process control (SPC): Definition and Importance of SPC, Quality measurement in manufacturing, Statistical control charts - concepts and general aspects, Advantages of statistical control, Process capability, Estimating Inherent or potential capability from a control chart analysis, Measuring process control and quality improvement, Pursuit of decreased process variability.	8 Hrs
6	Regulatory Compliance through Quality Management and development of Quality Culture Benchmarking: Definition of benchmarking, Reasons for benchmarking, Types of Benchmarking, Benchmarking process, Advantages of benchmarking, Limitations of benchmarking.	4 Hrs

REFERENCES

1. Implementing Juran's Road Map for Quality Leadership: Benchmarks and Results, By Al Endres, Wiley, 2000
2. Understanding, Managing and Implementing Quality: Frameworks, Techniques and Cases, By Jiju Antony; David Preece, Routledge, 2002
3. Organizing for High Performance: Employee Involvement, TQM, Reengineering, and Knowledge Management in the Fortune 1000: The CEO Report By Edward E. Lawler; Susan Albers Mohrman; George Benson, Jossey-Bass, 2001
4. Corporate Culture and the Quality Organization By James W. Fairfield-Sonn, Quorum Books, 2001
5. The Quality Management Sourcebook: An International Guide to Materials and Resources By Christine Avery; Diane Zabel, Routledge, 1997
6. The Quality Toolbox, Second Edition, Nancy R. Tague, ASQ Publications
7. Juran's Quality Handbook, Sixth Edition, Joseph M. Juran and Joseph A. De Feo, ASQ Publications
8. Root Cause Analysis, The Core of Problem Solving and Corrective Action, Duke Okes, 2009, ASQ Publications.

QUALITY CONTROL AND QUALITY ASSURANCE
(MQA 103T)

Scope

This course deals with the various aspects of quality control and quality assurance aspects of pharmaceutical industries. It covers the important aspects like cGMP, QC tests, documentation, quality certifications, GLP and regulatory affairs.

Objectives

Upon completion of this course the student should be able to

- Understand the cGMP aspects in a pharmaceutical industry
- To appreciate the importance of documentation
- To understand the scope of quality certifications applicable to Pharmaceutical industries
- To understand the responsibilities of QA & QC departments.

THEORY 60 Hrs

1. Introduction: Concept and evolution and scopes of Quality Control and Quality Assurance, Good Laboratory Practice, GMP, Overview of ICH Guidelines - QSEM, with special emphasis on Q-series guidelines. 12 Hrs

   Good Laboratory Practices: Scope of GLP, Definitions, Quality assurance unit, protocol for conduct of non clinical testing, control on animal house, report preparation and documentation. CPCSEA guidelines.

2 cGMP guidelines according to schedule M, USFDA (inclusive of CDER and CBER) Pharmaceutical Inspection Convention(PIC), WHO and EMEA covering: Organization and personnel responsibilities, training, hygiene and personal records, drug industry location, design, construction and plant lay out, maintenance, sanitation, environmental control, utilities and maintenance of sterile areas, control of contamination and Good Warehousing Practice. 12 Hrs

3 Analysis of raw materials, finished products, packaging materials, in process quality control (IPQC), Developing specification (ICH Q6 and Q3), purchase specifications and maintenance of stores for raw materials. 12 Hrs

In process quality control and finished products quality control for following dosage forms in Pharma industry according to Indian, US and British pharmacopoeias: tablets, capsules, ointments, suppositories, creams, parenterals, ophthalmic and surgical products (How to refer pharmacopoeias).

4 Documentation in pharmaceutical industry: Three tier documentation, Policy, Procedures and Work instructions, and records (Formats), Basic principles- How to maintain, retention and retrieval etc. Standard operating procedures (How to write), Master Batch Record, Batch Manufacturing Record, Quality audit plan and reports. Specification and test procedures, Protocols and reports. Distribution records. Electronic data handling. Concepts of controlled and uncontrolled documents. 12 Hrs

Submission documents for regulators DMFs, as Common Technical Document and Electronic Common Technical Documentation (CTD, eCTD). Concept of regulated and non regulated markets.

5 Manufacturing operations and controls: Sanitation of manufacturing premises, mix-ups and cross contamination, processing of intermediates and bulk products, packaging operations, IPQC, release of finished product, process deviations, charge-in of components, time limitations on production, drug product inspection, expiry date calculation, calculation of yields, production record review, change control, sterile products, aseptic process control, packaging, reprocessing, salvaging, handling of waste and scrap disposal. 12 Hrs

Introduction, scope and importance of intellectual property rights. Concept of trade mark, copyright and patents.

REFERENCES

1. Quality Assurance Guide by organization of Pharmaceutical Procedures of India, 3rd revised edition, Volume I & II, Mumbai, 1996.
2. Good Laboratory Practice Regulations, 2nd Edition, Sandy Weinberg Vol. 69, Marcel Dekker Series, 1995.
3. Quality Assurance of Pharmaceuticals- A compedium of Guide lines and Related materials Vol I & II, 2nd edition, WHO Publications, 1999.
4. How to Practice GMP's – P P Sharma, Vandana Publications, Agra, 1991.

5. The International Pharmacopoeia – vol I, II, III, IV & V - General Methods of Analysis and Quality specification for Pharmaceutical Substances, Excepients and Dosage forms, 3rd edition, WHO, Geneva, 2005.
6. Good laboratory Practice Regulations – Allen F. Hirsch, Volume 38, Marcel Dekker Series, 1989.
7. ICH guidelines
8. ISO 9000 and total quality management
9. The drugs and cosmetics act 1940 – Deshpande, Nilesh Gandhi, 4th edition, Susmit Publishers, 2006.
10. QA Manual – D.H. Shah, 1st edition, Business Horizons, 2000.
11. Good Manufacturing Practices for Pharmaceuticals a plan for total quality control – Sidney H. Willig, Vol. 52, 3rd edition, Marcel Dekker Series.
12. Steinborn L. GMP/ISO Quality Audit Manual for Healthcare Manufacturers and Their Suppliers, Sixth Edition, (Volume 1 - With Checklists and Software Package). Taylor & Francis; 2003.
13. Sarker DK. Quality Systems and Controls for Pharmaceuticals. John Wiley & Sons; 2008.
14. Packaging of Pharmaceuticals.
15. Schedule M and Schedule N.

PRODUCT DEVELOPMENT AND TECHNOLOGY TRANSFER
(MQA 104T)

Scope

This deal with technology transfer covers the activities associated with Drug Substance, Drug Product and analytical tests and methods, required following candidate drug selection to completion of technology transfer from R&D to the first receiving site and technology transfer related to post-marketing changes in manufacturing places.

Objectives

Upon completion of this course the student should be able to

- To understand the new product development process
- To understand the necessary information to transfer technology from R&D to actual manufacturing by sorting out various information obtained during R&D
- To elucidate necessary information to transfer technology of existing products between various manufacturing places

THEORY		60 Hrs
1.	Principles of Drug discovery and development: Introduction, Clinical research process. Development and informational content for Investigational New Drugs Application (IND), New Drug Application (NDA), Abbreviated New Drug Application (ANDA), Supplemental New Drug Application (SNDA), Scale Up Post Approval Changes (SUPAC) and Bulk active chemical Post approval changes (BACPAC), Post marketing surveillance, Product registration guidelines - CDSCO, USFDA.	12 Hrs
2	Pre-formulation studies: Introduction/concept, organoleptic properties, purity, impurity profiles, particle size, shape and surface area. Solubility, Methods to improve solubility of Drugs: Surfactants & its importance, co-solvency. Techniques for the study of Crystal properties and polymorphism. Pre-formulation protocol, Stability testing during product development.	12 Hrs
3	Pilot plant scale up: Concept, Significance, design, layout of pilot plant scale up study, operations, large scale manufacturing techniques (formula, equipment, process, stability and quality control) of solids, liquids, semisolid and parenteral dosage forms. New era of drug products: opportunities and challenges.	12 Hrs

4	Pharmaceutical packaging: Pharmaceutical dosage form and their packaging requirments, Pharmaceutical packaging materials, Medical device packaging, Enteral Packaging, Aseptic packaging systems, Container closure systems, Issues facing modern drug packaging, Selection and evaluation of Pharmaceutical packaging materials. Quality control test: Containers, closures and secondary packing materials.	12 Hrs
5	Technology transfer: Development of technology by R & D, Technology transfer from R & D to production, Optimization and Production, Qualitative and quantitative technology models. Documentation in technology transfer: Development report, technology transfer plan and Exhibit.	12 Hrs

REFERENCES

1. The process of new drug discovery and development. I and II Edition (2006) by Charles G. Smith, James T and O. Donnell. CRC Press, Group of Taylor and Francis.
2. Leon Lac Lachman, Herbert A. Liberman, Theory and Practice of Industrial Pharmacy. Marcel Dekker Inc. New York.
3. Sidney H Willing, Murray M, Tuckerman. Williams Hitchings IV, Good manufacturing of pharmaceuticals (A Plan for total quality control) 3rd Edition. Bhalani publishing house Mumbai.
4. Tablets Vol. I, II, III by Leon Lachman, Herbert A. Liberman, Joseph B. Schwartz, 2nd Edn. (1989) Marcel Dekker Inc. New York.
5. Text book of Bio- Pharmaceutics and clinical Pharmacokinetics by Milo Gibaldi, 3rd Edn, Lea & Febriger, Philadelphia.
6. Pharmaceutical product development. Vandana V. Patrevale. John I. Disouza. Maharukh T.Rustomji. CRC Press, Group of Taylor and Francis.
7. Dissolution, Bioavailability and Bio-Equivalence by Abdou H.M, Mack Publishing company, Eastern Pennsylvania.
8. Remingtons Pharmaceutical Sciences, by Alfonso & Gennaro, 19th Edn.(1995)OO2C Lippincott; Williams and Wilkins A Wolters Kluwer Company, Philadelphia.
9. The Pharmaceutical Sciences; the Pharma Path way 'Pure and applied Pharmacy' by D. A Sawant, Pragathi Books Pvt. Ltd.
10. Pharmaceutical Packaging technology by D.A. Dean. E.R. Evans, I.H. Hall. 1st Edition(Reprint 2006). Taylor and Francis. London and New York.

QUALITY ASSURANCE PRACTICAL - I
(MQA 105P)

PRACTICALS

1. Analysis of Pharmacopoeial compounds in bulk and in their formulations (tablet/ capsules/ semisolids) by UV Vis spectrophotometer
2. Simultaneous estimation of multi-drug component containing formulations by UV spectrophotometry
3. Experiments based on HPLC
4. Experiments based on Gas Chromatography
5. Estimation of riboflavin/quinine sulphate by fluorimetry
6. Estimation of sodium/potassium by flame photometry or AAS
7. Case studies on
   - Total Quality Management
   - Six Sigma
   - Change Management/ Change control. Deviations,
   - Out of Specifications (OOS)
   - Out of Trend (OOT)
   - Corrective & Preventive Actions (CAPA)
   - Deviations
8. Development of Stability study protocol
9. Estimation of process capability
10. In process and finished product quality control tests for tablets, capsules, parenterals and semisolid dosage forms.
11. Assay of raw materials as per official monographs
12. Testing of related and foreign substances in drugs and raw materials
13. To carry out pre formulation study for tablets, parenterals (2 experiment).
14. To study the effect of pH on the solubility of drugs, (1 experiment)
15. Quality control tests for Primary and secondary packaging materials
16. Accelerated stability studies (1 experiment)
17. Improved solubility of drugs using surfactant systems (1 experiment)
18. Improved solubility of drugs using co-solvency method (1 experiment)
19. Determination of Pka and Log p of drugs.

HAZARDS AND SAFETY MANAGEMENT
(MQA 201T)

Scope

This course is designed to convey the knowledge necessary to understand issues related to different kinds of hazard and their management. Basic theoretical and practical discussions integrate the proficiency to handle the emergency situation in the pharmaceutical product development process and provides the principle based approach to solve the complex tribulations.

Objectives

At completion of this course it is expected that students will be able to

- Understand about environmental problems among learners.
- Impart basic knowledge about the environment and its allied problems.
- Develop an attitude of concern for the industry environment.
- Ensure safety standards in pharmaceutical industry
- Provide comprehensive knowledge on the safety management
- Empower an ideas to clear mechanism and management in different kinds of hazard management system
- Teach the method of Hazard assessment, procedure, methodology for provide safe industrial atmosphere.

THEORY 60Hrs

1. Multidisciplinary nature of environmental studies: Natural Resources, Renewable and non-renewable resources, Natural resources and associated problems, 12 Hrs

   a) Forest resources; b) Water resources; c) Mineral resources; d) Energy resources; e) Land resources

   Ecosystems: Concept of an ecosystem and Structure and function of an ecosystem. Environmental hazards: Hazards based on Air, Water, Soil and Radioisotopes.

2 Air based hazards: Sources, Types of Hazards, Air circulation maintenance industry for sterile area and non sterile area, Preliminary Hazard Analysis (PHA) Fire protection system: Fire prevention, types of fire extinguishers and critical Hazard management system. 12 Hrs

3 Chemical based hazards: Sources of chemical hazards, Hazards of Organic synthesis, sulphonating hazard, Organic solvent hazard, Control measures for chemical hazards, 12 Hrs

Management of combustible gases, Toxic gases and Oxygen displacing gases management, Regulations for chemical hazard, Management of over-Exposure to chemicals and TLV concept.

4 Fire and Explosion: Introduction, Industrial processes and hazards potential, mechanical electrical, thermal and process hazards. Safety and hazards regulations, Fire protection system: Fire prevention, types of fire extinguishers and critical Hazard management system mechanical and chemical explosion, multiphase reactions, transport effects and global rates. Preventive and protective management from fires and explosion-electricity passivation, ventilation, and sprinkling, proofing, relief systems -relief valves, flares, scrubbers. 12 Hrs

5 Hazard and risk management: Self-protective measures against workplace hazards. Critical training for risk management, Process of hazard management, ICH guidelines on risk assessment and Risk management methods and Tools
Factory act and rules, fundamentals of accident prevention, elements of safety programme and safety management, Physicochemical measurements of effluents, BOD, COD, Determination of some contaminants, Effluent treatment procedure, Role of emergency services. 12 Hrs

REFERENCES

1. Y.K. Sing, Environmental Science, New Age International Pvt, Publishers, Bangalore
2. "Quantitative Risk Assessment in Chemical Process Industries" American Institute of Chemical Industries, Centre for Chemical Process safety.
3. Bharucha Erach, The Biodiversity of India, Mapin Pu blishing Pvt. Ltd., Ahmedabad – 380 013, India,
4. Hazardous Chemicals: Safety Management and Global Regulations, T.S.S. Dikshith, CRC press

PHARMACEUTICAL VALIDATION
(MQA 202T)

Scope

The main purpose of the subject is to understand about validation and how it can be applied to industry and thus improve the quality of the products. The subject covers the complete information about validation, types, methodology and application.

Objectives

At completion of this course, it is expected that students will be able to understand

- The concepts of calibration, qualification and validation
- The qualification of various equipments and instruments
- Process validation of different dosage forms
- Validation of analytical method for estimation of drugs
- Cleaning validation of equipments employed in the manufacture of pharmaceuticals

THEORY 60 Hrs

1. Introduction to validation: Definition of Calibration, Qualification and Validation, Scope, frequency and importance. Difference between calibration and validation. Calibration of weights and measures. Advantages of Validation, scope of Validation, Organization for Validation, Validation Master plan, Types of Validation, Streamlining of qualification & Validation process and Validation Master Plan. 10 Hrs

   Qualification: User requirement specification, Design qualification, Factory Acceptance Test (FAT)/Site Acceptance Test (SAT), Installation qualification, Operational qualification, Performance qualification, Re-Qualification (Maintaining status-Calibration Preventive Maintenance, Change management).

2 Qualification of manufacturing equipment: Dry Powder Mixers, Fluid Bed and Tray dryers, Tablet Compression (Machine), Dry heat sterilization/Tunnels, Autoclaves, Membrane filtration, Capsule filling machine. 10 Hrs

   Qualification of analytical instruments: UV-Visible spectrophotometer, FTIR, DSC, GC, HPLC, HPTLC, LC-MS.

3	Qualification of laboratory equipments: Hardness tester, Friability test apparatus, tap density tester, Disintegration tester, Dissolution test apparatus Validation of Utility systems: Pharmaceutical water system & pure steam, HVAC system, Compressed air and nitrogen.	10 Hrs
4	Process Validation: Concept, Process and documentation of Process Validation. Prospective, Concurrent & Retrospective Validation, Re validation criteria, Process Validation of various formulations (Coated tablets, Capsules, Ointment/Creams, Liquid Orals and aerosols.), Aseptic filling: Media fill validation, USFDA guidelines on Process Validation- A life cycle approach. Analytical method validation: General principles, Validation of analytical method as per ICH guidelines and USP.	10 Hrs
5	Cleaning Validation: Cleaning Method development, Validation of analytical method used in cleaning, Cleaning of Equipment, Cleaning of Facilities. Cleaning in place (CIP). Validation of facilities in sterile and non-sterile plant. Computerized system validation: Electronic records and digital signature - 21 CFR Part 11 and GAMP	10 Hrs
6	General Principles of Intellectual Property: Concepts of Intellectual Property (IP), Intellectual Property Protection (IPP), Intellectual Property Rights (IPR); Economic importance, mechanism for protection of Intellectual Property –patents, Copyright, Trademark; Factors affecting choice of IP protection; Penalties for violation; Role of IP in pharmaceutical industry; Global ramification and financial implications. Filing a patent applications; patent application forms and guidelines. Types patent applications-provisional and non provisional, PCT and convention patent applications; International patenting requirement procedures and costs; Rights and responsibilities of a patentee; Practical aspects regarding maintaining of a Patent file; Patent infringement meaning and scope. Significance of transfer technology (TOT), IP and ethics-positive and negative aspects of IPP; Societal responsibility, avoiding unethical practices.	10 Hrs

REFERENCES

1. B. T. Loftus & R. A. Nash, "Pharmaceutical Process Validation", Drugs and Pharm Sci. Series, Vol. 129, 3rd Ed., Marcel Dekker Inc., N.Y.
2. The Theory & Practice of Industrial Pharmacy, 3rd edition, Leon Lachman, Herbert A. Lieberman, Joseph. L. Karig, Varghese Publishing House, Bombay.
3. Validation Master plan by Terveeks or Deeks, Davis Harwood International publishing.
4. Validation of Aseptic Pharmaceutical Processes, 2nd Edition, by Carleton & Agalloco,
5. (Marcel Dekker).
6. Michael Levin, Pharmaceutical Process Scale-Up", Drugs and Pharm. Sci. Series, Vol. 157,2nd Ed., Marcel Dekker Inc., N.Y.
7. Validation Standard Operating Procedures: A Step by Step Guide for Achieving Compliance in the Pharmaceutical, Medical Device, and Biotech Industries, Syed Imtiaz Haider
8. Pharmaceutical Equipment Validation: The Ultimate Qualification Handbook, Phillip A. Cloud, Interpharm Press
9. Validation of Pharmaceutical Processes: Sterile Products, Frederick J. Carlton (Ed.) and James Agalloco (Ed.), Marcel Dekker
10. Analytical Method validation and Instrument Performance Verification by Churg Chan, Heiman Lam, Y.C. Lee, Yue. Zhang, Wiley Interscience.
11. Huber L. Validation and Qualification in Analytical Laboratories. Informa Healthcare
12. Wingate G. Validating Corporate Computer Systems: Good IT Practice for Pharmaceutical Manufacturers. Interpharm Press
13. LeBlanc DA. Validated Cleaning Technologies for Pharmaceutical Manufacturing. Interpharm Press

AUDITS AND REGULATORY COMPLIANCE
(MPA 203T)

Scope

This course deals with the understanding and process for auditing in pharmaceutical industries. This subject covers the methodology involved in the auditing process of different in pharmaceutical industries.

Objectives

Upon completion of this course the student should be able to

- To understand the importance of auditing
- To understand the methodology of auditing
- To carry out the audit process
- To prepare the auditing report
- To prepare the check list for auditing

THEORY 60 Hrs

1.	Introduction: Objectives, Management of audit, Responsibilities, Planning process, information gathering, administration, Classifications of deficiencies	12 Hrs
2	Role of quality systems and audits in pharmaceutical manufacturing environment: cGMP Regulations, Quality assurance functions, Quality systems approach, Management responsibilities, Resource, Manufacturing operations, Evaluation activities, Transitioning to quality system approach, Audit checklist for drug industries.	12 Hrs
3	Auditing of vendors and production department: Bulk Pharmaceutical Chemicals and packaging material Vendor audit, Warehouse and weighing, Dry Production: Granulation, tableting, coating, capsules, sterile production and packaging.	12 Hrs
4	Auditing of Microbiological laboratory: Auditing the manufacturing process, Product and process information, General areas of interest in the building raw materials, Water, Packaging materials.	12 Hrs

5	Auditing of Quality Assurance and engineering department: Quality Assurance Maintenance, Critical systems: HVAC, Water, Water for Injection systems, ETP.	12 Hrs

REFERENCES

1. Compliance auditing for Pharmaceutical Manufacturers. Karen Ginsbury and Gil Bismuth, Interpharm/CRC, Boca Raton, London New York, Washington D.C.
2. Pharmaceutical Manufacturing Handbook, Regulations and Quality by Shayne Cox Gad. Wiley-Interscience, A John Wiley and sons, Inc., Publications.
3. Handbook of microbiological Quality control. Rosamund M. Baird, Norman A. Hodges, Stephen P. Denyar. CRC Press. 2000.
4. Laboratory auditing for quality and regulatory compliance. Donald C. Singer, Raluca-loana Stefan, Jacobus F. Van Staden. Taylor and Francis (2005).

PHARMACEUTICAL MANUFACTURING TECHNOLOGY
(MQA 204T)

Scope

This course is designed to impart knowledge and skills necessary to train the students with the industrial activities during Pharmaceutical Manufacturing.

Objectives

At completion of this course it is expected that students will be able to understand,

- The common practice in the pharmaceutical industry developments, plant layout and production planning
- Will be familiar with the principles and practices of aseptic process technology, non sterile manufacturing technology and packaging technology.
- Have a better understanding of principles and implementation of Quality by design (QbD) and process analytical technology (PAT) in pharmaceutical manufacturing

THEORY 60 Hrs

1. Pharmaceutical industry developments: Legal requirements and Licenses for API and formulation industry, Plant location-Factors influencing. 12 Hrs

   Plant layout: Factors influencing, Special provisions, Storage space requirements, sterile and aseptic area layout.

   Production planning: General principles, production systems, calculation of standard cost, process planning, routing, loading, scheduling, dispatching of records, production control.

2 Aseptic process technology: Manufacturing, manufacturing flowcharts, in process-quality control tests for following sterile dosage forms: Ointment, Suspension and Emulsion, Dry powder, Solution (Small Volume & large Volume). 12 Hrs

   Advanced sterile product manufacturing technology : Area planning & environmental control, wall and floor treatment, fixtures and machineries, change rooms, personnel flow, utilities & utilities equipment location, engineering and maintenance.

   Process Automation in Pharmaceutical Industry: With specific reference to manufacturing of sterile semisolids, Small Volume Parenterals & Large Volume Parenterals (SVP & LVP), Monitoring of Parenteral manufacturing facility, Cleaning in Place (CIP),

	Sterilization in Place (SIP), Prefilled Syringe, Powdered Jet, Needle Free Injections, and Form Fill Seal Technology (FFS). Lyophilization technology: Principles, process, equipment.	
3	Non sterile manufacturing process technology: Manufacturing, manufacturing flowcharts, in process-quality control tests for following Non-Sterile solid dosage forms: Tablets (compressed & coated), Capsules (Hard & Soft). Advance non-sterile solid product manufacturing technology: Process Automation in Pharmaceutical Industry with specific reference to manufacturing of tablets and coated products, Improved Tablet Production: Tablet production process, granulation and pelletization equipments, continuous and batch mixing, rapid mixing granulators, rota granulators, spheronizers and marumerisers, and other specialized granulation and drying equipments. Problems encountered. Coating technology: Process, equipments, particle coating, fluidized bed coating, application techniques. Problems encountered.	12 Hrs
4	Containers and closures for pharmaceuticals: Types, performance, assuring quality of glass; types of plastics used, Drug plastic interactions, biological tests, modification of plastics by drugs; different types of closures and closure liners; film wrapper; blister packs; bubble packs; shrink packaging; foil / plastic pouches, bottle seals, tape seals, breakable seals and sealed tubes; quality control of packaging material and filling equipment, flexible packaging, product package compatibility, transit worthiness of package, Stability aspects of packaging. Evaluation of stability of packaging material.	12 Hrs
5	Quality by design (QbD) and process analytical technology (PAT): Current approach and its limitations. Why QbD is required, Advantages, Elements of QbD, Terminology: QTPP. CMA, CQA, CPP, RLD, Design space, Design of Experiments, Risk Assessment and mitigation/minimization. Quality by Design, Formulations by Design, QbD for drug products, QbD for Drug Substances, QbD for Excipients, Analytical QbD. FDA initiative on process analytical technology. PAT as a driver for improving quality and reducing costs: quality by design (QbD), QA, QC and GAMP. PAT guidance, standards and regulatory requirements.	12 Hrs

REFERENCES

1. Lachman L, Lieberman HA, Kanig JL. The theory and practice of industrial pharmacy, 3rd ed., Varghese Publishers, Mumbai 1991.
2. Sinko PJ. Martin's physical pharmacy and pharmaceutical sciences, 5th ed., B.I. Publications Pvt. Ltd, Noida, 2006.
3. Lieberman HA, Lachman L, Schwartz JB. Pharmaceutical dosage forms: tablets Vol. I-III, 2nd ed., CBS Publishers & distributors, New Delhi, 2005.
4. Banker GS, Rhodes CT. Modern Pharmaceutics, 4th ed., Marcel Dekker Inc, New York, 2005.
5. Sidney H Willing, Murray M, Tuckerman. Williams Hitchings IV, Good manufacturing of pharmaceuticals (A Plan for total quality control) 3rd Edition. Bhalani publishing house Mumbai.
6. Indian Pharmacopoeia. Controller of Publication. Delhi, 1996.
7. British Pharmacopoeia. British Pharmacopoeia Commission Office, London, 2008.
8. United States Pharmacopoeia. United States Pharmacopeial Convention, Inc, USA, 2003.
9. Dean D A, Evans E R and Hall I H. Pharmaceutical Packaging Technology. London, Taylor & Francis, 1st Edition. UK.
10. Edward J Bauer. Pharmaceutical Packaging Handbook. 2009. Informa Health care USA Inc. New york.
11. Shaybe Cox Gad. Pharmaceutical Manufacturing Handbook. John Willey and Sons, New Jersey, 2008.

QUALITY ASSURANCE PRACTICAL – II PRACTICALS
(MQA 205P)

1. Organic contaminants residue analysis by HPLC
2. Estimation of Metallic contaminants by Flame photometer
3. Identification of antibiotic residue by TLC
4. Estimation of Hydrogen Sulphide in Air.
5. Estimation of Chlorine in Work Environment.
6. Sampling and analysis of SO_2 using Colorimetric method
7. Qualification of following Pharma equipment
   a. Autoclave
   b. Hot air oven
   c. Powder Mixer (Dry)
   d. Tablet Compression Machine
8. Validation of an analytical method for a drug
9. Validation of a processing area
10. Qualification of at least two analytical instruments
11. Cleaning validation of one equipment
12. Qualification of Pharmaceutical Testing Equipment (Dissolution testing apparatus, Friability Apparatus, Disintegration Tester)
13. Check list for Bulk Pharmaceutical Chemicals vendors
14. Check list for tableting production.
15. Check list for sterile production area
16. Check list for Water for injection.
17. Design of plant layout: Sterile and non-sterile
18. Case study on application of QbD
19. Case study on application of PAT

PHARMACEUTICALREGULATORY AFFAIRS(MRA)

GOOD REGULATORY PRACTICES (MRA 101T)

Scope

This course is designed to impart fundamental knowledge on various Good Regulatory Practices viz., cGMP, GLP, GALP and GDP for Pharmaceuticals, Cosmetics, Food & Nutraceuticals, Medical devices, In-vitro Diagnostic Medical Devices (IVDs) and biological products and understand the rationale behind these requirements and will propose ways and means of complying with them.

Objectives

At completion of this course it is expected that students will be able to understand,

- The key regulatory and compliance elements with respect to Good Manufacturing Practices, Good Laboratory Practices, Good Automated Laboratory Practices and Good Documentation Practices.
- Prepare and implement the check lists and SOPs for various Good Regulatory Practices
- Implement Good Regulatory Practices in the Healthcare and related Industries
- Prepare for the readiness and conduct of audits and inspections.

THEORY 60 Hrs

1.	Current Good Manufacturing Practices: Introduction, US cGMP Part 210 and Part 211.EC Principles of GMP (Directive 91/356/EEC) Article 6 to Article 14 and WHO cGMP guidelines GAMP-5; Medical device and IVDs Global Harmonization Task Force(GHTF) Guidance docs.	12 Hrs
2	Good Laboratory Practices: Introduction, USFDA GLP Regulations (Subpart A to Subpart K), Controlling the GLP inspection process, Documentation, Audit, goals of Laboratory Quality Audit, Audit tools, Future of GLP regulations, relevant ISO and Quality Council of India(QCI) Standards	12 Hrs
3	Good Automated Laboratory Practices: Introduction to GALP, Principles of GALP, GALP Requirements, SOPs of GALP, Training Documentation,21 CFR Part 11, General check list of 21CFR Part 11, Software Evaluation checklist, relevant ISO and QCI Standards.	12 Hrs

4	Good Distribution Practices: Introduction to GDP, Legal GDP requirements put worldwide, Principles, Personnel, Documentation, Premises and Equipment, Deliveries to Customers, Returns, Self-Inspection, Provision of information, Stability testing principles, WHO GDP, USP GDP (Supply chain integrity), relevant CDSCO guidance and ISO standards	12 Hrs
5	Quality management systems: Concept of Quality, Total Quality Management, Quality by design, Six Sigma concept, Out of Specifications (OOS), Change control. Validation: Types of Validation, Types of Qualification, Validation master plan (VMP), Analytical Method Validation. Validation of utilities, [Compressed air, steam, water systems, Heat Ventilation and Air conditioning (HVAC)]and Cleaning Validation. The International Conference on Harmonization (ICH) process, ICH guidelines to establish quality, safety and efficacy of drug substances and products, ISO 13485, Sch MIII and other relevant CDSCO regulatory guidance documents.	12 Hrs

REFERENCES

1. Good Laboratory Practice Regulations, by Sandy Weinberg, Fourth Edition Drugs and the Pharmaceutical Sciences, Vol.168
2. Good Pharmaceutical Manufacturing practice, Rational and compliance by John Sharp, CRC Press
3. Establishing a cGMP Laboratory Audit System, A practical Guide by David M.Bleisner, Wiley Publication.
4. How to practice GLP by PP Sharma, Vandana Publications.
5. Laboratory Auditing for Quality and Regulatory compliance bu Donald C.Singer, Drugs and the Pharmaceutical Sciences, Vol.150.
6. Drugs & Cosmetics Act, Rules & Amendments

DOCUMENTATION AND REGULATORY WRITING
(MRA 102T)

Scope

This course is designed to impart fundamental knowledge on documentation and general principles involved in regulatory writing and submission to agencies.

Objectives

Upon completion of the course the student shall be able to,

- Know the various documents pertaining to drugs in pharmaceutical industry
- Understand the basics of regulatory compilation
- Create and assemble the regulation submission as per the requirements of agencies
- Follow up the submissions and post approval document requirements

THEORY 60 Hrs

1. Documentation in pharmaceutical industry: Exploratory Product Development Brief (EPDB) for Drug substance and Drug product, Product Development Plan (PDP), Product Development Report (PDR), Master Formula Record, Batch Manufacturing Record and its calculations, Batch Reconciliation, Batch Packaging Records, Print pack specifications, Distribution records, Certificate of Analysis (CoA), Site Master File and Drug Master Files (DMF). 12 Hrs

2 Dossier preparation and submission: Introduction and overview of dossiers, contents and organization of dossier, binders and sections, compilation and review of dossier. Paper submissions, overview and modules of CTD, electronic CTD submissions; Electronic submission: Planning electronic submission, requirements for submission, regulatory bindings and requirements, Tool and Technologies, electronic dossier submission process and validating the submission, Electronic Submission Gateway (ESG). Non eCTD electronic submissions (NeeS), Asian CTD formats (ACTD) submission. Organizing, process and validation of submission. Submission in Sugam system of CDSCO. 12 Hrs

3	Audits: Introduction, Definition, Summary, Types of audits, GMP compliance audit, Audit policy, Internal and External Audits, Second Party Audits, External third party audits, Auditing strategies, Preparation and conducting audit, Auditing strategies, audit analysis, audit report, audit follow up. Auditing/inspection of manufacturing facilities by regulatory agencies. Timelines for audits/inspection. GHTF study group 4 guidance document. ISO 13485.	12 Hrs
4	Inspections: Pre-approval inspections, Inspection of pharmaceutical manufacturers, Inspection of drug distribution channels, Quality systems requirements for national good manufacturing practice inspectorates, inspection report, model certificate of good manufacturing practices, Root cause analysis, Corrective and Preventive action (CAPA).	12 Hrs
5	Product life cycle management: Prior Approval Supplement (PAS), Post Approval Changes [SUPAC], Changes Being Effected in 30 Days (CBE-30), Annual Report, Post marketing Reporting Requirements, Post approval Labeling Changes, Lifecycle Management, FDA Inspection and Enforcement, Establishment Inspection Report (EIR), Warning Letters, Recalls, Seizure and Injunctions. ISO Risk Management Standard	12 Hrs

REFERENCES

1. Compliance auditing for Pharmaceutical Manufacturers. Karen Ginsbury and Gil Bismuth, Interpharm/CRC, Boca Raton, London New York, Washington D.C.
2. Pharmaceutical Manufacturing Handbook, Regulations and Quality by Shayne Cox Gad. Wiley-Interscience, A John Wiley and sons, Inc., Publications.
3. Handbook of microbiological Quality control. Rosamund M. Baird, Norman A. Hodges, Stephen P. Denyar. CRC Press. 2000.
4. Laboratory auditing for quality and regulatory compliance. Donald C. Singer, Raluca-loana Stefan, Jacobus F. Van Staden. Taylor and Francis (2005).
5. Implementing Juran's Road Map for Quality Leadership: Benchmarks and Results, By Al Endres, Wiley, 2000
6. Understanding, Managing and Implementing Quality: Frameworks, Techniques and Cases, By Jiju Antony; David Preece, Routledge, 2002

7. Organizing for High Performance: Employee Involvement, TQM, Reengineering, and Knowledge Management in the Fortune 1000: The CEO Report By Edward E. Lawler; Susan Albers Mohrman; George Benson, Jossey-Bass, 2001
8. Corporate Culture and the Quality Organization By James W. Fairfield-Sonn, Quorum Books, 2001
9. The Quality Management Sourcebook: An International Guide to Materials and Resources By Christine Avery; Diane Zabel, Routledge, 1997
10. The Quality Toolbox, Second Edition, Nancy R. Tague, ASQ Publications
11. Juran's Quality Handbook, Sixth Edition, Joseph M. Juran and Joseph A. De Feo, ASQ Publications
12. Root Cause Analysis, The Core of Problem Solving and Corrective Action, Duke Okes, 2009, ASQ Publications
13. International Medical Device Regulators Forum (IMDRF) Medical Device Single Audit Program (MDSAP)

CLINICAL RESEARCH REGULATIONS
(MRA 103T)

Scope

This course is designed to impart the fundamental knowledge on the clinical development process of drugs, pharmaceuticals and Medical Devices, phases and conduct of clinical trials and research, regulations and guidance governing the conduct of clinical research in India, USA and EU. It prepares the students to learn in detail on various laws, legislations and guidance related to safety, efficacy, ethical conduct and regulatory approval of clinical research.

Objectives

Upon completion of the course, the student shall be able to (know, do and appreciate)

- History, origin and ethics of clinical and biomedical research and evaluation
- Clinical drug, medical device development process and different types and phases of clinical trials
- Regulatory requirements and guidance for conduct of clinical trials and research

Theory — 60 Hrs

1. Clinical Drug Development Process — 12 Hrs
   - Different types of Clinical Studies
   - Phases of clinical trials, Clinical Trial protocol
   - Phase 0 studies
   - Phase I and subtype studies (single ascending, multiple ascending, dose escalation, methods, food effect studies, drug – drug interaction, PK end points
   - Phase II studies (proof of concept or principle studies to establish efficacy)
   - Phase III studies (Multi ethnicity, global clinical trial, registration studies)
   - Phase IV studies (Post Marketing Studies; PSUR)

   Clinical Investigation and Evaluation of Medical Devices & IVDs

   Different Types of Studies
   Key Concepts of Medical Device Clinical Evaluation
   Key concepts of Clinical Investigation

2 Ethics in Clinical Research: 12 Hrs

- Historical Perspectives: Nuremberg Code, Thalidomide study , Nazis Trials, Tuskegee Syphilis Study, The Belmont Report, The declaration of Helsinki
- Origin of International Conference on Harmonization - Good Clinical Practice (ICH-GCP) guidelines.
- The ethics of randomized clinical trials
- The role of placebo in clinical trials
- Ethics of clinical research in special population
- Institutional Review Board/Independent Ethics Committee/Ethics Committee – composition, roles, responsibilities, review and approval process and ongoing monitoring of safety data
- Data safety monitoring boards.
- Responsibilities of sponsor, CRO, and investigator in ethical conduct of clinical research
  - Ethical principles governing informed consent process
  - Patient Information Sheet and Informed Consent Form
  - The informed consent process and documentation

3 Regulations governing Clinical Trials 12 Hrs

India: Clinical Research regulations in India – Schedule Y & Medical Device Guidance

USA: Regulations to conduct drug studies in USA (FDA)

- NDA 505(b)(1) of the FD&C Act (Application for approval of a new drug)
- NDA 505(b)(2) of the FD&C Act (Application for approval of a new drug that relies, at least in part, on data not developed by the applicant)
- ANDA 505(j) of the FD&C Act (Application for approval of a generic drug product)
- FDA Guidance for Industry - Acceptance of Foreign Clinical Studies
- FDA Clinical Trials Guidance Document: Good Clinical Practice

EU: Clinical Research regulations in European Union (EMA)

4 Clinical Research Related Guidelines 12 Hrs

- Good Clinical Practice Guidelines (ICH GCP E6)
- Indian GCP Guidelines
- ICMR Ethical Guidelines for Biomedical Research
- CDSCO guidelines

GHTF study group 5 guidance documents

Regulatory Guidance on Efficacy and Safety ICH Guidance's

- E4 – Dose Response Information to support Drug Registration
- E7 – Studies in support of General Population: Geriatrics
- E8 – General Considerations of Clinical Trials
- E10 – Choice of Control Groups and Related Issues in Clinical Trials,
- E 11 – Clinical Investigation of Medicinal Products in the Pediatric Population
- General biostatics principle applied in clinical research

5 USA & EU Guidance 12 Hrs

USA: FDA Guidance

- CFR 21Part 50: Protection of Human Subjects
- CFR 21Part 54: Financial Disclosure by Clinical Investigators
- CFR 21Part 312: IND Application
- CFR 21Part 314: Application for FDA Approval to Market a New Drug
- CFR 21Part 320: Bioavailability and bioequivalence requirements
- CFR 21Part 812: Investigational Device Exemptions
- CFR 21Part 822: Post-market surveillance
- FDA Safety Reporting Requirements for INDs and BA/BE Studies
- FDA Med Watch
- Guidance for Industry: Good Pharmacovigilance Practices and Pharmacoepidemiologic Assessment

European Union: EMA Guidance

- EU Directives 2001
- EudraLex (EMEA) Volume 3 – Scientific guidelines for medicinal products for human use
- EU Annual Safety Report (ASR)
- Volume 9A – Pharmacovigilance for Medicinal Products for Human Use
- EU MDD with respect to clinical research
- ISO 14155

REFERENCES

1. Clinical Trials and Human Research: A Practical Guide to Regulatory Compliance By Fay A. Rozovsky and Rodney K. Adams
2. HIPAA and Human Subjects Research: A Question and Answer Reference Guide By Mark Barnes, JD, LLM and Jennifer Kulynych, JD, PhD
3. Principles and Practices of Clinical Research, Second Edition Edited by John I. Gallin and Frederick P. Ognibene
4. Reviewing Clinical Trials: A Guide for the Ethics Committee; Johan PE Karlberg and Marjorie A Speers; Karlberg, Johan Petter Einar, Hong Kong.
5. International Pharmaceutical Product Registration: Aspects of Quality, Safety and Efficacy; Anthony C. Cartwright; Taylor & Francis Inc., USA.
6. New Drug Approval Process: The Global Challenge; Guarino, Richard A; Marcel Dekker Inc., NY.
7. FDA regulatory affairs: a guide for prescription drugs, medical devices, and biologics; Douglas J. Pisano, David Mantus; CRC Press, USA
8. Country Specific Guidelines from official websites.
9. Drugs & Cosmetics Act & Rules and Amendments

RECOMMENDED WEBSITES:

1. EU Clinical Research Directive 2001: http://www.eortc.be/services/doc/clinical-eudirective-04-april-01.pdf
2. Code of Federal Regulations, FDA: http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfcfr/cfrsearch.cfm
3. Guidelines of International Conference on Harmonization: http://www.ich.org/products/guidelines.html
4. Eudralex Guidelines: http://www.gmpcompliance.info/euguide.htm
5. FDA New Drug Application:
6. http://www.fda.gov/regulatoryinformation/legislation/FederalFoodDrugandCosmeticActFDCAct/FDCActChapterVDrugsandDevices/ucm108125.htm
7. Medicines and Healthcare products Regulatory Agency: http://www.mhra.gov.uk
8. Central Drugs Standard Control Organization Guidance for Industry: http://cdsco.nic.in/CDSCO-GuidanceForIndustry.pdf
9. ICMR Ethical Guidelines for Biomedical Research: http://icmr.nic.in/ethical_guidelines.pdf

REGULATIONS AND LEGISLATION FOR DRUGS & COSMETICS, MEDICAL DEVICES, BIOLOGICALS & HERBALS, AND FOOD & NUTRACEUTICALS IN INDIA AND INTELLECTUAL PROPERTY RIGHTS

(MRA 104T)

Scope

This course is designed to impart fundamental knowledge on regulations and legislation in India w.r.t. Drugs & Cosmetics, Medical Devices, Biologicals & Herbals, and Food & Nutraceuticals. It prepares the students for basic regulatory requirements in India of Drugs & Cosmetics, Medical Devices, Biologicals & Herbals, and Food & Nutraceuticals. for manufacture, import & registration, export, sale, marketing authorization, clinical trials and intellectual property rights.

Objectives

Upon the completion of the course the student shall be able to:

- Know different Acts and guidelines that regulate Drugs & Cosmetics, Medical Devices, Biologicals & Herbals, and Food & Nutraceuticals industry in India.
- Understand the approval process and regulatory requirements for Drugs & Cosmetics, Medical Devices, Biologicals & Herbals, and Food & Nutraceuticals

THEORY 60 Hrs

1. Biologicals & Herbals, and Food & Nutraceuticals Acts and Rules (with latest amendments): 12 Hrs

    1. Drugs and Cosmetics Act 1940 and Rules 1945: DPCO and NPPA
    2. Other relevant provisions (rules schedules and guidelines for approval of Drugs & Cosmetics, Medical Devices, Biologicals & Herbals, and Food & Nutraceuticals in India

    Other relevant Acts: Narcotics Drugs and Psychotropic Substances Act; Medicinal and Toilet Preparations (Excise Duties) Act, 1955; Pharmacy Act, 1948; Drugs and Magic Remedies (Objectionable Advertisements) Act, 1955; Prevention of Cruelty to Animals Act.

2	Regulatory requirements and approval procedures for Drugs & Cosmetics Medical Devices, Biologicals & Herbals, and Food & Nutraceuticals CDSCO (Central Drug Standard Control Organization) and State Licensing Authority: Organization, Responsibilities • Rules, regulations, guidelines and standards for regulatory filing of Drugs & Cosmetics, Medical Devices, Biologicals & Herbals, and Food & Nutraceuticals • Format and contents of Regulatory dossier filing Clinical trial/ investigations	12 Hrs
3	Indian Pharmacopoeial Standards, BIS standards and ISO and other relevant standards	12 Hrs
4	Bioavailability and Bioequivalence data (BA &BE), BCS Classification of Drugs, Regulatory Requirements for Bioequivalence study Stability requirements: ICH and WHO Guidelines for Drug testing in animals/Preclinical Studies Animal testing: Rationale for conducting studies, CPCSEA Guidelines Ethical guidelines for human participants ICMR-DBT Guidelines for Stem Cell Research	12 Hrs
5	Intellectual Property Rights: Patent, Trademark, Copyright, Industrial Designs and Geographical Indications, Indian Patent Scenario. IPR vs Regulatory Affairs	12 Hrs

REFERENCES

1. Manual of Patent Practice & Procedure, 3rd Edition, by The Patent Office of India
2. Patent Failure How Judges, Bureaucrats, and Lawyers put innovators at risk by James Bessen and Michael J. Meurer
3. Principles and Practice of Clinical Trial Medicine by Richard Chin and Bruce Y. Lee
4. Ethical Guidelines for Biomedical Research on Human Participants by Indian Council of Medical Research New delhi 2006.
5. CPCSEA Guidelines for Laboratory Animal Facility by Committee for the purpose of control and supervision on experiments on animals (CPCSEA)

6. ICH E6 Guideline — Good Clinical Practice‖ by ICH Harmonised Tripartite
7. Guidance for Industry on Submission of Clinical Trial Application for Evaluating Safety and Efficacy by CDSCO (Central Drug Standard Control Organisation)
8. Guidance for Industry on Requirement of Chemical & Pharmaceutical Information including Stability Study Data before approval of clinical trials / BE studies by CDSCO
9. Guidelines for Import and Manufacture of Medical Devices by CDSCO
10. Guidelines from official website of CDSCO

REGULATORY AFFAIRS PRACTICAL - I
(MRA 105P)

1. Case studies (4 Nos.) of each of Good Pharmaceutical Practices.
2. Documentation for in process and finished products Quality control tests for Solid, liquid, Semisolid and Sterile preparations.
3. Preparation of SOPs, Analytical reports (Stability and validation)
4. Protocol preparation for documentation of various types of records (BMR, MFR, DR)
5. Labeling comparison between brand & generics.
6. Preparation of clinical trial protocol for registering trial in India
7. Registration for conducting BA/ BE studies in India
8. Import of drugs for research and developmental activities
9. Preparation of regulatory dossier as per Indian CTD format and submission in SUGAM
10. Registering for different Intellectual Property Rights in India
11. GMP Audit Requirements as per CDSCO
12. Preparation and documentation for Indian Patent application.
13. Preparation of checklist for registration of IND as per ICH CTD format.
14. Preparation of checklist for registration of NDA as per ICH CTD format.
15. Preparation of checklist for registration of ANDA as per ICH CTD format.
16. Case studies on response with scientific rationale to USFDA Warning Letter
17. Preparation of submission checklist of IMPD for EU submission.
18. Comparison study of marketing authorization procedures in EU.
19. Comparative study of DMF system in US, EU and Japan
20. Preparation of regulatory submission using eCTD software
21. Preparation of Clinical Trial Application (CTA) for US submission
22. Preparation of Clinical Trial Application (CTA) for EU submission
23. Comparison of Clinical Trial Application requirements of US, EU and Japan of a dosage form.
24. Regulatory requirements checklist for conducting clinical trials in India.
25. Regulatory requirements checklist for conducting clinical trials in Europe.
26. Regulatory requirements checklist for conducting clinical trials in USA

SEMESTER II

REGULATORY ASPECTS OF DRUGS & COSMETICS

(MRA 201T)

Scope

This course is designed to impart the fundamental knowledge on the drug development process, regulatory requirements for approval of new drugs, drug products and cosmetics in regulated and semi-regulated countriesIt prepares the students to learn in detail on the regulatory requirements, documentation requirements, and registration procedures for marketing the drug products and cosmetics in regulated and semi-regulated countries.

Objectives

Upon completion of the course, the student shall be able to know

- process of drug discovery and development and generic product development
- regulatory approval process and registration procedures for API and drug products in US, EU
- Cosmetics regulations in regulated and semi-regulated countries
- A comparative study of India with other global regulated markets

Theory 60 Hrs

1. USA & CANADA: Organization structure and functions of FDA. Federal register and Code of Federal Regulations (CFR), History and evolution of United States Federal, Food, Drug and Cosmetic Act (FFDCA), Hatch Waxman act and Orange book, Purple book, Drug Master Files (DMF) system in US, Regulatory Approval Process for Investigational New Drug (IND), New Drug Application (NDA), Abbreviated New Drug Application (ANDA), Supplemental New Drug Application (SNDA); Regulatory requirements for Orphan drugs and Combination Products, Changes to an approved NDA / ANDA. Regulatory considerations for manufacturing, packaging and labeling of pharmaceuticals in USA. Legislation and regulations for import, manufacture, distribution and sale of cosmetics in USA and Canada. 12 Hrs

2 European Union & Australia: Organization and structure of EMA & EDQM, General guidelines, Active Substance Master Files (ASMF) system in EU, Content and approval process of IMPD, Marketing Authorization procedures in EU (Centralized procedure, 12 Hrs

	Decentralized procedure, Mutual recognition procedure and National Procedure). Regulatory considerations for manufacturing, packaging and labeling of pharmaceuticals in EU, Eudralex directives for human medicines, Variations & extensions, Compliance of European Pharmacopoeia (CEP)/ Certificate of Suitability (CoS), Marketing Authorization (MA) transfers, Qualified Person (QP) in EU. Legislation and regulations for import, manufacture, distribution and sale of cosmetics in European Union & Australia.	
3	Japan: Organization of the PMDA, Pharmaceutical Laws and regulations, types of registration applications, DMF system in Japan, drug regulatory approval process, Regulatory considerations for manufacturing, packaging and labeling of pharmaceuticals in Japan, Post marketing surveillance in Japan. Legislation and regulations for import, manufacture, distribution and sale of cosmetics in Japan	12 Hrs
4	Emerging Market: Introduction, Countries covered, Study of the world map,study of various committees across the globe (ASEAN, APEC, EAC, GCC, PANDRH, SADC) WHO: WHO, GMP, Regulatory Requirements for registration of drugs and post approval requirements in WHO through prequalification programme, Certificate of Pharmaceutical Product (CoPP) - General and Country Specific (South Africa, Egypt, Algeria and Morocco, Nigeria, Kenya and Botswana)	12 Hrs
5	Brazil, ASEAN, CIS and GCC Countries: ASIAN Countries: Introduction to ACTD, Regulatory Requirements for registration of drugs and post approval requirements in China and South Korea & Association of Southeast Asian Nations (ASEAN) Region i.e. Vietnam, Malaysia, Philippines, Singapore and Thailand. CIS (Commonwealth Independent States): Regulatory pre-requisites related to Marketing authorization requirements for drugs and post approval requirements in CIS countries i.e. Russia, Kazakhstan and Ukraine GCC (Gulf Cooperation Council) for Arab states: Regulatory pre-requisites related to Marketing authorization requirements for drugs and post approval requirements in Saudi Arabia and UAE Legislation and regulations for import, manufacture, distribution and sale of cosmetics in Brazil, ASEAN, CIS and GCC Countries.	12 Hrs

REFERENCES :

1. Generic Drug Product Development, Solid Oral Dosage forms, Leon Shargel and Isader Kaufer, Marcel Dekker series, Vol.143
2. The Pharmaceutical Regulatory Process, Edited by Ira R. Berry Marcel Dekker Series, Vol.144
3. The Pharmaceutical Regulatory Process, Second Edition Edited by Ira R. Berry and Robert P. Martin, Drugs and the Pharmaceutical Sciences, Vol.185 Informa Health care Publishers.
4. New Drug Approval Process: Accelerating Global Registrations By Richard A Guarino, MD, 5th edition, Drugs and the Pharmaceutical Sciences, Vol.190.
5. Guidebook for drug regulatory submissions / Sandy Weinberg. By John Wiley & Sons. Inc.
6. Drugs: From Discovery to Approval, Second Edition By Rick Ng
7. New Drug Development: A Regulatory Overview, Eighth Edition By Mark Mathieu
8. Pharmaceutical Risk Management By Jeffrey E. Fetterman, Wayne L. Pines and Gary H. Slatko
9. Preparation and Maintenance of the IND Application in eCTD Format By William K. Sietsema
10. Country Specific Guidelines from official websites.
11. http://www.who.int/medicines/areas/quality_safety/regulation_legislation/ListMRAWebsites.pdf
12. Roadmap to an ASEAN economic community Edited by Denis Hew. ISEAS Publications, Singapore 2005, ISBN981-230-347-2
13. ASEAN, Rodolfo C. Severino, ISEAS Publications, Singapore 2005, ISBN 978-981-230-750-7
14. Building a Future with Brics: The Next Decade for Offshoring, Mark Kobayashi-Hillary, Springer
15. Outsourcing to India: The Offshore Advantage, Mark Kobayashi-Hillary, Springer Trade performance and Regional Integration of the CIS Countries, Lev Freinkman,
16. The world Bank, Washington, DC, ISBN: 0-8212-5896-0
17. Global Pharmaceutical Policy: Ensuring Medicines for Tomorrow's World ByFrederick M. Abbott, Graham Dukes, Maurice Nelson Graham Dukes 139
18. The Gulf Cooperation Council: A Rising Power and Lessons for ASEAN by Linda Low and Lorraine Carlos Salazar (Nov 22, 2010)
19. Doing Business in the Asean Countries, Balbir Bhasin, Business Expert Press ISBN:13:978-1-60649-108-9
20. Realizing the ASEAN Economic Community: A Comprehensive Assessment, Michael G Plummer (Editor), Chia Siow Yue (Editor), Instute of South east asian studies, Singapore

REGULATORY ASPECTS OF HERBAL AND BIOLOGICALS
(MRA 202T)

Scope

This course is designed to impart fundamental knowledge on Regulatory Requirements, Licensing and Registration, Regulation on Labelling of Biologics in India, USA and Europe

It prepares the students to learn in detail on Regulatory Requirements for biologics, Vaccines and Blood Products

Objectives

Upon the completion of the course the student shall be able to :

- Know the regulatory Requirements for Biologics and Vaccines
- Understand the regulation for newly developed biologics and biosimilars
- Know the pre-clinical and clinical development considerations of biologics
- Understand the Regulatory Requirements of Blood and/or Its Components Including Blood Products and label requirements

Theory 60 Hrs

1. India : Introduction, Applicable Regulations and Guidelines , Principles for Development of Similar Biologics, Data Requirements for Preclinical Studies, Data Requirements for Clinical Trial Application, Data Requirements for Market Authorization Application, Post-Market Data for Similar Biologics, Pharmacovigilance. GMP and GDP. — 12 Hrs

2 USA: Introduction to Biologics; biologics, biological and biosimilars, different biological products, difference between generic drug and biosimilars, laws, regulations and guidance on biologics/ biosimilars, development and approval of biologics and biosimilars (IND, PMA, BLA, NDA, 510(k), pre-clinical and clinical development considerations, advertising, labelling and packing of biologics — 12 Hrs

3 European Union: Introduction to Biologics; directives, scientific guidelines and guidance related to biologics in EU, comparability/ biosimilarity assessment, Plasma master file, TSE/ BSE evaluation, development and regulatory approval of biologics (Investigational medicinal products and biosimilars), pre-clinical — 12 Hrs

	and clinical development considerations; stability, safety, advertising, labelling and packing of biologics in EU	
4	Vaccine regulations in India, US and European Union: Clinical evaluation, Marketing authorisation, Registration or licensing, Quality assessment, Pharmacovigilance, Additional requirements Blood and Blood Products Regulations in India, US and European Union: Regulatory Requirements of Blood and/or Its Components Including Blood Products, Label Requirements, ISBT (International Society of Blood Transfusion) and IHN (International Haemovigilence Network)	12 Hrs
5	Herbal Products: Quality, safety and legislation for herbal products in India, USA and European Union.	12 Hrs

REFERENCES

1. FDA Regulatory Affairs: A Guide for Prescription Drugs, Medical Devices, and Biologics, Douglas J. Pisano , David S. Mantus ; Informa ,2008
2. Biological Drug Products: Development and Strategies; Wei Wang , Manmohan Singh ; wiley ,2013
3. Development of Vaccines: From Discovery to Clinical Testing; Manmohan Singh , Indresh K. Srivastava ;Wiley, 2011
4. www.who.int/biologicals/en
5. www.fda.gov/BiologicsBloodVaccines/GuidanceComplianceRegulatoryInformation/
6. www.ihn-org.com
7. www.isbtweb.org
8. Guidelines on Similar Biologics: Regulatory Requirements for Marketing Authorization in India
9. www.cdsco.nic.in
10. www.ema.europa.eu › scientific guidelines › Biologicals
11. www.fda.gov/biologicsbloodVaccines/GuidanceCompliance Regulatory Information (Biologics)

REGULATORY ASPECTS OF MEDICAL DEVICES
(MRA 203T)

Scope

This course is designed to impart the fundamental knowledge on the medical devices and in vitro diagnostics, basis of classification and product life cycle of medical devices, regulatory requirements for approval of medical devices in regulated countries like US, EU and Asian countries along with WHO regulations. It prepares the students to learn in detail on the harmonization initiatives, quality and ethical considerations, regulatory and documentation requirements for marketing medical devices and IVDs in regulated countries.

Objectives

Upon completion of the course, the student shall be able to know

- basics of medical devices and IVDs, process of development, ethical and quality considerations
- harmonization initiatives for approval and marketing of medical devices and IVDs
- regulatory approval process for medical devices and IVDs in India, US, Canada, EU, Japan and ASEAN
- clinical evaluation and investigation of medical devices and IVDs

Theory — 60 Hrs

1. Medical Devices: Introduction, Definition, Risk based classification and Essential Principles of Medical Devices and IVDs. Differentiating medical devices IVDs and Combination Products from that of pharmaceuticals, History of Medical Device Regulation, Product Lifecycle of Medical Devices and Classification of Medical Devices. — 12 Hrs

   IMDRF/GHTF: Introduction, Organizational Structure, Purpose and Functions, Regulatory Guidelines, Working Groups, Summary Technical Document (STED), Global Medical Device Nomenclature (GMDN).

2. Ethics: Clinical Investigation of Medical Devices, Clinical Investigation Plan for Medical Devices, Good Clinical Practice for Clinical Investigation of medical devices (ISO 14155:2011) — 12 Hrs

   Quality: Quality System Regulations of Medical Devices: ISO 13485, Quality Risk Management of Medical Devices: ISO 14971, Validation and Verification of Medical device, Adverse Event Reporting of Medical device

3	USA: Introduction, Classification, Regulatory approval process for Medical Devices (510k) Premarket Notification, Pre-Market Approval (PMA), Investigational Device Exemption (IDE) and In vitro Diagnostics, Quality System Requirements 21 CFR Part 820, Labeling requirements 21 CFR Part 801, Post marketing surveillance of MD and Unique Device Identification (UDI). Basics of In vitro diagnostics, classification and approval process.	12 Hrs
4	European Union: Introduction, Classification, Regulatory approval process for Medical Devices (Medical Device Directive, Active Implantable Medical Device Directive) and In vitro Diagnostics (In Vitro Diagnostics Directive), CE certification process. Basics of In vitro diagnostics, classification and approval process.	12 Hrs
5	ASEAN, China & Japan: Medical Devices and IVDs, Regulatory registration procedures, Quality System requirements and clinical evaluation and investigation. IMDRF study groups and guidance documents.	12 Hrs

REFERENCES

1. FDA regulatory affairs: a guide for prescription drugs, medical devices, and biologics by Douglas J. Pisano, David Mantus.
2. Medical Device Development: A Regulatory Overview by Jonathan S. Kahan
3. Medical Product Regulatory Affairs: Pharmaceuticals, Diagnostics, Medical Devices by John J. Tobin and Gary Walsh
4. Compliance Handbook for Pharmaceuticals, Medical Devices and Biologics by Carmen Medina
5. Country Specific Guidelines from official websites.

REGULATORY ASPECTS OF FOOD & NUTRACEUTICALS
(MRA 204T)

Scope

This course is designed to impart the fundamental knowledge on Regulatory Requirements, Registration and Labeling Regulations of Nutraceuticals in India, USA and Europe.

It prepares the students to learn in detail on Regulatory Aspects for nutraceuticals and food supplements.

Objectives

Upon completion of the course, the student shall be able to

- Know the regulatory Requirements for nutraceuticals
- Understand the regulation for registration and labeling of nutraceuticals and food supplements in India, USA and Europe.

Theory		60 Hrs
1.	Nutraceuticals: Introduction, History of Food and Nutraceutical Regulations, Meaning of Nutraceuticals, Dietary Supplements, Functional Foods, Medical Foods, Scope and Opportunities in Nutraceutical Market.	12 Hrs
2	Global Aspects: WHO guidelines on nutrition. NSF International: Its Role in the Dietary Supplements and Nutraceuticals Industries, NSF Certification, NSF Standards for Food And Dietary Supplements. Good Manufacturing Practices for Nutraceuticals.	12 Hrs
3	India : Food Safety and Standards Act, Food Safety and Standards Authority of India: Organization and Functions, Regulations for import, manufacture and sale of nutraceutical products in India, Recommended Dietary Allowances (RDA) in India.	12 Hrs
4	USA: US FDA Food Safety Modernization Act, Dietary Supplement Health and Education Act. U.S. regulations for manufacture and sale of nutraceuticals and dietary supplements, Labelling Requirements and Label Claims for Dietary Supplements, Recommended Dietary Allowances (RDA) in the U.S	12 Hrs

5	European Union: European Food Safety Authority (EFSA): Organization and Functions. EU Directives and regulations for manufacture and sale of nutraceuticals and dietary supplements. Nutrition labelling. European Regulation on Novel Foods and Novel Food Ingredients. Recommended Dietary Allowances (RDA) in Europe.	12 Hrs

REFERENCES

1. Regulation of Functional Foods and Nutraceuticals: A Global Perspective by Clare M. Hasler (Wiley Online Library)
2. Nutraceutical and Functional Food Regulations in the United States and Around the World by Debasis Bagchi (Academic Press, Elsevier)
3. http://www.who.int/publications/guidelines/nutrition/en/
4. http://www.europarl.europa.eu/RegData/etudes/STUD/2015/536324/IPOL_STU(2015)536324_EN.pdf
5. Handbook of Nutraceuticals by Yashwant Pathak (CRC Press)
6. Food Regulation: Law, Science, Policy and Practice by Neal D. Fortin (Wiley)
7. Country Specific Guidelines from official websites.

REGULATORY AFFAIRS PRACTICAL - II
(MRA 205P)

1. Case studies on
2. Change Management/ Change control. Deviations
3. Corrective & Preventive Actions (CAPA)
4. Documentation of raw materials analysis as per official monographs
5. Preparation of audit checklist for various agencies
6. Preparation of submission to FDA using eCTD software
7. Preparation of submission to EMA using eCTD software
8. Preparation of submission to MHRA using eCTD software
9. Preparation of Biologics License Applications (BLA)
10. Preparation of documents required for Vaccine Product Approval
11. Comparison of clinical trial application requirements of US, EU and India of Biologics
12. Preparation of Checklist for Registration of Blood and Blood Products
13. Registration requirement comparison study in 5 emerging markets (WHO) and preparing check list for market authorization
14. Registration requirement comparison study in emerging markets (BRICS) and preparing check list for market authorization
15. Registration requirement comparison study in emerging markets (China and South Korea) and preparing check list for market authorization
16. Registration requirement comparison study in emerging markets (ASEAN) and preparing check list for market authorization
17. Registration requirement comparison study in emerging markets (GCC) and preparing check list for market authorization
18. Checklists for 510k and PMA for US market
19. Checklist for CE marking for various classes of devices for EU
20. STED Application for Class III Devices
21. Audit Checklist for Medical Device Facility
22. Clinical Investigation Plan for Medical Devices

PHARMACEUTICALBIOTECHNOLOGY(MPB)

MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES (MPB 101T)

Scope

This subject deals with various advanced analytical instrumental techniques for identification, characterization and quantification of drugs. Instruments dealt are NMR, Mass spectrometer, IR, HPLC, GC etc.

Objectives

After completion of course student is able to know,

- The analysis of various drugs in single and combination dosage forms
- Theoretical and practical skills of the instruments

THEORY 60 Hrs

1. a. UV-Visible spectroscopy: Introduction, Theory, Laws, Instrumentation associated with UV-Visible spectroscopy, Choice of solvents and solvent effect and Applications of UV-Visible spectroscopy. 12 Hrs

   IR spectroscopy: Theory, Modes of Molecular vibrations, Sample handling, Instrumentation of Dispersive and Fourier - Transform IR Spectrometer, Factors affecting vibrational frequencies and Applications of IR spectroscopy

   b. Spectroflourimetry: Theory of Fluorescence, Factors affecting fluorescence, Quenchers, Instrumentation and Applications of fluorescence spectrophotometer.

   c. Flame emission spectroscopy and Atomic absorption spectroscopy: Principle, Instrumentation, Interferences and Applications.

2 NMR spectroscopy: Quantum numbers and their role in NMR, Principle, Instrumentation, Solvent requirement in NMR, Relaxation process, NMR signals in various compounds, Chemical shift, Factors influencing chemical shift, Spin-Spin coupling, Coupling constant, Nuclear magnetic double resonance, Brief outline of principles of FT-NMR and 13C NMR. Applications of NMR spectroscopy. 12 Hrs

3	Mass Spectroscopy: Principle, Theory, Instrumentation of Mass Spectroscopy, Different types of ionization like electron impact, chemical, field, FAB and MALDI, APCI, ESI, APPI Analyzers of Quadrupole and Time of Flight, Mass fragmentation and its rules, Meta stable ions, Isotopic peaks and Applications of Mass spectroscopy	12 Hrs
4	Chromatography: Principle, apparatus, instrumentation, chromatographic parameters, factors affecting resolution and applications of the following: a) Paper chromatography b) Thin Layer chromatography c) Ion exchange chromatography d) Column chromatography e) Gas chromatography f) High Performance Liquid chromatography g) Affinity chromatography	12 Hrs
5	a. Electrophoresis: Principle, Instrumentation, Working conditions, factors affecting separation and applications of the following: a) Paper electrophoresis b) Gel electrophoresis c) Capillary electrophoresis d) Zone electrophoresis e) Moving boundary electrophoresis f) Iso electric focusing b. X ray Crystallography: Production of X rays, Different X ray methods, Bragg's law, Rotating crystal technique, X ray powder diffration technique, Types of crystals and applications of X-ray diffraction.	12 Hrs

REFERENCES

1. Spectrometric Identification of Organic compounds - Robert M Silverstein, Sixth edition, John Wiley & Sons.
2. Principles of Instrumental Analysis - Doglas A Skoog, F. James Holler, Timothy A. Nieman, 5th edition, Eastern press, Bangalore.
3. Instrumental methods of analysis – Willards, 7th edition, CBS publishers.
4. Practical Pharmaceutical Chemistry – Beckett and Stenlake, Vol II, 4th edition, CBS Publishers, New Delhi.
5. Organic Spectroscopy - William Kemp, 3rd edition, ELBS.
6. Quantitative Analysis of Drugs in Pharmaceutical formulation - P D Sethi, 3rd Edition, CBS Publishers, New Delhi.
7. Pharmaceutical Analysis- Modern methods – Part B - J W Munson, Volume 11, Marcel Dekker Series

MICROBIAL AND CELLULAR BIOLOGY
(MPB 102T)

Scope

This subject is designed to provide the advanced knowledge to the biotechnology students in invaluable areas of advanced microbiology which plays a crucial role in determining its future use and applications in medicine, drug discovery and in pharmaceutical industry.

Objective

At the completion of this course it is expected that the students will get an understanding about the following aspects;

- Importance of Microorganisms in Industry
- Central dogma of molecular biology
- Structure and function of cell and cell communication
- Cell culture technology and its applications in pharmaceutical industries.
- Microbial pathogenesis and correlating it to rational use of antimicrobial agents.

THEORY 60Hrs

1. Microbiology 12 Hrs

Introduction – Prokaryotes and Eukaryotes. Bacteria, fungi, actionomycetes and virus - structure, chemistry and morphology, cultural, physiological and reproductive features. Methods of isolation, cultivation and maintenance of pure cultures. Industrially important microorganisms - examples and applications

2 Molecular Biology: Structure of nucleus and chromosome, Nucleic acids and composition, structure and types of DNA and RNA. Central dogma of molecular biology: Replication, Transcription and translation. 12 Hrs

Gene regulation

Gene copy number, transcriptional control and translational control.

RNA processing

Modification and Maturation, RNA splicing, RNA editing, RNA amplification. Mutagenesis and repair mechanisms, types of mutants, application of mutagenesis in stain improvement, gene mapping of plasmids- types purification and application. Phage genetics, geneticorganization, phage mutation and lysogeny.

3	Cell structure and function Cell organelles, cytoskeleton & cell movements, basic aspectsof cell regulation, bioenergetics and fuelling reactions of aerobics and anaerobics,secondary metabolism & its applications. Cell communication, cell cycle and apoptosis, mechanism of cell division. Celljunctions/adhesion and extra cellular matrix, germ cells and fertilization, histology – thelife and death of cells in tissues. Cell Cycle and Cytoskeleton Cell Division and its Regulation, G-Protein CoupledReceptors, Kinases, Nuclear receptors, Cytoskeleton & cell movements, IntermediateFilaments. Apoptosis and Oncogenes Programmed Cell Death, Tumor cells, carcinogens & repair. Differentiation and Developmental Biology Fertilization, Events of Fertilization, In vitro Fertilization, Embryonic Germ Cells, Stem Cells and its Application.	12 Hrs
4	Principles of microbial nutrition Physical and chemical environment for microbial growth, Stability and degeneration of microbial cultures. Growth of animal cells in culture General procedure for cell culture, Nutrient composition, Primary, established and transformed cell cultures, applications of cell cultures in pharmaceutical industry and research. Growth of viruses in cell culture propagation and enumeration. In-vitro screening techniques- cytotoxicity, anti-tumor, anti-viral assays.	12 Hrs
5	Microbial pathology Identifying the features of pathogenic bacteria, fungi and viruses. Mechanism of microbial pathogenicity, etiology and pathology of common microbial diseases and currently recommended therapies for common bacterial, fungal & viral infections. Mechanism of action of antimicrobial agents and possible sites of chemotherapy.	12 Hrs

REFERENCES

1. W.B. Hugo and A.D. Russel: Pharmaceutical Microbiology, Blackwell Scientific publications, Oxford London.
2. Prescott and Dunn, Industrial Microbiology, CBS Publishers & Distributors, Delhi.
3. Pelczar, Chan Kreig, Microbiology, Tata McGraw Hill edn.
4. David Freifelder, Molecular Biology, 2nd edition, Narosa Publishing House.
5. R. Ian Freshney, Culture of animal cells – A manual of Basic techniques, 6th edition, Wileys publication house.
6. David Baltimore,Molecular cell biology, W H Freeman & Co publishers.
7. Cell biology vol-I,II,III by Julio E.Cells
8. Bergeys manual of systematic bacteriology, Williams and Wilkins- A Waverly company.

BIOPROCESS ENGINEERING AND TECHNOLOGY
(MPB 103T)

Scope

This paper has been designed to provide the knowledge to the biotechnology students in invaluable areas of bioprocess technology to develop skills to modify, design and operate different types of fermenters, to understand and implement various fermentation procedures, to train students in scale up fermentation operations.

Objective

At the completion of this subject it is expected that students will be able to,

- Understand basics and design of fermentation technology
- Scale up and scale down processing of fermentation technology
- Bioprocessing of the industrially important microbial metabolites in industries and R & D organizations.
- Regulation governing the manufacturing of biological products
- Understand and conduct fermentation process kinetics.

	THEORY	60 Hrs
1.	Introduction to fermentation technology Basic principles of fermentation Study of the design and operation of bioreactor Ancillary parts and function, impeller design and agitation, power requirements on measurements and control of dissolved oxygen, carbon dioxide, temperature, pH and foam. Types of bioreactor CSTR, tower, airlift, bubble column, packed glass bead, hollow fiber, configuration and application Computer control of fermentation process System configuration and application	12 Hrs
2	Mass transfer Theory, diffusional resistance to oxygen requirements of microorganisms, measurements of mass transfer co- efficient and factor affecting them, effects of aeration and agitation on mass transfer, supply of air, air compressing, cleaning and sterilization of air and plenum ventilation, air sampling and testing standards for air purity.	12 Hrs

Rheology

Rheological properties of fermentation system and their importance in bioprocessing.

3 Scale up of fermentation process 12 Hrs

Principles, theoretical considerations, techniques used, media for fermentation, HTST sterilization, advantage and disadvantage, liquid sterilization.

Cultivation and immobilized culture system

Cultivation system - batch culture, continuous culture, synchronous cultures, fed batch culture. Graphical plot representing the above systems.

Introduction to immobilization

Techniques, immobilization of whole cell, immobilized culture system to prepare fine chemicals. Immobilization of enzymes and their applications in the industry. Reactors for immobilized systems and perspective of enzyme engineering.

4 Scale down of fermentation process 12 Hrs

Theory, equipment design and operation, methods of filtration, solvent extraction, chromatographic separation, crystallization turbidity analysis and cell yield determination, metabolic response assay, enzymatic assay, bioautographic techniques and disruption of cells for product recovery.

Isolation and screening

Primary and secondary, maintenance of stockculture, strain improvement for increased yield.

5 Bioprocessing of the industrially important microbial metabolites 12 Hrs

a) Organic solvents – Alcohol and Glycerol
b) Organic acids - Citric acids, Lactic acids,
c) Amino acids - Glutamic acids, Lysine, Cyclic AMP and GMP
d) Antibiotics - Penicillin, Streptomycin, Griseofulvin,
e) Vitamins - B12, Riboflavin and Vitamin C

Biosynthetic pathways for some secondary metabolites, microbial transformation of steroids and alkaloids

Regulation governing the manufacturing of biological products .

REFERENCES

1. Peter Stanbury, Allan Whitaker, Stephen Hall, Principles of Fermentation technology, Elsevier stores.
2. L.E. Casida, Industrial Microbiology, John Wiley & sons Inc.
3. F.M. Asubel, Current protocols in molecular biology, volume I and II, John Wiley Publishers.
4. Biotol Board, Bioreactor design and product yield, Butterworth and Helhemann Publishers.
5. H. Patel, Industrial microbiology, Macmillan India Limited.

ADVANCED PHARMACEUTICAL BIOTECHNOLOGY
(MPB 104T)

Scope

This paper has been designed to provide the knowledge to the students to develop skills of advanced techniques of isolation and purification of enzymes, to enrich students with current status of development of vaccines and economic importance of biotechnology products.

Objective

At the completion of this subject it is expected that students will be able to

- Understand about the latest technology development in biotechnology technique, tools and their uses in drug and vaccine development.
- Identify appropriate sources of enzymes.
- Understand and perform genetic engineering techniques in gene manipulation, r-DNA technology and gene amplification.
- Understand the overview of pharmacogenomics.
- Learn the regulatory approval process and key regulatory agencies for new drugs, biologics, devices, and drug-device combinations.

THEORY 60 Hrs

1. Enzyme Technology 12 Hrs

Classification, general properties of enzymes, dynamics of enzymatic activity,sources of enzymes, extraction and purification, pharmaceutical,therapeutic and clinical application. Production of amyloglucosidase, glucose isomerase,amylase and trypsin.

2 Genetic Engineering 12 Hrs

Techniques of gene manipulation, cloning strategies,procedures, cloning vectors expression vectors, recombinant selection andscreening, expression in E.coli and yeast.

Site directed mutagenesis, polymerase chain reaction, and analysis of DNAsequences.

Gene library and cDNA

Applications of the above technique in the production of,

- Regulatory proteins - Interferon, Interleukins
- Blood products - Erythropoietin
- Vaccines - Hepatitis-B
- Hormones - Insulin

3	Therapeutic peptides Study on controlled and site specified delivery of therapeutic peptides and proteins through various routes of administration. Transgenic animals Production of useful proteins in transgenic animals and gene therapy. Human Genome The human genome project-a brief study, Human chromosome – Structure and classification, chromosomal abnormalities – Syndromes	12 Hrs
4	Signal transduction Introduction, cell signaling pathways, Ion channels, Sensors and effectors, ON and OFF mechanisms, Spatial and temporal aspects of signaling, cellular process, development, cell cycle and proliferation, neuronal signaling, cell stress, inflammatory responses and cell death, signaling defects and diseases. Oncogenes Introduction, definition, various oncogenes and their proteins.	12 Hrs
5	Microbial Biotransformation Biotransformation for the synthesis of chiral drugs and steroids. Microbial Biodegradation Biodegradation of xenobiotics, chemical and industrial wastes, Production of single-cell protein, Applications of microbes in environmental monitoring. Biosensors Definition, characteristics of ideal biosensors, types of biosensors, biological recognition elements, transducers, application of biosensors.	12 Hrs

REFERENCES

1. Biotechnology-The biological principles: MD Trevan, S Boffey, KH Goulding and P.F. Stanbury.
2. Immobilization of cells and enzymes: HosevearKennadycabral& Bicker staff
3. Principles of Gene Manipulating: RW Old and S.B.Primrose.
4. Molecular Cell Biology: Harvey Lodish, David Baltimore, Arnold Berk, S LawenceZipursky, Paul Matsudaira, James Darnell.
5. Modern Biotechnology: S.B Primrose

6. Gene transfer and expression protocols-methods in Molecular Biology, vol. VII, Edit E.T. Murray
7. Current protocols in Molecular Biology, Vo1.I & II:F.M. Asubel, John wiley Publishers
8. Current protocols in cellular biology, Vo1.1 & II John wiley publishers.
9. Principles of human genetics; by Curt Stern, published by W.H. Freeman.

PHARMACEUTICAL BIOTECHNOLOGY PRACTICAL - I
(MPB 105P)

1. Analysis of Pharmacopoeial compounds and their formulations by UV Vis spectrophotometer
2. Simultaneous estimation of multi component containing formulations by UV spectrophotometry
3. Experiments based on HPLC
4. Experiments based on Gas Chromatography
5. Estimation of riboflavin/quinine sulphate by fluorimetry
6. Estimation of sodium/potassium by flame photometry
7. Isolation and Purification of microorganism from the soil
8. Microbial contamination of Water and biochemical parameters.
9. Determination of Minimum Inhibitory concentration by gradient plate technique and serial dilution method.
10. UV- survival curve and Dark repair
11. Sterility test for pharmaceutical preparations
12. Sub culturing of cells and cytotoxicity assays.
13. Construction of growth curve and determination of specific growth rate and doubling time
14. Fermentation process of alcohol and wine production
15. Fermentation of vitamins and antibiotics
16. Whole cell immobilization engineering
17. Thermal death kinetics of bacteria
18. Replica plating
19. Bio-autography.
20. Isolation and estimation of DNA
21. Isolation and estimation of RNA
22. Isolation of plasmids
23. Agarose gel electrophoresis.
24. Transformation techniques
25. SDS - polyacrylamide gel electrophoresis for proteins
26. Polymerase chain reaction technique.

PROTEINS AND PROTEIN FORMULATIONS
(MPB 201T)

Scope

This course is designed to impart knowledge and skills necessary for knowing fundamental aspects of proteins and their formulations is a part of drug research and development process. Basic theoretical discussions of the principles of more integrated and coherent use of information for protein formulation and design are provided to help the students to clarify the various biological concepts of protein.

Objective

At the completion of this course it is expected that students will be able to understand,

- Various methods of purification of proteins
- Peptides in drug development
- Protein identification and characterization
- Protein based formulations
- Sequencing proteins

THEORY 60 Hrs

1. Protein engineering — 12 Hrs

   Concepts for protein engineering. Isolation and purification of proteins, Stability and activity based approaches of protein engineering, Chemical and Physical Considerations in Protein and Peptide Stability, Different methods for protein engineering, gene shuffling, and direct evolution.

2 Peptidomimetics — 12 Hrs

   Introduction, classification; Conformationally restricted peptides, design, pseudopeptides, peptidomimetics and transition state analogs; Biologically active template; Amino acid replacements; Peptidomimetics and rational drug design; CADD techniques in peptidomimetics; Development of non peptide peptidomimetics.

3 Proteomics — 12 Hrs

   Protein identification and characterization: Methods/strategies, protein identification, de novo protein characterization, Isotope labelling, N- and C-terminal tags.

	2-Dimensional gel electrophoresis Methods including immobilized pH gradients (IPGs), resolution, reproducibility and image analysis, future developments	
4	Protein formulation Different strategies used in the formulation of DNA and proteins, Analytical and biophysical parameters of proteins and DNA in pre-formulation, Liposomes, Neon-spears, Neon-particulate system, PEGylation, Biological Activity, Biophysical Characterization Techniques, Forced degradation studies of protein.	12 Hrs
5	Methods of protein sequencing Various methods of protein sequencing, characterisation, Edman degradation, Tryptic and/or Chymotryptic Peptide Mapping.	12 Hrs

REFERENCES

1. H. Lodhishet. Al. Molecular Cell Biology, W. H. Freeman and Company
2. Protein Purification – Hand Book, Amersham pharmacia biotech
3. EngelbertBuxbaum, Fundamentals of Protein Structure and Function, Springer Science
4. Sheldon J. Park, Jennifer R. Cochran, Protein Engineering and Design, CRC press.
5. Robert K. Skopes. Protein purification, principle and practice, springer link.
6. David Whitford, Proteins-Structure and Function, John Wiley & Sons Ltd.
7. James Swarbrick, Protein Formulation and Delivery Informa Healthcare USA,Inc.
8. Rodney Pearlman, Y. John Wang Formulation, Characterization, and Stability of Protein Drugs, Kluwer Academic Publishers.

IMMUNOTECHNOLOGY
(MPB 202T)

Scope

This course is designed to impart knowledge on production and engineering of antibodies, the application of antigens, the design of (recombinant) vaccines, strategies for immune intervention, etc. The Immunotechnology - based techniques will be used for therapeutics and diagnostics, industries in the production, quality control and quality assurance, and in R&D.

Objective

After this course, the students will be able to:-

- Understand the techniques like immunodiagnostic tests,
- Characterization of lymphocytes, purification of antigens and antibody, etc.
- Access health problems with immunological background;
- Develop approaches for the immune intervention of diseases

THEORY 60 Hrs

1. Fundamental aspects of immunology 12 Hrs

Introduction, cells and organs of the immune system, cellular basis of Immune response, primary and secondary lymphoid organs, antigen antibody and their structure.

Types of immune responses, anatomy of immune response.

Overview of innate and adaptive Immunity.

Humoral Immunity

B - Lymphocytes and their activation. Structure and function of immunoglobulins, idiotypes and anti idiotypic antibodies.

Cell mediated Immunity

Thymus derived lymphocytes (T cells) - their ontogeny and types, MHC complex, antigen presenting cells (APC), mechanisms of T cell activation, macrophages, dendritic cells, langerhans cells, mechanism of phagocytosis

2 Immune Regulation and Tolerance 12 Hrs

Complement activation and types and their biological functions, cytokines and their role in immune response.

Hypersensitivity

Hypersensitivity Types I-IV, Hypersensitivity reactions and treatment

Autoimmune diseases

3 Vaccine technology 12 Hrs

Vaccine and their types, conventional vaccines, novel methods for vaccine production, antiidiotype vaccine, DNA vaccine, genetically engineered vaccine, iscoms, synthetic peptides, and immunodiagnostics.

Stem cell technology

Stem cell technology and applications to immunology

4 Hybridoma Technology 12 Hrs

Hybridoma techniques – fusion methods for myeloma cells and B-Lymphocytes, selection and screening techniques. Production and purification of monoclonal antibodies and their applications in Pharmaceutical industry.

5 Immunological Disorder 12 Hrs

Autoimmune disorders and types, pathogenic mechanisms, treatment, experimental models of auto immune diseases, primary and secondary immunodeficiency disorders.

Immunodiagnosis

Antigen antibody interaction – Precipitation reaction, Agglutination reactions, Principles and applications of ELISA, Radio Immuno Assay, Western blot analysis, immune-electrophoresis, immuno fluorescence, chemiluminescence assay, complement fixation reaction.

REFERENCES

1. J. Kubey, Immunology – an Introduction.
2. S.C. Rastogi, Immunodiagonstics, New Age International.
3. Ashim Chakravarthy, Immunology and Immunotechnology, Oxford University Press.
4. E. Benjamini, Molecular Immunology.

BIOINFORMATICS AND COMPUTATIONAL BIOTECHNOLOGY
(MPB 203T)

Scope

This paper has been designed to provide the advanced knowledge to the biotechnology students in invaluable areas of advanced bioinformatics which plays a crucial role in determining its future use and applications in medicine, drug discovery and in pharmaceutical industry.

Objectives

Upon completion of this course it is expected that the students will be able to understand,

- Use of computers in developing a new drugs
- Biological concepts for bioinformatics
- Proteins and their diversity
- Various gene finding methods
- Searching the biological databases
- Target searching
- Various methods of drug designing

THEORY — 60 Hrs

1. Introduction to Bioinformatics — 12 Hrs

   Definition and History of Bioinformatics, Internet and Bioinformatics, Introduction to Data Mining, Applications of Data Mining to Bioinformatics,

   Biological Database

   Protein and nucleic acid databases. Structural data bases. Collecting and storing the sequence and Applications of Bioinformatics.

2 Sequence analysis — 12 Hrs

   Sequence alignment, pair wise alignment techniques, multiple sequence analysis, multiple sequence alignment; Flexible sequence similarity searching with the FAST3 program package, the use of CLUSTAL W and CLUSTAL X for the multiple sequence alignment. Tools used for sequence analysis.

3 Protein informatics — 12 Hrs

   Introduction; Force field methods; Energy, buried and exposed residues, side chains and neighbours; Fixed regions, hydrogen bonds, mapping properties onto surfaces; Fitting monomers, R &

S fit of conformers, assigning secondary structures; Sequence alignment-methods, evaluation, scoring; Protein completion, backbone construction and side chain addition; Small peptide methodology, software accessibility, building peptides; Protein displays; Substructure manipulations, annealing.

Protein structure prediction

Protein folding and model generation; Secondary structure prediction, analyzing secondary structures; Protein loop searching, loop generating methods, loop analysis; Homology modeling, concepts of homology modeling, potential applications, description, methodology, homologous sequence identification; Align structures, align model sequence; Construction of variable and conserved regions, threading techniques, Topology fingerprint approach for prediction, evaluation of alternate models; Structure prediction on a mystery sequence, structure aided sequence techniques of structure prediction, structural profiles, alignment algorithms, mutation tables, prediction, validation, sequence based methods of structure prediction, prediction using inverse folding, fold prediction; Significance analysis, scoring techniques, sequence- sequence scoring.

Docking

Docking problems, methods for protein- ligand docking, validation studies and applications; Screening small molecule databases, docking of combinatorial libraries, input data, analyzing docking results.

4 Diversity of Genomes 12 Hrs

Prokaryotic and Eukaryotic Gene Families. Genome Analysis: Introduction, Gene prediction methods, Gene mapping and applications- Genetic and Physical Mapping, Integrated map, Sequence assembly and gene expression.

Completed Genomes

Bacterium, Nematode, Plant and Human

Evolution of Genomes

Lateral or Horizontal Transfer among Genomes, Transcriptome and Proteome-General Account

Phylogenetic analysis

Evolutionary Change in Nucleotide Sequences, Rates and Patterns of Nucleotide Substitution, Models for Nucleotide Substitution, Construction of Phylogenetic Tree, Genome Annotation technique.

5	Target searching and Drug Designing Target and lead, timeline for drug development, target discovery, target modulators, In-silico gene expression, microarray, and lead discovery, libraries of ligands, active site analysis, and prediction of drug quality.	12 Hrs

REFERENCES

1. David W. Mount, Bioinformatics Sequence and Genome Analysis, CBS Publishers and Distributors
2. S. C. Rastogiet. al. Bioinformatics- Concepts Skill and Applications, CBS Publishers and Distributors
3. T. E. Creighton, Protein Structure and Molecular Properties, W. H.Freeman and Company
4. Andreas D. Baxevanis, B. F. Francis Ouellette, Bioinformatics; A Practical Guide to the Analysis of Genes and Proteins, John Wiley & Sons, Inc.
5. Arthur M. Lesk, Introduction to Bioinformatics, Oxford University Press.
6. Shui Qing Ye. Bioinformatics: A Practical Approach, Chapman & Hall/CRC.
7. David Posada, Bioinformatics for DNA Sequence Analysis, Humana press.
8. Lesk, A.M. Introduction to Bioinformatics. Oxford University Press.
9. Letovsky, S.I. Bioinformatics. Kluwer Academic Publishers.
10. Baldi, P. and Brunak, S. Bioinformatics. The MIT Press.

BIOLOGICAL EVALUATION OF DRUG THERAPY
(MPB 204T)

Scope

This paper has been designed to provide the knowledge to the biotechnology students to understand the importance of biological and evaluation of drug therapy of biological medicines.

Objective

At the completion of this subject it is expected that students will be able to,

- Understand about the general concept of standardization of biological.
- Understand the importance of transgenic animals and knockout animals.
- Understand the biological medicines in development of various diseases.
- Learn the biological evaluation of drugs in vitro and in vivo

THEORY 60 Hrs

1. Biological Standardization 12 Hrs

General principles, Scope and limitation of bio-assay, bioassay of some official drugs.

Preclinical drug evaluation

Preclinical drug evaluation of its biological activity, potency and toxicity-Toxicity test in animals including acute, sub-acute and chronic toxicity, ED50 and LD50 determination, special toxicity test like teratogenecity and mutagenecity.

Guidelines for toxicity studies

Various guidelines for toxicity studies. Animal experiments assessing safety of packaging materials.

2 Pyrogens 12 Hrs

Pyrogens: Sources, Chemistry and properties of bacterial pyrogens and endotoxins, Official pyrogen tests.

Microbiological assay

Assay of antibiotics and vitamins.

Biological evaluation of drugs

Screening and evaluation (including principles of screening, development of models for diseases: In vivo models / In vitro models / cell line study).

3 Biologic Medicines in Development for various diseases - By Therapeutic Category — 12 Hrs

- Genetic Disorders
- Eye related Disorders
- Digestive Disorders
- Diabetes/Related Conditions
- Cardiovascular Disease
- Cancer/Related Conditions
- Blood Disorders
- Autoimmune Disorders
- Infectious Diseases
- Neurologic Disorders
- Skin Diseases
- Organe Transplantation

Biologic Medicines in Development for various diseases – by Product Category

- Antisense
- Vaccines
- Recombinant Hormones/Proteins
- Monoclonal Antibodies (mAb)
- Interferons
- Growth Factors
- Gene Therapy
- RNA Interference

4 Regulatory aspects : drugs, biologics and medical devices — 12 Hrs

An introduction to the regulations and documents necessary for approval of a medical product.

Regulatory consideration

Regulatory consideration for pre-clinical testing and clinical testing of drugs, biologics and medical devices.

New Drug Applications for Global Pharmaceutical Product Approvals

5 Bioavailability — 12 Hrs

Objectives and consideration in bio-availability studies of Biopharmaceuticals, Concept of equivalents, Measurements of bio-availability.

Determination of the rate of absorption, Bioequivalence and its importance, Regulatory aspects of bio-availability and bioequivalence studies for conventional dosage forms and controlled drug delivery systems of Biopharmaceuticals.

Pharmacokinetics

Pharmacokinetics:- Basic consideration, Pharmacokinetic models, Application of Pharmacokinetics in new drug development of Biopharmaceuticals and designing of dosage forms and Novel drug delivery systems of Biopharmaceuticals.

REFERENCES

1. Perkins F.T., Hennessen W. Standardization and Control of Biologicals Produced by Recombinant DNA Technology, International Association of Biological Standardization
2. J.H. Burn., Biological Standardization, Oxford University Press
3. Drug Discovery and Evaluation in Pharmacology assay: Vogel
4. Chow, Shein, Ching, Design and analysis of animal studies in pharmaceutical development,
5. Nodine and Siegler, Animal and Clinical pharmacologic Techniques in Drug Evaluation.
6. Screening methods in pharmacology (vol I & II), R.A. Turner.

PHARMACEUTICAL BIOTECHNOLOGY PRACTICAL - II
(MPB 205P)

1. Protein identification
2. Protein characterization
3. Protein biochemistry
4. Recombinant DNA Technology
5. Protein expression
6. Protein formulations
7. Database searching
8. Sequence analysis methods
9. Protein structure prediction
10. Gene annotation methods
11. Phylogenetic analysis
12. Protein, DNA binding studies
13. Preparation of DNA for PCR applications – Isolation, Purity and Quantification
14. Introduction to PCR – working of PCR, Programming.
15. Introduction to RT-PCR – working, programming.
16. Primer design using softwares.
17. Gene DNA amplification by random / specific primers.
18. Southern Hybridization
19. Western Blotting
20. Gene transformation

PHARMACYPRACTICE(MPP)

CLINICAL PHARMACY PRACTICE (MPP 101T)

Scope

This course is designed to impart the basic knowledge and skills that are required to practice pharmacy including the provision of pharmaceutical care services to both healthcare professionals and patients in clinical settings.

Objectives

Upon completion of this course it is expected that students shall be able to :

- Understand the elements of pharmaceutical care and provide comprehensive patient care services
- Interpret the laboratory results to aid the clinical diagnosis of various disorders
- Provide integrated, critically analyzed medicine and poison information to enable healthcare professionals in the efficient patient management

THEORY 60 Hrs

1. Introduction to Clinical Pharmacy: Definition, evolution and scope of clinical pharmacy, International and national scenario of clinical pharmacy practice, Pharmaceutical care — 12 Hrs

   Clinical Pharmacy Services: Ward round participation, Drug therapy review (Drug therapy monitoring including medication order review, chart endorsement, clinical review and pharmacist interventions)

2 Clinical Pharmacy Services: Patient medication history interview, Basic concept of medicine and poison information services, Basic concept of pharmacovigilance, Hemovigilance, Materiovigilance and AEFI, Patient medication counselling, Drug utilisation evaluation, Documentation of clinical pharmacy services, Quality assurance of clinical pharmacy services. — 12 Hrs

3 Patient Data Analysis: — 12 Hrs

Patient Data & Practice Skills: Patient's case history - its structure and significances in drug therapy management, Common medical abbreviations and terminologies used in clinical practice, Communication skills: verbal and non-verbal communications, its applications in patient care services.

	Lab Data Interpretation: Hematological tests, Renal function tests, Liver function tests	
4	Lab Data Interpretation: Tests associated with cardiac disorders, Pulmonary function tests, Thyroid function tests, Fluid and electrolyte balance, Microbiological culture sensitivity tests	12 Hrs
5	Medicines & Poison Information Services Medicine Information Service: Definition and need for medicine information service, Medicine information resources, Systematic approach in answering medicine information queries, Preparation of verbal and written response, Establishing a drug information centre. Poison Information Service: Definition, need, organization and functions of poison information centre.	12 Hrs

REFERENCES

1. A Textbook of Clinical Pharmacy Practice – Essential concepts and skills – Parthasarathi G, Karin Nyfort-Hansen and Milap Nahata
2. Practice Standards and Definitions - The Society of Hospital Pharmacists of Australia
3. Basic skills in interpreting laboratory data - Scott LT, American Society of Health System Pharmacists Inc
4. Relevant review articles from recent medical and pharmaceutical literature.

PHARMACOTHERAPEUTICS-I
(MPP 102T)

Scope

This course aims to enable the students to understand the different treatment approaches in managing various disease conditions. Also, it imparts knowledge and skills in optimizing drug therapy of a patient by individualizing the treatment plan through evidence-based medicines.

Objectives

Upon completion of this course it is expected that students shall be able to:

- Describe and explain the rationale for drug therapy
- Summarize the therapeutic approach for management of various disease conditions including reference to the latest available evidence
- Discuss the clinical controversies in drug therapy and evidence based medicine
- Prepare individualized therapeutic plans based on diagnosis
- Identify the patient specific parameters relevant in initiating drug therapy, and monitoring therapy (including alternatives, time- course of clinical and laboratory indices of therapeutic response and adverse effect/s)

THEORY 60 Hrs

Etiopathogenesis and pharmacotherapy of diseases associated with following systems

1.	Cardiovascular system: Hypertension, Congestive cardiac failure, Acute coronary syndrome, Arrhythmias, Hyperlipidemias.	12 Hrs
2	Respiratory system: Asthma, Chronic obstructive airways disease, Drug induced pulmonary diseases Endocrine system: Diabetes, Thyroid diseases	12 Hrs
3	Gastrointestinal system: Peptic ulcer diseases, Reflux esophagitis, Inflammatory bowel diseases, Jaundice & hepatitis	12 Hrs
4	Gastrointestinal system: Cirrhosis, Diarrhea and Constipation, Drug-induced liver disease	12 Hrs
	Hematological diseases: Anemia, Deep vein thrombosis, Drug induced hematological disorders	

5	Bone and joint disorders: Rheumatoid arthritis, Osteoarthritis, Gout, Osteoporosis	12 Hrs
	Dermatological Diseases: Psoriasis, Eczema and scabies, impetigo, drug induced skin disorders	
	Ophthalmology: Conjunctivitis, Glaucoma	

REFERENCES

1. Roger and Walker. Clinical Pharmacy and Therapeutics - Churchill Livingstone publication
2. Joseph T. Dipiro et al. Pharmacotherapy: A Pathophysiologic Approach- Appleton & Lange
3. Robins SL. Pathologic basis of disease -W.B. Saunders publication
4. Eric T. Herfindal. Clinical Pharmacy and Therapeutics- Williams and Wilkins Publication
5. Lloyd Young and Koda-Kimble MA Applied Therapeutics: The clinical Use of Drugs- Lippincott Williams and Wilkins
6. Chisholm- Burns Wells Schwinghammer Malone and Joseph P Dipiro. Pharmacotherapy Principles and practice-– McGraw Hill Publication
7. Carol Mattson Porth. Principles of Pathophysiology- Lippincott Williams and Wilkins
8. Harrison's. Principles of Internal Medicine - McGraw Hill
9. Relevant review articles from recent medical and pharmaceutical literature

HOSPITAL & COMMUNITY PHARMACY
(MPP 103T)

Scope

This course is designed to impart basic knowledge and skills that are required to practice pharmacy in both hospital and community settings.

Objectives

Upon completion of this course it is expected that students shall be able to:

- Understand the organizational structure of hospital pharmacy
- Understand drug policy and drug committees
- Know about procurement & drug distribution practices
- Know the admixtures of radiopharmaceuticals
- Understand the community pharmacy management
- Know about value added services in community pharmacies

THEORY 60 Hrs

1.	Introduction to Hospitals – Definition, classification, organizational structure Hospital Pharmacy: Definition, Relationship of hospital pharmacy department with other departments, Organizational structure, legal requirements, work load statistics, Infrastructural requirements, Hospital Pharmacy Budget and Hospital Pharmacy management Hospital Drug Policy: Pharmacy & Therapeutics Committee, Infection Control committee, Research & Ethics Committee, Management of Medicines as per NABH	12 Hrs
2	Hospital Formulary Guidelines and its development, Developing Therapeutic guidelines, Drug procurement process, and methods of Inventory control, Methods of Drug distribution, Intravenous admixtures, Hospital Waste Management	12 Hrs
3	Education and training: Training of technical staff, training and continuing education for pharmacists, Pharmacy students, Medical staff and students, Nursing staff and students, Formal and informal meetings and lectures, Drug and therapeutics newsletter. Community Pharmacy Practice: Definition, roles & responsibilities of community pharmacists, and their relationship with other health care providers.	12 Hrs

Community Pharmacy management: Legal requirements to start community pharmacy, site selection, lay out & design, drug display, super drug store model, accounts and audits, Good dispensing practices, Different softwares & databases used in community pharmacies. Entrepreneurship in community pharmacy.

4	Prescription – Legal requirements & interpretation, prescription related problems Responding to symptoms of minor ailments: Head ache, pyrexia, menstrual pains, food and drug allergy, OTC medication: Rational use of over the counter medications Medication counseling and use of patient information leaflets Medication adherence – Definition, factors influencing adherence behavior, strategies to improve medication adherence Patient referrals to the doctors ADR monitoring in community pharmacies	12 Hrs
5	Health Promotion – Definition and health promotion activities, family planning, Health screening services, first aid, prevention of communicable and non-communicable diseases, smoking cessation, Child & mother care National Health Programs- Role of Community Pharmacist in Malaria and TB control programs Home Medicines review program – Definition, objectives, Guidelines, method and outcomes Research in community pharmacy Practice	12 Hrs

REFERENCES

1. Hospital Pharmacy - Hassan WE. Lea and Febiger publication.
2. Textbook of hospital pharmacy - Allwood MC and Blackwell.
3. Avery's Drug Treatment, Adis International Limited.
4. Community Pharmacy Practice – Ramesh Adepu, BSP Publishers, Hyderabad
5. Remington Pharmaceutical Sciences.
6. Relevant review articles from recent medical and pharmaceutical literature

CLINICAL RESEARCH
(MPP 104T)

Scope

This course aims to provide the students an opportunity to learn drug development process especially the phases of clinical trials and also the ethical issues involved in the conduct of clinical research. Also, it aims to imparts knowledge and develop skills on conceptualizing, designing, conducting and managing clinical trials.

Objectives

Upon completion of this course it is expected that students shall be able to:

- Know the new drug development process.
- Understand the regulatory and ethical requirements.
- Appreciate and conduct the clinical trials activities
- Know safety monitoring and reporting in clinical trials
- Manage the trial coordination process

THEORY 60 Hrs

1. Drug development process: Introduction, various approaches to drug discovery, Investigational new drug application submission Ethics in Biomedical Research: Ethical Issues in Biomedical Research – Principles of ethics in biomedical research, Ethical committee [institutional review board] - its constitution and functions, Challenges in implementation of ethical guidelines, ICH GCP guidelines and ICMR guidelines in conduct of Clinical trials, Drug Safety Reporting. 12 Hrs

2 Types and Designs used in Clinical Research: Planning and execution of clinical trials, Various Phases of clinical trials, Bioavailability and Bioequivalence studies, Randomization techniques (Simple randomization, restricted randomization, blocking method and stratification), Types of research designs based on Controlling Method (Experimental, Quasi experimental, and Observational methods) Time Sequences (Prospective and Retrospective), Sampling methods (Cohort study, case Control study and cross sectional study), Health outcome measures (Clinical & Physiological, Humanistic and economic) 12 Hrs

Clinical Trial Study team: Roles and responsibilities of: Investigator, Study Coordinator, Sponsor, Monitor, Contract Research Organization.

3	Clinical trial Documents: Guidelines to the preparation of following documents: Protocols, Investigator's Brochure, Informed Consent Form, Case report forms, Contracts and agreements, Dairy Cards Clinical Trial Start up activities: Site Feasibility Studies, Site/Investigator selection, Pre-study visit, Investigator meeting, Clinical trial agreement execution, Ethics committee document preparation and submission	12 Hrs
4	Investigational Product: Procurement and Storage of investigation product Filing procedures: Essential documents for clinical trial, Trial Master File preparation and maintenance, Investigator Site File, Pharmacy File, Site initiation visit, Conduct, Report and Follow up Clinical Trial Monitoring and Close out: Preparation and conduct of monitoring visit: Review of source documents, CRF, ICF, IP storage, accountability and reconciliation, Study Procedure, EC communications, Safety reporting, Monitoring visit reporting and follow-up Close-Out visit: Study related documents collection, Archival requirement, Investigational Product reconciliation and destruction, Close-Out visit report.	12 Hrs
5	Quality Assurance and Quality Control in Clinical Trials: Types of audits, Audit criteria, Audit process, Responsibilities of stakeholders in audit process, Audit follow-up and documentation, Audit resolution and Preparing for FDA inspections, Fraud and misconduct management Data Management Infrastructure and System Requirement for Data Management: Electronic data capture systems, Selection and implementation of new systems, System validation and test procedures, Coding dictionaries, Data migration and archival Clinical Trial Data Management: Standard Operating Procedures, Data management plan, CRF & Data base design considerations, Study set-up, Data entry, CRF tracking and corrections, Data cleaning, Managing laboratory and ADR data, Data transfer and database lock, Quality Control and Quality Assurance in CDM, Data mining and warehousing.	12 Hrs

REFERENCES

1. Principles and practice of pharmaceutical medicine, Second edition. Authors:Lionel. D. Edward, Aadrew.J.Flether Anthony W Fos , Peter D Sloaier Publisher:Wiley;
2. Handbook of clinical research. Julia Lloyd and Ann Raven Ed. Churchill Livingstone
3. Principles of Clinical Research edited by Giovanna di Ignazio, Di Giovanna and Haynes.
4. Central Drugs Standard Control Organization. Good Clinical Practices-Guidelines for Clinical Trials on Pharmaceutical Products in India. New Delhi: Ministry of Health.
5. International Conference on Harmonisation of Technical requirements for registration of Pharmaceuticals for human use. ICH Harmonised Tripartite Guideline. Guideline for Good Clinical Practice.E6; May 1996.
6. Ethical Guidelines for Biomedical Research on Human Subjects. Indian Council of Medical Research, New Delhi.
7. Textbook of Clinical Trials edited by David Machin, Simon Day and Sylvan Green, John Wiley and Sons.
8. Clinical Data Management edited by R K Rondels, S A Varley, C F Webbs. Second Edition, Jan 2000, Wiley Publications.
9. Goodman & Gilman: JG Hardman, LE Limbard, McGraw Hill Publications.
10. Relevant review articles from recent medical and pharmaceutical literature.

PHARMACY PRACTICE PRACTICAL – I
(MPP 105P)

Pharmacy Practice practical component includes experiments covering important topics of the courses Clinical Pharmacy Practice, Pharmacotherapeutics-I, Hospital & Community Pharmacy and Clinical Research.

List of Experiments (24)

1. Treatment Chart Review (one)
2. Medication History Interview (one)
3. Patient Medication Counseling (two)
4. Drug Information Query (two)
5. Poison Information Query (one)
6. Lab Data Interpretation (two)
7. Presentation of clinical cases of various disease conditions adopting Pharmaceutical Care Plan Model (eight)
8. ABC Analysis of a given list of medications (one)
9. Preparation of content of a medicine, with proper justification, for the inclusion in the hospital formulary (one)
10. Formulation and dispensing of a given IV admixtures (one)
11. Preparation of a patient information leaflet (two)
12. Preparation of Study Protocol (one)
13. Preparation of Informed Consent Form (one)

PRINCIPLES OF QUALITY USE OF MEDICINES
(MPP 201T)

Scope:

This course is designed to impart basic knowledge and skills that are required to practice quality use of medicines (QUM) in different healthcare settings and also to promote quality use of medicines, in clinical practice, through evidence-based medicine approach.

Objectives:

Upon completion of this course it is expected that students shall be able to:

- Understand the principles of quality use of medicines
- Know the benefits and risks associated with use of medicines
- Understand regulatory aspects of quality use of medicines
- Identify and resolve medication related problems
- Promote quality use of medicines
- Practice evidence-based medicines

	THEORY	60 Hrs
1.	Introduction to Quality use of medicines (QUM): Definition and Principles of QUM, Key partners and responsibilities of the partners, Building blocks in QMC, Evaluation process in QMC, Communication in QUM, Cost effective prescribing.	12 Hrs
2	Concepts in QUM Evidence based medicine: Definition, concept of evidence based medicine, Approach and practice of evidence based medicine in clinical settings Essential drugs: Definition, need, concept of essential drug, National essential drug policy and list Rational drug use: Definition, concept and need for rational drug use, Rational drug prescribing, Role of pharmacist in rational drug use.	12 Hrs
3	QUM in various settings: Hospital settings, Ambulatory care/Residential care, Role of health care professionals in promoting the QUM, Strategies to promote the QUM, Impact of QUM on E-health, integrative medicine and multidisciplinary care. QUM in special population: Pediatric prescribing, Geriatric prescribing, Prescribing in pregnancy and lactation, Prescribing in immune compromised and organ failure patients.	12 Hrs

4	Regulatory aspects of QUM in India: Regulation including scheduling, Regulation of complementary medicines, Regulation of OTC medicines, Professional responsibility of pharmacist, Role of industry in QUM in medicine development.	12 Hrs
5	Medication errors: Definition, categorization and causes of medication errors, Detection and prevention of medication errors, Role of pharmacist in monitoring and management of medication errors Pharmacovigilance: Definition, aims and need for pharmacovigilance, Types, predisposing factors and mechanism of adverse drug reactions (ADRs), Detection, reporting and monitoring of ADRs, Causality assessment of ADRs, Management of ADRs, Role of pharmacist in pharmacovigilance.	12 Hrs

REFERENCES:

1. A Textbook of Clinical Pharmacy Practice – Essential concepts and skills – Parthasarathi G, Karin Nyfort-Hansen and Milap Nahata
2. Andrews EB, Moore N. Mann's Pharmacovigilance
3. Dipiro JT, Talbert RL, Yee GC. Pharmacotherapy: A Pathophysiologic Approach
4. Straus SE, Richardson WS, Glasziou P, Haynes RB. Evidence-Based Medicine: How to practice and teach it
5. Cohen MR. Medication Errors
6. Online:
   - http://medicinesaustralia.com.au/files/2012/05/MA_QUM_External_Reduced.pdf
   - http://curriculum.racgp.org.au/statements/quality-use-of-medicines/
   - http://www.rug.nl/research/portal/files/14051541/Chapter_2.pdf
7. Relevant review articles from recent medical and pharmaceutical literature.

PHARMACOTHERAPEUTICS II
(MPP 202T)

Scope

This course aims to enable the students to understand the different treatment approaches in managing various disease conditions. Also, it imparts knowledge and skills in optimizing drug therapy of a patient by individualizing the treatment plan through evidence-based medicines.

Objectives

Upon completion of this course it is expected that students shall be able to:

- Describe and explain the rationale for drug therapy
- Summarize the therapeutic approach for management of various disease conditions including reference to the latest available evidence
- Discuss the clinical controversies in drug therapy and evidence based medicine
- Prepare individualized therapeutic plans based on diagnosis
- Identify the patient specific parameters relevant in initiating drug therapy, and monitoring therapy (including alternatives, time- course of clinical and laboratory indices of therapeutic response and adverse effect/s)

THEORY		60 Hrs
1.	Nervous system: Epilepsy, Parkinson's disease, Stroke, Headache, Alzheimer's disease, Neuralgias and Pain pathways and Pain management.	12 Hrs
2	Psychiatric disorders: Schizophrenia, Depression, Anxiety disorders, Sleep disorders, Drug induced psychiatric disorders Renal system: Acute renal failure, Chronic renal failure, Renal dialysis, Drug induced renal disease	12 Hrs
3	Infectious diseases: General guidelines for the rational use of antibiotics and surgical prophylaxis, Urinary tract infections, Respiratory tract infections, Gastroenteritis, Tuberculosis, Malaria, Bacterial endocarditis, Septicemia.	12 Hrs
4	Infectious diseases: Meningitis, HIV and opportunistic infections, Rheumatic fever, Dengue fever, H1N1, Helmenthiasis, Fungal infections Gynecological disorders: Dysmenorrhea, Hormone replacement therapy.	12 Hrs

5	Oncology: General principles of cancer chemotherapy, pharmacotherapy of breast cancer, lung cancer, head & neck cancer, hematological malignancies, Management of nausea and vomiting, Palliative care	12 Hrs

REFERENCES

1. Roger and Walker. Clinical Pharmacy and Therapeutics - Churchill Livingstone publication.
2. Joseph T. Dipiro et al. Pharmacotherapy: A Pathophysiologic Approach- Appleton & Lange
3. Robins SL. Pathologic basis of disease -W.B. Saunders publication
4. Eric T. Herfindal. Clinical Pharmacy and Therapeutics- Williams and Wilkins Publication
5. Lloyd Young and Koda-Kimble MA Applied Therapeutics: The clinical Use of Drugs- Lippincott Williams and Wilkins
6. Chisholm- Burns Wells Schwinghammer Malone and Joseph P Dipiro. Pharmacotherapy Principles and practice-– McGraw Hill Publication
7. Carol Mattson Porth. Principles of Pathophysiology- Lippincott Williams and Wilkins
8. Harrison's. Principles of Internal Medicine - McGraw Hill
9. Relevant review articles from recent medical and pharmaceutical literature

CLINICAL PHARMACOKINETICS AND THERAPEUTIC DRUG MONITORING
(MPP 203T)

Scope

This course is designed to enable students to understand the basics principles and applications of pharmacokinetics in designing the individualized dosage regimen, to interpret the plasma drug concentration profile in altered pharmacokinetics, drug interactions and in therapeutic drug monitoring processes to optimize the drug dosage regimen. Also, it enables students to understand the basic concepts of pharmacogenetics, pharmacometrics for modeling and simulation of pharmacokinetic data.

Objectives

Upon completion of this course it is expected that students shall be able to:

- Design the drug dosage regimen for individual patients
- Interpret and correlate the plasma drug concentrations with patients' therapeutic outcomes
- Recommend dosage adjustment for patients with renal/ hepatic impairment
- Recommend dosage adjustment for paediatrics and geriatrics
- Manage pharmacokinetic drug interactions
- Apply pharmacokinetic parameters in clinical settings
- Interpret the impact of genetic polymorphisms of individuals on pharmacokinetics and or pharmacodynamics of drugs
- Do pharmacokinetic modeling for the given data using the principles of pharmacometrics

THEORY 60 Hrs

1. Introduction to Clinical pharmacokinetics: Compartmental and Non compartmental models, Renal and non-renal clearance, Organ extraction and models of hepatic clearance, Estimation and determinants of bioavailability, Multiple dosing, Calculation of loading and maintenance doses
   Designing of dosage regimens: Determination of dose and dosing intervals, Conversion from intravenous to oral dosing, Nomograms and Tabulations in designing dosage regimen. 12 Hrs

2	Pharmacokinetics of Drug Interaction: Pharmacokinetic drug interactions, Inhibition and Induction of Drug metabolism, Inhibition of Biliary Excretion Pharmacogenetics: Genetic polymorphism in Drug metabolism: Cytochrome P-450 Isoenzymes, Genetic Polymorphism in Drug Transport and Drug Targets, Pharmacogenetics and Pharmacokinetic / Pharmacodynamic considerations Introduction to Pharmacometrics: Introduction to Bayesian Theory, Adaptive method or Dosing with feedback, Analysis of Population pharmacokinetic Data.	12 Hrs
3	Non Linier Mixed Effects Modelling: The Structural or Base Model, Modeling Random Effects, Modeling Covariate Relationships, Mixture Model, Estimation Methods, Model Building Techniques, Covariate Screening Methods, Testing the model assumptions, Precision of the parameter estimates and confidence intervals, Model misspecification and violation of the model assumptions, Model Validation, Simulation of dosing regimens and dosing recommendations, Pharmacometrics software.	12 Hrs
4	Altered Pharmacokinetics: Drug dosing in the elderly, Drug dosing in the paediatrics, Drug dosing in the obese patients, Drug dosing in the pregnancy and lactation, Drug dosing in the renal failure and extracorporeal removal of drugs, Drug dosing in the in hepatic failure.	12 Hrs
5	Therapeutic Drug monitoring: Introduction, Individualization of drug dosage regimen (Variability – Genetic, age, weight, disease and Interacting drugs), Indications for TDM, Protocol for TDM, Pharmacokinetic/Pharmacodynamic Correlation in drug therapy, TDM of drugs used in the following conditions: Cardiovascular disease: Digoxin, Lidocaine, Amiodarone; Seizure disorders: Phenytoin, Carbamazepine, Sodium Valproate; Psychiatric conditions: Lithium, Fluoxetine, Amitriptyline; Organ transplantations: Cyclosporine; Cytotoxic Agents: Methotrexate, 5-FU, Cisplatin; Antibiotics: Vancomycin, Gentamicin, Meropenem.	12 Hrs

REFERENCES

1. Leon Shargel, Susanna Wu-Pong, Andrew Yu. Applied Biopharmaceutics & Pharmacokinetics. New York: Mc Graw Hill.
2. Peter L. Bonate. Pharmacokinetic - Pharmacodynamic Modeling and Simulation. Springer Publications.
3. Michael E. Burton, Leslie M. Shaw, Jerome J. Schentag, William E.Evans. Applied Pharmacokinetics & Pharmacodynamics: Principles of Therapeutic Drug Monitoring. lippincott Williams & Wilkins.
4. Steven How-Yan Wong, Irving Sunshine. Handbook of Analytical Therapeutic Drug Monitoring and Toxicology. CRC Press, USA.
5. Soraya Dhillon, Andrzej Kostrzewski. Clinical pharmacokinetics. 1st edition. London: Pharmaceutical Press.
6. Joseph T.Dipiro, William J.Spruill, William E.Wade, Robert A.Blouin and Jane M.Pruemer .Concepts in Clinical Pharmacokinetics. American Society of Health-System Pharmacists, USA.
7. Malcolm Rowland, Thomas N. Tozer .Clinical Pharmacokinetics and pharmacodynamics: concepts and applications. lippincott Williams & Wilkins, USA.
8. Evans, Schentag, Jusko. Applied pharmacokinetics. American Society of Health system Pharmacists, USA.
9. Michael E. Winter. Basic Clinical Pharmacokinetics. lippincott Williams & Wilkins, USA.
10. Milo Gibaldi. Biopharmaceutics and Clinical Pharmacokinetics. Pharma Book Syndicate, USA.
11. Dhillon and Kostrzewski. Clinical pharmacokinetics. Pharmaceutical Press, London.
12. John E .Murphy. Clinical Pharmacokinetics. 5th edition. US: American Society of Health- System Pharmacist, USA.
13. Relevant review articles from recent medical and pharmaceutical literature

PHARMACOEPIDEMIOLOGY & PHARMACOECONOMICS
(MPP 204T)

Scope

This course enables students to understand various pharmacoepidemiological methods and their clinical applications. Also, it aims to impart knowledge on basic concepts, assumptions, terminology, and methods associated with Pharmacoeconomics and health related outcomes, and when should be appropriate Pharmacoeconomic model should be applied for a health care regimen.

Objectives

Upon completion of this course it is expected that students shall be able to:

- Understand the various epidemiological methods and their applications
- Understand the fundamental principles of Pharmacoeconomics.
- Identify and determine relevant cost and consequences associated with pharmacy products and services.
- Perform the key Pharmacoeconomics analysis methods
- Understand the Pharmacoeconomic decision analysis methods and its applications.
- Describe current Pharmacoeconomic methods and issues.
- Understand the applications of Pharmacoeconomics to various pharmacy settings.

THEORY 60 Hrs

1. Introduction to Pharmacoepidemiology: Definition, Scope, Need, Aims & Applications; Outcome measurement: Outcome measures, Drug use measures: Monetary units, Number of prescriptions, units of drug dispensed, defined daily doses, prescribed daily doses, Diagnosis and Therapy surveys, Prevalence, Incidence rate, Monetary units, number of prescriptions, unit of drugs dispensed, defined daily doses and prescribed daily doses, medications adherence measurements. Concept of risk: Measurement of risk, Attributable risk and relative risk, Time- risk relationship and odds ratio — 12 Hrs

2 Pharmacoepidemiological Methods: Qualitative models: Drug Utilization Review; Quantitative models: case reports, case series, Cross sectional studies, Cohort and case control studies, Calculation of Odds' ratio, Meta analysis models, Drug effects study in populations: Spontaneous reporting, Prescription event — 12 Hrs

monitoring, Post marketing surveillance, Record linkage systems, Applications of Pharmacoepidemiology

3	Introduction to Pharmacoeconomics: Definition, history of Pharmacoeconomics, Need of Pharmacoeconomic studies in Indian healthcare system. Cost categorization and resources for cost estimation: Direct costs. Indirect costs. Intangible costs. Outcomes and Measurements of Pharmacoeconomics: Types of outcomes: Clinical outcome, Economic outcomes, Humanistic outcomes; Quality Adjusted Life Years, Disability Adjusted Life Years Incremental Cost Effective Ratio, Average Cost Effective Ratio. Person Time, Willingness To Pay, Time Trade Off and Discounting.	12 Hrs
4	Pharmacoeconomic evaluations: Definition, Steps involved, Applications, Advantages and disadvantages of the following Pharmacoeconomic models: Cost Minimization Analysis (CMA), Cost Benefit Analysis (CBA), Cost Effective Analysis (CEA), Cost Utility Analysis (CUA), Cost of Illness (COI), Cost Consequences Analysis (COA).	12 Hrs
5	Definition, Steps involved, Applications, Advantages and disadvantages of the following: Health related quality of life (HRQOL): Definition, Need for measurement of HRQOL, Common HRQOL measures. Definition, Steps involved, Applications of the following: Decision Analysis and Decision tree, Sensitivity analysis, Markov Modeling, Software used in pharmacoeconomic analysis, Applications of Pharmacoeconomics.	12 Hrs

REFERENCES

1. Rascati K L. Essentials of Pharmacoeconomics, Woulters Kluwer Lippincott Williams & Wilkins, Philadelphia.
2. Thomas E Getzen. Health economics. Fundamentals and Flow of Funds. John Wiley & Sons, USA.
3. Andrew Briggs, Karl Claxton, Mark Sculpher. Decision Modelling for Health Economic Evaluation, Oxford University Press, London.
4. Michael Drummond, Mark Sculpher, George Torrence, Bernie O'Brien and Greg Stoddart. Methods for the Economic Evaluation of Health Care Programmes Oxford University Press, London.

5. George E Mackinnon III. Understanding health outcomes and pharmacoeconomics.
6. Graker, Dennis. Pharmacoeconomics and outcomes.
7. Walley, Pharmacoeconomics.
8. Pharmacoeconomic – ed. by Nowakowska – University of Medical Sciences, Poznan.
9. Relevant review articles from recent medical and pharmaceutical literature

PHARMACY PRACTICE PRACTICAL - II
(MPP 205P)

Pharmacy Practice practical component includes experiments covering important topics of the courses Principles of Quality Use of Medicines, Pharmacotherapeutics-II, Clinical Pharmacokinetics & Therapeutic Drug Monitoring and Pharmacoepidemiology and Pharmacoeconomics.

List of Experiments (24)

1. Causality assessment of adverse drug reactions (three)
2. Detection and management of medication errors (three)
3. Rational use of medicines in special population (three)
4. Presentation of clinical cases of various disease conditions adopting Pharmaceutical Care Plan Model (eight)
5. Calculation of Bioavailability and Bioequivalence from the given data (two)
6. Interpretation of Therapeutic Drug Monitoring reports of a given patient (three)
7. Calculation of various Pharmacoeconomic outcome analysis for the given data (two)

PHARMACOLOGY (MPL)

MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES (MPL 101T)

Scope

This subject deals with various advanced analytical instrumental techniques for identification, characterization and quantification of drugs. Instruments dealt are NMR, Mass spectrometer, IR, HPLC, GC etc.

Objectives

After completion of course student is able to know about,

- Chemicals and Excipients
- The analysis of various drugs in single and combination dosage forms
- Theoretical and practical skills of the instruments

THEORY 60 Hrs

1. UV-Visible spectroscopy: Introduction, Theory, Laws, Instrumentation associated with UV-Visible spectroscopy, Choice of solvents and solvent effect and Applications of UV-Visible spectroscopy, Difference/ Derivative spectroscopy. 10 Hrs

   IR spectroscopy: Theory, Modes of Molecular vibrations, Sample handling, Instrumentation of Dispersive and Fourier - Transform IR Spectrometer, Factors affecting vibrational frequencies and Applications of IR spectroscopy, Data Interpretation.

   Spectroflourimetry: Theory of Fluorescence, Factors affecting fluorescence (Characterestics of drugs that can be analysed by flourimetry), Quenchers, Instrumentation and Applications of fluorescence spectrophotometer.

   Flame emission spectroscopy and Atomic absorption spectroscopy: Principle, Instrumentation, Interferences and Applications.

2 NMR spectroscopy: Quantum numbers and their role in NMR, Principle, Instrumentation, Solvent requirement in NMR, Relaxation process, NMR signals in various compounds, Chemical shift, Factors influencing chemical shift, Spin-Spin coupling, Coupling constant, Nuclear magnetic double resonance, Brief outline of principles of FT-NMR and 13C NMR. Applications of NMR spectroscopy. 10 Hrs

3	Mass Spectroscopy: Principle, Theory, Instrumentation of Mass Spectroscopy, Different types of ionization like electron impact, chemical, field, FAB and MALDI, APCI, ESI, APPI Analyzers of Quadrupole and Time of Flight, Mass fragmentation and its rules, Meta stable ions, Isotopic peaks and Applications of Mass spectroscopy.	10 Hrs
4	Chromatography: Principle, apparatus, instrumentation, chromatographic parameters, factors affecting resolution, isolation of drug from excipients, data interpretation and applications of the following: j) Thin Layer chromatography k) High Performance Thin Layer Chromatography l) Ion exchange chromatography m) Column chromatography n) Gas chromatography o) High Performance Liquid chromatography p) Ultra High Performance Liquid chromatography q) Affinity chromatography r) Gel Chromatography	10 Hrs
5	Electrophoresis: Principle, Instrumentation, Working conditions, factors affecting separation and applications of the following: a) Paper electrophoresis b) Gel electrophoresis c) Capillary electrophoresis d) Zone electrophoresis e) Moving boundary electrophoresis f) Iso electric focusing X ray Crystallography: Production of X rays, Different X ray methods, Bragg's law, Rotating crystal technique, X ray powder technique, Types of crystals and applications of X-ray diffraction.	10 Hrs
6	Potentiometry: Principle, working, Ion selective Electrodes and Application of potentiometry. Thermal Techniques: Principle, thermal transitions and Instrumentation (Heat flux and power-compensation and designs), Modulated DSC, Hyper DSC, experimental parameters (sample preparation, experimental conditions, calibration, heating and cooling rates, resolution, source of errors) and their influence, advantage and disadvantages, pharmaceutical applications. Differential Thermal Analysis (DTA): Principle, instrumentation and advantage and disadvantages, pharmaceutical applications, derivative differential thermal analysis (DDTA). TGA: Principle, instrumentation, factors affecting results, advantage and disadvantages, pharmaceutical applications.	10 Hrs

REFERENCES

1. Spectrometric Identification of Organic compounds - Robert M Silverstein, Sixth edition, John Wiley & Sons, 2004.
2. Principles of Instrumental Analysis - Doglas A Skoog, F. James Holler, Timothy A. Nieman, 5th edition, Eastern press, Bangalore, 1998.
3. Instrumental methods of analysis – Willards, 7th edition, CBS publishers.
4. Practical Pharmaceutical Chemistry – Beckett and Stenlake, Vol II, 4th edition, CBS Publishers, New Delhi, 1997.
5. Organic Spectroscopy - William Kemp, 3rd edition, ELBS, 1991.
6. Quantitative Analysis of Drugs in Pharmaceutical formulation - P D Sethi, 3rd Edition, CBS Publishers, New Delhi, 1997.
7. Pharmaceutical Analysis - Modern Methods – Part B - J W Munson, Vol 11, Marcel. Dekker Series
8. Spectroscopy of Organic Compounds, 2nd edn., P.S/Kalsi, Wiley estern Ltd., Delhi.
9. Textbook of Pharmaceutical Analysis, KA.Connors, 3rd Edition, John Wiley & Sons, 1982.

ADVANCED PHARMACOLOGY - I
(MPL 102T)

Scope

The subject is designed to strengthen the basic knowledge in the field of pharmacology and to impart recent advances in the drugs used for the treatment of various diseases. In addition, this subject helps the students to understand the concepts of drug action and mechanisms involved

Objectives

Upon completion of the course the student shall be able to :

- Discuss the pathophysiology and pharmacotherapy of certain diseases
- Explain the mechanism of drug actions at cellular and molecular level
- Understand the adverse effects, contraindications and clinical uses of drugs used in treatment of diseases

THEORY 60 Hrs

1. General Pharmacology 12 Hrs

a. Pharmacokinetics: The dynamics of drug absorption, distribution, biotransformation and elimination. Concepts of linear and non-linear compartment models. Significance of Protein binding.

b. Pharmacodynamics: Mechanism of drug action and the relationship between drug concentration and effect. Receptors, structural and functional families of receptors, quantitation of drug receptors interaction and elicited effects.

2 Neurotransmission 12 Hrs

a. General aspects and steps involved in neurotransmission.

b. Neurohumoral transmission in autonomic nervous system (Detailed study about neurotransmitters- Adrenaline and Acetyl choline).

c. Neurohumoral transmission in central nervous system (Detailed study about neurotransmitters- histamine, serotonin, dopamine, GABA, glutamate and glycine].

d. Non adrenergic non cholinergic transmission (NANC). Co-transmission

Systemic Pharmacology

A detailed study on pathophysiology of diseases, mechanism of action, pharmacology and toxicology of existing as well as novel drugs used in the following systems

Autonomic Pharmacology

Parasympathomimetics and lytics, sympathomimetics and lytics, agents affecting

neuromuscular junction

3	Central nervous system Pharmacology General and local anesthetics Sedatives and hypnotics, drugs used to treat anxiety. Depression, psychosis, mania, epilepsy, neurodegenerative diseases. Narcotic and non-narcotic analgesics.	12 Hrs
4	Cardiovascular Pharmacology Diuretics, antihypertensives, antiischemics, anti- arrhythmics, drugs for heart failure and hyperlipidemia. Hematinics, coagulants , anticoagulants, fibrinolytics and anti-platelet drugs	12 Hrs
5	Autocoid Pharmacology The physiological and pathological role of Histamine, Serotonin, Kinins Prostaglandins Opioid autocoids. Pharmacology of antihistamines, 5HT antagonists.	12 Hrs

REFEERENCES

1. The Pharmacological Basis of Therapeutics, Goodman and Gillman's
2. Principles of Pharmacology. The Pathophysiologic basis of drug Therapy by David E Golan, Armen H, Tashjian Jr, Ehrin J,Armstrong, April W, Armstrong, Wolters, Kluwer-Lippincott Williams & Wilkins Publishers.
3. Basic and Clinical Pharmacology by B.G Katzung
4. Hand book of Clinical Pharmacokinetics by Gibaldi and Prescott.
5. Applied biopharmaceutics and Pharmacokinetics by Leon Shargel and Andrew B.C.Yu.
6. Graham Smith. Oxford textbook of Clinical Pharmacology.
7. Avery Drug Treatment
8. Dipiro Pharmacology, Pathophysiological approach.
9. Green Pathophysiology for Pharmacists.

10. Robbins & Cortan Pathologic Basis of Disease, 9th Ed. (Robbins Pathology)
11. A Complete Textbook of Medical Pharmacology by Dr. S.K Srivastava published by APC Avichal Publishing Company
12. KD.Tripathi. Essentials of Medical Pharmacology.
13. Modern Pharmacology with Clinical Applications, Craig Charles R. & Stitzel Robert E., Lippincott Publishers.
14. Clinical Pharmacokinetics & Pharmacodynamics : Concepts and Applications - Malcolm Rowland and Thomas N.Tozer, Wolters Kluwer, Lippincott Williams & Wilkins Publishers.
15. Applied biopharmaceutics and Pharmacokinetics, Pharmacodynamics and Drug metabolism for industrial scientists.
16. Modern Pharmacology, Craig CR. & Stitzel RE, Little Brown & Company.

PHARMACOLOGICAL AND TOXICOLOGICAL SCREENING METHODS - I
(MPL 103T)

Scope

This subject is designed to impart the knowledge on preclinical evaluation of drugs and recent experimental techniques in the drug discovery and development. The subject content helps the student to understand the maintenance of laboratory animals as per the guidelines, basic knowledge of various in-vitro and in-vivo preclinical evaluation processes

Objectives

Upon completion of the course the student shall be able to,

- Appraise the regulations and ethical requirement for the usage of experimental animals.
- Describe the various animals used in the drug discovery process and good laboratory practices in maintenance and handling of experimental animals
- Describe the various newer screening methods involved in the drug discovery process
- Appreciate and correlate the preclinical data to humans

THEORY 60 Hrs

1. Laboratory Animals 12 Hrs

Common laboratory animals: Description, handling and applications of different species and strains of animals.

Transgenic animals: Production, maintenance and applications
Anaesthesia and euthanasia of experimental animals.
Maintenance and breeding of laboratory animals.
CPCSEA guidelines to conduct experiments on animals

Good laboratory practice.
Bioassay-Principle, scope and limitations and methods

2 Preclinical screening of new substances for the pharmacological activity using in vivo, in vitro, and other possible animal alternative models. 12 Hrs

General principles of preclinical screening. CNS Pharmacology: behavioral and muscle co ordination, CNS stimulants and

depressants, anxiolytics, anti-psychotics, anti epileptics and nootropics. Drugs for neurodegenerative diseases like Parkinsonism, Alzheimers and multiple sclerosis. Drugs acting on Autonomic Nervous System.

3	Preclinical screening of new substances for the pharmacological activity using in vivo, in vitro, and other possible animal alternative models. Respiratory Pharmacology: anti-asthmatics, drugs for COPD and anti allergics. Reproductive Pharmacology: Aphrodisiacs and antifertility agents Analgesics, antiinflammatory and antipyretic agents. Gastrointestinal drugs: anti ulcer, anti -emetic, anti-diarrheal and laxatives.	12 Hrs
4	Preclinical screening of new substances for the pharmacological activity using in vivo, in vitro, and other possible animal alternative models. Cardiovascular Pharmacology: antihypertensives, antiarrythmics, antianginal, antiatherosclerotic agents and diuretics. Drugs for metabolic disorders like anti-diabetic, antidyslipidemic agents. Anti cancer agents. Hepatoprotective screening methods.	12 Hrs
5	Preclinical screening of new substances for the pharmacological activity using in vivo, in vitro, and other possible animal alternative models. Iimmunomodulators, Immunosuppressants and immunostimulants General principles of immunoassay: theoretical basis and optimization of immunoassay, heterogeneous and homogenous immunoassay systems. Immunoassay methods evaluation; protocol outline, objectives and preparation. Immunoassay for digoxin and insulin Limitations of animal experimentation and alternate animal experiments. Extrapolation of in vitro data to preclinical and preclinical to humans	12 Hrs

REFERENCES

1. Biological standardization by J.H. Burn D.J. Finney and I.G. Goodwin
2. Screening methods in Pharmacology by Robert Turner. A
3. Evaluation of drugs activities by Laurence and Bachrach
4. Methods in Pharmacology by Arnold Schwartz.
5. Fundamentals of experimental Pharmacology by M.N.Ghosh
6. Pharmacological experiment on intact preparations by Churchill Livingstone
7. Drug discovery and Evaluation by Vogel H.G.
8. Experimental Pharmacology by R.K.Goyal.
9. Preclinical evaluation of new drugs by S.K. Guta
10. Handbook of Experimental Pharmacology, SK.Kulkarni
11. Practical Pharmacology and Clinical Pharmacy, SK.Kulkarni, 3rd Edition.
12. David R.Gross. Animal Models in Cardiovascular Research, 2nd Edition, Kluwer Academic Publishers, London, UK.
13. Screening Methods in Pharmacology, Robert A.Turner.
14. Rodents for Pharmacological Experiments, Dr.Tapan Kumar chatterjee.
15. Practical Manual of Experimental and Clinical Pharmacology by Bikash Medhi (Author), Ajay Prakash (Author)

CELLULAR AND MOLECULAR PHARMACOLOGY
(MPL 104T)

Scope:

The subject imparts a fundamental knowledge on the structure and functions of cellular components and help to understand the interaction of these components with drugs. This information will further help the student to apply the knowledge in drug discovery process.

Objectives:

Upon completion of the course, the student shall be able to,

- Explain the receptor signal transduction processes.
- Explain the molecular pathways affected by drugs.
- Appreciate the applicability of molecular pharmacology and biomarkers in drug discovery process.
- Demonstrate molecular biology techniques as applicable for pharmacology

THEORY		60 Hrs
1.	Cell biology Structure and functions of cell and its organelles Genome organization. Gene expression and its regulation, importance of siRNA and micro RNA, gene mapping and gene sequencing Cell cycles and its regulation. Cell death- events, regulators, intrinsic and extrinsic pathways of apoptosis. Necrosis and autophagy.	12 Hrs
2	Cell signaling Intercellular and intracellular signaling pathways. Classification of receptor family and molecular structure ligand gated ion channels; G-protein coupled receptors, tyrosine kinase receptors and nuclear receptors. Secondary messengers: cyclic AMP, cyclic GMP, calcium ion, inositol 1,4,5-trisphosphate, (IP3), NO, and diacylglycerol. Detailed study of following intracellular signaling pathways: cyclic AMP signaling pathway, mitogen-activated protein kinase (MAPK) signaling, Janus kinase (JAK)/signal transducer and activator of transcription (STAT) signaling pathway.	12 Hrs

3	Principles and applications of genomic and proteomic tools DNA electrophoresis, PCR (reverse transcription and real time), Gene sequencing, micro array technique, SDS page, ELISA and western blotting, Recombinant DNA technology and gene therapy Basic principles of recombinant DNA technology-Restriction enzymes, various types of vectors. Applications of recombinant DNA technology. Gene therapy- Various types of gene transfer techniques, clinical applications and recent advances in gene therapy.	12 Hrs
4	Pharmacogenomics Gene mapping and cloning of disease gene. Genetic variation and its role in health/ pharmacology Polymorphisms affecting drug metabolism Genetic variation in drug transporters Genetic variation in G protein coupled receptors Applications of proteomics science: Genomics, proteomics, metabolomics, functionomics, nutrigenomics Immunotherapeutics Types of immunotherapeutics, humanisation antibody therapy, Immunotherapeutics in clinical practice	12 Hrs
5	a. Cell culture techniques Basic equipments used in cell culture lab. Cell culture media, various types of cell culture, general procedure for cell cultures; isolation of cells, subculture, cryopreservation, characterization of cells and their application. Principles and applications of cell viability assays, glucose uptake assay, Calcium influx assays Principles and applications of flow cytometry b. Biosimilars	12 Hrs

REFERENCES:

1. The Cell, A Molecular Approach. Geoffrey M Cooper.
2. Pharmacogenomics: The Search for Individualized Therapies. Edited by J. Licinio and M -L. Wong
3. Handbook of Cell Signaling (Second Edition) Edited by Ralph A. et.al
4. Molecular Pharmacology: From DNA to Drug Discovery. John Dickenson et.al
5. Basic Cell Culture protocols by Cheril D.Helgason and Cindy L.Miller
6. Basic Cell Culture (Practical Approach) by J. M. Davis (Editor)
7. Animal Cell Culture: A Practical Approach by John R. Masters (Editor)
8. Current porotocols in molecular biology vol I to VI edited by Frederick M.Ausuvel et la.

PHARMACOLOGICAL PRACTICAL - I
(MPL 105P)

1. Analysis of pharmacopoeial compounds and their formulations by UV Vis spectrophotometer
2. Simultaneous estimation of multi component containing formulations by UV spectrophotometry
3. Experiments based on HPLC
4. Experiments based on Gas Chromatography
5. Estimation of riboflavin/quinine sulphate by fluorimetry
6. Estimation of sodium/potassium by flame photometry

Handling of laboratory animals.

1. Various routes of drug administration.
2. Techniques of blood sampling, anesthesia and euthanasia of experimental animals.
3. Functional observation battery tests (modified Irwin test)
4. Evaluation of CNS stimulant, depressant, anxiogenics and anxiolytic, anticonvulsant activity.
5. Evaluation of analgesic, anti-inflammatory, local anesthetic, mydriatic and miotic activity.
6. Evaluation of diuretic activity.
7. Evaluation of antiulcer activity by pylorus ligation method.
8. Oral glucose tolerance test.
9. Isolation and identification of DNA from various sources (Bacteria, Cauliflower, onion, Goat liver).
10. Isolation of RNA from yeast
11. Estimation of proteins by Braford/Lowry's in biological samples.
12. Estimation of RNA/DNA by UV Spectroscopy
13. Gene amplification by PCR.
14. Protein quantification Western Blotting.
15. Enzyme based in-vitro assays (MPO, AChEs, α amylase, α glucosidase).
16. Cell viability assays (MTT/Trypan blue/SRB).
17. DNA fragmentation assay by agarose gel electrophoresis.
18. DNA damage study by Comet assay.
19. Apoptosis determination by fluorescent imaging studies.
20. Pharmacokinetic studies and data analysis of drugs given by different routes of administration using softwares
21. Enzyme inhibition and induction activity
22. Extraction of drug from various biological samples and estimation of drugs in biological fluids using different analytical techniques (UV)
23. Extraction of drug from various biological samples and estimation of drugs in biological fluids using different analytical techniques (HPLC)

REFERENCES

1. CPCSEA, OECD, ICH, USFDA, Schedule Y, EPA guidelines,
2. Fundamentals of experimental Pharmacology by M.N.Ghosh
3. Handbook of Experimental Pharmacology by S.K. Kulkarni.
4. Drug discovery and Evaluation by Vogel H.G.
5. Spectrometric Identification of Organic compounds - Robert M Silverstein,
6. Principles of Instrumental Analysis - Doglas A Skoog, F. James Holler, Timothy A. Nieman,
7. Vogel's Text book of quantitative chemical analysis - Jeffery, Basset, Mendham, Denney,
8. Basic Cell Culture protocols by Cheril D. Helgason and Cindy L.Mille
9. Basic Cell Culture (Practical Approach) by J. M. Davis (Editor)
10. Animal Cell Culture: A Practical Approach by John R. Masters (Editor)
11. Practical Manual of Experimental and Clinical Pharmacology by Bikash Medhi(Author), Ajay Prakash (Author) Jaypee brothers' medical publishers Pvt. Ltd

ADVANCED PHARMACOLOGY - II
(MPL 201T)

Scope

The subject is designed to strengthen the basic knowledge in the field of pharmacology and to impart recent advances in the drugs used for the treatment of various diseases. In addition, the subject helps the student to understand the concepts of drug action and mechanism involved

Objectives

Upon completion of the course the student shall be able to:

- Explain the mechanism of drug actions at cellular and molecular level
- Discuss the Pathophysiology and pharmacotherapy of certain diseases
- Understand the adverse effects, contraindications and clinical uses of drugs used in treatment of diseases

	THEORY	60 Hrs
1.	Endocrine Pharmacology Molecular and cellular mechanism of action of hormones such as growth hormone, prolactin, thyroid, insulin and sex hormones Anti-thyroid drugs, Oral hypoglycemic agents, Oral contraceptives, Corticosteroids. Drugs affecting calcium regulation	12 Hrs
2	Chemotherapy Cellular and molecular mechanism of actions and resistance of antimicrobial agents such as ß-lactams, aminoglycosides, quinolones, Macrolide antibiotics. Antifungal, antiviral, and anti-TB drugs.	12 Hrs
3	Chemotherapy Drugs used in Protozoal Infections Drugs used in the treatment of Helminthiasis Chemotherapy of cancer Immunopharmacology Cellular and biochemical mediators of inflammation and immune response. Allergic or hypersensitivity reactions. Pharmacotherapy of asthma and COPD. Immunosuppressants and Immunostimulants	12 Hrs

4	GIT Pharmacology Antiulcer drugs, Prokinetics, antiemetics, anti-diarrheals and drugs for constipation and irritable bowel syndrome. Chronopharmacology Biological and circadian rhythms, applications of chronotherapy in various diseases like cardiovascular disease, diabetes, asthma and peptic ulcer	12 Hrs
5	Free radicals Pharmacology Generation of free radicals, role of free radicals in etiopathology of various diseases such as diabetes, neurodegenerative diseases and cancer. Protective activity of certain important antioxidant Recent Advances in Treatment: Alzheimer's disease, Parkinson's disease, Cancer, Diabetes mellitus	12 Hrs

REFERENCES

1. The Pharmacological basis of therapeutics- Goodman and Gill man's
2. Principles of Pharmacology. The Pathophysiologic basis of drug therapy by David E Golan et al.
3. Basic and Clinical Pharmacology by B.G -Katzung
4. Pharmacology by H.P. Rang and M.M. Dale.
5. Hand book of Clinical Pharmacokinetics by Gibaldi and Prescott.
6. Text book of Therapeutics, drug and disease management by E T. Herfindal and Gourley.
7. Applied biopharmaceutics and Pharmacokinetics by Leon Shargel and Andrew B.C.Yu.
8. Handbook of Essential Pharmacokinetics, Pharmacodynamics and Drug Metabolism for Industrial Scientists
9. Robbins & Cortan Pathologic Basis of Disease, 9th Ed. (Robbins Pathology)
10. A Complete Textbook of Medical Pharmacology by Dr. S.K Srivastava published by APC Avichal Publishing Company.
11. KD.Tripathi. Essentials of Medical Pharmacology
12. Principles of Pharmacology. The Pathophysiologic basis of drug Therapy by David E Golan, Armen H, Tashjian Jr, Ehrin J,Armstrong, April W, Armstrong, Wolters, Kluwer-Lippincott Williams & Wilkins Publishers

PHARMACOLOGICAL AND TOXICOLOGICAL SCREENING METHODS-II
(MPL 202T)

Scope:

This subject imparts knowledge on the preclinical safety and toxicological evaluation of drug & new chemical entity. This knowledge will make the student competent in regulatory toxicological evaluation.

Objectives:

Upon completion of the course, the student shall be able to,

- Explain the various types of toxicity studies.
- Appreciate the importance of ethical and regulatory requirements for toxicity studies.
- Demonstrate the practical skills required to conduct the preclinical toxicity studies.

THEORY 60 Hrs

1.	Basic definition and types of toxicology (general, mechanistic, regulatory and descriptive) Regulatory guidelines for conducting toxicity studies OECD, ICH, EPA and Schedule Y OECD principles of Good laboratory practice (GLP) History, concept and its importance in drug development	12 Hrs
2	Acute, sub-acute and chronic- oral, dermal and inhalational studies as per OECD guidelines. Acute eye irritation, skin sensitization, dermal irritation & dermal toxicity studies. Test item characterization- importance and methods in regulatory toxicology studies	12 Hrs
3	Reproductive toxicology studies, Male reproductive toxicity studies, female reproductive studies (segment I and segment III), teratogenecity studies (segment II) Genotoxicity studies (Ames Test, in vitro and in vivo Micronucleus and Chromosomal aberrations studies) In vivo carcinogenicity studies	12 Hrs
4	IND enabling studies (IND studies)- Definition of IND, importance of IND, industry perspective, list of studies needed for IND submission.	12 Hrs

Safety pharmacology studies- origin, concepts and importance of safety pharmacology.
Tier1- CVS, CNS and respiratory safety pharmacology, HERG assay. Tier2- GI, renal and other studies

5	Toxicokinetics- Toxicokinetic evaluation in preclinical studies, saturation kinetics Importance and applications of toxicokinetic studies. Alternative methods to animal toxicity testing.	12 Hrs

REFERENCES

1. Hand book on GLP, Quality practices for regulated non-clinical research and development (http://www.who.int/tdr/publications/documents/glp-handbook.pdf).
2. Schedule Y Guideline: drugs and cosmetics (second amendment) rules, 2005, ministry of health and family welfare (department of health) New Delhi
3. Drugs from discovery to approval by Rick NG.
4. Animal Models in Toxicology, 3rd Edition, Lower and Bryan
5. OECD test guidelines.
6. Principles of toxicology by Karen E. Stine, Thomas M. Brown.
7. Guidance for Industry M3(R2) Nonclinical Safety Studies for the Conduct of Human Clinical Trials and Marketing Authorization for Pharmaceuticals (http://www.fda.gov/downloads/drugs/guidancecomplianceregulatoryinformation/guidances/ucm073246.pdf)

PRINCIPLES OF DRUG DISCOVERY
(MPL 203T)

Scope:

The subject imparts basic knowledge of drug discovery process. This information will make the student competent in drug discovery process

Objectives:

Upon completion of the course, the student shall be able to,

- Explain the various stages of drug discovery.
- Appreciate the importance of the role of genomics, proteomics and bioinformatics in drug discovery
- Explain various targets for drug discovery.
- Explain various lead seeking method and lead optimization
- Appreciate the importance of the role of computer aided drug design in drug discovery

THEORY		60 Hrs
1.	An overview of modern drug discovery process: Target identification, target validation, lead identification and lead Optimization. Economics of drug discovery. Target Discovery and validation-Role of Genomics, Proteomics and Bioinformatics. Role of Nucleic acid microarrays, Protein microarrays, Antisense technologies, siRNAs, antisense oligonucleotides, Zinc finger proteins. Role of transgenic animals in target validation.	12 Hrs
2	Lead Identification- combinatorial chemistry & high throughput screening, in silico lead discovery techniques, Assay development for hit identification. Protein structure Levels of protein structure, Domains, motifs, and folds in protein structure. Computational prediction of protein structure: Threading and homology modeling methods. Application of NMR and X-ray crystallography in protein structure prediction	12 Hrs
3	Rational Drug Design Traditional vs rational drug design, Methods followed in traditional drug design, High throughput screening, Concepts of Rational Drug Design, Rational Drug Design Methods: Structure and Pharmacophore based approaches	12 Hrs

	Virtual Screening techniques: Drug likeness screening, Concept of pharmacophore mapping and pharmacophore based Screening,	
4	Molecular docking: Rigid docking, flexible docking, manual docking; Docking based screening. De novo drug design. Quantitative analysis of Structure Activity Relationship History and development of QSAR, SAR versus QSAR, Physicochemical parameters, Hansch analysis, Fee Wilson analysis and relationship between them.	12 Hrs
5	QSAR Statistical methods – regression analysis, partial least square analysis (PLS) and other multivariate statistical methods. 3D-QSAR approaches like COMFA and COMSIA Prodrug design-Basic concept, Prodrugs to improve patient acceptability, Drug solubility, Drug absorption and distribution, site specific drug delivery and sustained drug action. Rationale of prodrug design and practical consideration of prodrug design	12 Hrs

REFERENCES

1. MouldySioud. Target Discovery and Validation Reviews and Protocols: Volume 2 Emerging Molecular Targetsand Treatment Options. 2007 Humana Press Inc.
2. Darryl León. Scott MarkelIn. Silico Technologies in Drug Target Identification and Validation. 2006 by Taylor and Francis Group, LLC.
3. Johanna K. DiStefano. Disease Gene Identification. Methods and Protocols. Springer New York Dordrecht Heidelberg London.
4. Hugo Kubiny. QSAR: Hansch Analysis and Related Approaches. Methods and Principles in Medicinal Chemistry. Publisher Wiley-VCH
5. Klaus Gubernator, Hans-Joachim Böhm. Structure-Based Ligand Design. Methods and Principles in Medicinal Chemistry. Publisher Wiley-VCH
6. Abby L . Parrill. M . Rami Reddy. Rational Drug Design. Novel Methodology and Practical Applications. ACS Symposium Series; American Chemical Society: Washington, DC, 1999.
7. J. Rick Turner. New drug development design, methodology and, analysis. John Wiley & Sons, Inc., New Jersey.

CLINICAL RESEARCH AND PHARMACOVIGILANCE
(MPL 204T)

Scope:

This subject will provide a value addition and current requirement for the students in clinical research and pharmacovigilance. It will teach the students on conceptualizing, designing, conducting, managing and reporting of clinical trials. This subject also focuses on global scenario of Pharmacovigilance in different methods that can be used to generate safety data. It will teach the students in developing drug safety data in Pre-clinical, Clinical phases of Drug development and post market surveillance.

Objectives:

Upon completion of the course, the student shall be able to,

- Explain the regulatory requirements for conducting clinical trial
- Demonstrate the types of clinical trial designs
- Explain the responsibilities of key players involved in clinical trials
- Execute safety monitoring, reporting and close-out activities
- Explain the principles of Pharmacovigilance
- Detect new adverse drug reactions and their assessment
- Perform the adverse drug reaction reporting systems and communication in Pharmacovigilance

THEORY — 60 Hrs

1. Regulatory Perspectives of Clinical Trials: — 12 Hrs
   Origin and Principles of International Conference on Harmonization - Good Clinical Practice (ICH-GCP) guidelines
   Ethical Committee: Institutional Review Board, Ethical Guidelines for Biomedical Research and Human Participant- Schedule Y, ICMR
   Informed Consent Process: Structure and content of an Informed Consent Process Ethical principles governing informed consent process
2. Clinical Trials: Types and Design — 12 Hrs
   Experimental Study- RCT and Non RCT,
   Observation Study: Cohort, Case Control, Cross sectional
   Clinical Trial Study Team
   Roles and responsibilities of Clinical Trial Personnel: Investigator, Study Coordinator, Sponsor, Contract Research Organization and its management

3	Clinical Trial Documentation- Guidelines to the preparation of documents, Preparation of protocol, Investigator Brochure, Case Report Forms, Clinical Study Report Clinical Trial Monitoring- Safety Monitoring in CT Adverse Drug Reactions: Definition and types. Detection and reporting methods. Severity and seriousness assessment.Predictability and preventability assessment, Management of adverse drug reactions; Terminologies of ADR.	12 Hrs
4	Basic aspects, terminologies and establishment of pharmacovigilance History and progress of pharmacovigilance, Significance of safety monitoring, Pharmacovigilance in India and international aspects, WHO international drug monitoring programme, WHO and Regulatory terminologies of ADR, evaluation of medication safety, Establishing pharmacovigilance centres in Hospitals, Industry and National programmes related to pharmacovigilance. Roles and responsibilities in Pharmacovigilance	12 Hrs
5	Methods, ADR reporting and tools used in Pharmacovigilance International classification of diseases, International Non-proprietary names for drugs, Passive and Active surveillance, Comparative observational studies, Targeted clinical investigations and Vaccine safety surveillance. Spontaneous reporting system and Reporting to regulatory authorities, Guidelines for ADRs reporting. Argus, Aris G Pharmacovigilance, VigiFlow, Statistical methods for evaluating medication safety data.	12 Hrs
6	Pharmacoepidemiology, pharmacoeconomics, safety pharmacology	12 Hrs

REFERENCES

1. Central Drugs Standard Control Organization- Good Clinical Practices, Guidelines for Clinical Trials on Pharmaceutical Products in India. New Delhi: Ministry of Health;2001.
2. International Conference on Harmonization of Technical requirements for registration of Pharmaceuticals for human use. ICH Harmonized Tripartite Guideline. Guideline for Good Clinical Practice.E6; May 1996.

3. Ethical Guidelines for Biomedical Research on Human Subjects 2000. Indian Council of Medical Research, New Delhi.
4. Textbook of Clinical Trials edited by David Machin, Simon Day and Sylvan Green, March 2005, John Wiley and Sons.
5. Clinical Data Management edited by R K Rondels, S A Varley, C F Webbs. Second Edition, Jan 2000, Wiley Publications.
6. Handbook of clinical Research. Julia Lloyd and Ann Raven Ed. Churchill Livingstone.
7. Principles of Clinical Research edited by Giovanna di Ignazio, Di Giovanna and Haynes.

PHARMACOLOGICAL PRACTICAL - II
(MPL 205P)

1. To record the DRC of agonist using suitable isolated tissues preparation.
2. To study the effects of antagonist/potentiating agents on DRC of agonist using suitable isolated tissue preparation.
3. To determine to the strength of unknown sample by matching bioassay by using suitable tissue preparation.
4. To determine to the strength of unknown sample by interpolation bioassay by using suitable tissue preparation
5. To determine to the strength of unknown sample by bracketing bioassay by using suitable tissue preparation
6. To determine to the strength of unknown sample by multiple point bioassay by using suitable tissue preparation.
7. Estimation of PA_2 values of various antagonists using suitable isolated tissue preparations.
8. To study the effects of various drugs on isolated heart preparations
9. Recording of rat BP, heart rate and ECG.
10. Recording of rat ECG
11. Drug absorption studies by averted rat ileum preparation.
12. Acute oral toxicity studies as per OECD guidelines.
13. Acute dermal toxicity studies as per OECD guidelines.
14. Repeated dose toxicity studies- Serum biochemical, haematological, urine analysis, functional observation tests and histological studies.
15. Drug mutagenicity study using mice bone-marrow chromosomal aberration test.
16. Protocol design for clinical trial.(3 Nos.)
17. Design of ADR monitoring protocol.
18. In-silico docking studies. (2 Nos.)
19. In-silico pharmacophore based screening.
20. In-silico QSAR studies.
21. ADR reporting

REFERENCES

1. Fundamentals of experimental Pharmacology-by M.N.Ghosh
2. Hand book of Experimental Pharmacology-S.K.Kulakarni
3. Text book of in-vitro practical Pharmacology by Ian Kitchen
4. Bioassay Techniques for Drug Development by Atta-ur-Rahman, Iqbal choudhary and William Thomsen
5. Applied biopharmaceutics and Pharmacokinetics by Leon Shargel and Andrew B.C.Yu.
6. Handbook of Essential Pharmacokinetics, Pharmacodynamics and Drug Metabolism for Industrial Scientists.

PHARMACOGNOSY (MPG)

MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES (MPG 101T)

Scope

This subject deals with various advanced analytical instrumental techniques for identification, characterization and quantification of drugs. Instruments dealt are NMR, Mass spectrometer, IR, HPLC, GC etc.

Objectives

After completion of course student is able to know,

- The analysis of various drugs in single and combination dosage forms
- Theoretical and practical skills of the instruments

THEORY 60 Hrs

1. UV-Visible spectroscopy: Introduction, Theory, Laws, Instrumentation associated with UV-Visible spectroscopy, Choice of solvents and solvent effect and Applications of UV-Visible spectroscopy. 12 Hrs

   IR spectroscopy: Theory, Modes of Molecular vibrations, Sample handling, Instrumentation of Dispersive and Fourier - Transform IR Spectrometer, Factors affecting vibrational frequencies and Applications of IR spectroscopy

   Spectroflourimetry: Theory of Fluorescence, Factors affecting fluorescence, Quenchers, Instrumentation and Applications of fluorescence spectrophotometer.

   Flame emission spectroscopy and Atomic absorption spectroscopy: Principle, Instrumentation, Interferences and Applications.

2 NMR spectroscopy: Quantum numbers and their role in NMR, Principle, Instrumentation, Solvent requirement in NMR, Relaxation process, NMR signals in various compounds, Chemical shift, Factors influencing chemical shift, Spin-Spin coupling, Coupling constant, Nuclear magnetic double resonance, Brief outline of principles of FT-NMR and 13C NMR. Applications of NMR spectroscopy.1 12 Hrs

3	Mass Spectroscopy: Principle, Theory, Instrumentation of Mass Spectroscopy, Different types of ionization like electron impact, chemical, field, FAB and MALDI, APCI, ESI, APPI Analyzers of Quadrupole and Time of Flight, Mass fragmentation and its rules, Meta stable ions, Isotopic peaks and Applications of Mass spectroscopy.	10 Hrs
4	Chromatography: Principle, apparatus, instrumentation, chromatographic parameters, factors affecting resolution, isolation of drug from excipients, data interpretation and applications of the following: a) Thin Layer chromatography b) High Performance Thin Layer Chromatography c) Ion exchange chromatography d) Column chromatography e) Gas chromatography f) High Performance Liquid chromatography g) Ultra High Performance Liquid chromatography h) Affinity chromatography i) Gel Chromatography	10 Hrs
5	Electrophoresis: Principle, Instrumentation, Working conditions, factors affecting separation and applications of the following: a) Paper electrophoresis b) Gel electrophoresis c) Capillary electrophoresis d) Zone electrophoresis e) Moving boundary electrophoresis f) Iso electric focusing X ray Crystallography: Production of X rays, Different X ray methods, Bragg's law, Rotating crystal technique, X ray powder technique, Types of crystals and applications of X-ray diffraction.	10 Hrs
6	Potentiometry: Principle, working, Ion selective Electrodes and Application of potentiometry. Thermal Techniques: Principle, thermal transitions and Instrumentation (Heat flux and power-compensation and designs), Modulated DSC, Hyper DSC, experimental parameters (sample preparation, experimental conditions, calibration, heating and	10 Hrs

cooling rates, resolution, source of errors) and their influence, advantage and disadvantages, pharmaceutical applications. Differential Thermal Analysis (DTA): Principle, instrumentation and advantage and disadvantages, pharmaceutical applications, derivative differential thermal analysis (DDTA). TGA: Principle, instrumentation, factors affecting results, advantage and disadvantages, pharmaceutical applications.

REFERENCES

1. Spectrometric Identification of Organic compounds - Robert M Silverstein, Sixth edition, John Wiley & Sons, 2004.
2. Principles of Instrumental Analysis - Doglas A Skoog, F. James Holler, Timothy A. Nieman, 5th edition, Eastern press, Bangalore, 1998.
3. Instrumental methods of analysis – Willards, 7th edition, CBS publishers.
4. Practical Pharmaceutical Chemistry – Beckett and Stenlake, Vol II, 4th edition, CBS Publishers, New Delhi, 1997.
5. Organic Spectroscopy - William Kemp, 3rd edition, ELBS, 1991.
6. Quantitative Analysis of Drugs in Pharmaceutical formulation - P D Sethi, 3rd Edition, CBS Publishers, New Delhi, 1997.
7. Pharmaceutical Analysis - Modern Methods – Part B - J W Munson, Vol 11, Marcel. Dekker Series
8. Spectroscopy of Organic Compounds, 2nd edn., P.S/Kalsi, Wiley estern Ltd., Delhi.

ADVANCED PHARMACOGNOSY - I
(MPG 102T)

SCOPE

To learn and understand the advances in the field of cultivation and isolation of drugs of natural origin, various phytopharmaceuticals, nutraceuticals and their medicinal use and health benefits.

OBJECTIVES

Upon completion of the course, the student shall be able to know the,

- advances in the cultivation and production of drugs
- various phyto-pharmaceuticals and their source, its utilization and medicinal value.
- various nutraceuticals/herbs and their health benefits
- Drugs of marine origin
- Pharmacovigilance of drugs of natural origin

THEORY 60 Hrs

1. Plant drug cultivation: General introduction to the importance of Pharmacognosy in herbal drug industry, Indian Council of Agricultural Research, Current Good Agricultural Practices, Current Good Cultivation Practices, Current Good Collection Practices, Conservation of medicinal plants- Ex-situ and In-situ conservation of medicinal plants. 12 Hrs

2 Marine natural products: General methods of isolation and purification, Study of Marine toxins, Recent advances in research in marine drugs, Problems faced in research on marine drugs such as taxonomical identification, chemical screening and their solution. 12 Hrs

3 Nutraceuticals: Current trends and future scope, Inorganic mineral supplements, Vitamin supplements, Digestive enzymes, Dietary fibres, Cereals and grains, Health drinks of natural origin, Antioxidants, Polyunsaturated fatty acids, Herbs as functional foods, Formulation and standardization of neutraceuticals, Regulatory aspects, FSSAI guidelines, Sources, name of marker compounds and their chemical nature, medicinal uses and health benefits of following 12 Hrs

i) Spirulina ii) Soya bean iii) Ginseng iv) Garlic v) Broccoli vi) Green and Herbal Tea vii) Flax seeds viii) Black cohosh ix) Turmeric.

4 Phytopharmaceuticals: Occurrence, isolation and characteristic features (Chemical nature, uses in pharmacy, medicinal and health benefits) of following. 12 Hrs

a) Carotenoids – i) α and β - Carotene ii) Xanthophyll (Lutein)
b) Limonoids – i) d-Limonene ii) α – Terpineol
c) Saponins – i) Shatavarins
d) Flavonoids – i) Resveratrol ii) Rutin iii) Hesperidin iv) Naringin v) Quercetin
e) Phenolic acids- Ellagic acid
f) Vitamins
g) Tocotrienols and Tocopherols
h) Andrographolide, Glycolipids, Gugulipids, Withanolides, Vascine, Taxol
i) Miscellaneous

5 Pharmacovigilance of drugs of natural origin: WHO and AYUSH guidelines for safety monitoring of natural medicine, Spontaneous reporting schemes for biodrug adverse reactions, bio drug-drug and bio drug-food interactions with suitable examples. 12 Hrs

REFERENCES (Latest Editions of)

1. Pharmacognosy - G. E. Trease and W.C. Evans. Saunders Edinburgh, New York.
2. Pharmacognosy-Tyler, Brady, Robbers
3. Modem Methods of Plant Analysis- Peach & M.V. Tracey, Vol. I&II
4. Text Book of Pharmacognosy by T.E. Wallis
5. Marine Natural Products-Vol.I to IV.
6. Natural products: A lab guide by Raphael Ikan , Academic Press 1991.
7. Glimpses of Indian Ethano Pharmacology, P. Pushpangadam. Ulf Nyman. V.George Tropical Botanic Garden & Research Institute, 1995.
8. Medicinal natural products (a biosynthetic approach), Paul M. Dewick, John Wiley & Sons Ltd., England, 1998.
9. Chemistry of Marine Natural Products- Paul J. Schewer 1973.
10. Herbal Drug Industry by RD. Choudhary, Eastern Publisher, New Delhi, 1996.
11. Cultivation of Medicinal Plants by C.K. Atal & B.M. Kapoor.
12. Cultivation and Utilization of Aromatic Plants, C.K. Atal & B.M. Kapoor
13. Cultivation of medicinal and aromatic crops, AA Farooqui and B.S. Sreeramu. University Press, 2001.

14. Natural Products from Plants, 1st edition, by Peter B. Kaufman, CRC Press, New York, 1998
15. Recent Advances in Phytochemistry- Vol. 1&4: Scikel Runeckles- Appleton Century crofts.
16. Text book of Pharmacognosy, C.K.Kokate, Purohit, Ghokhale, Nirali Prakasshan, 1996.
17. Pharmacognosy and Pharmacobiotechnology, Ashutoshkar, New Age Publications, New Delhi.

PHYTOCHEMISTRY
(MPG 103T)

SCOPE

Students shall be equipped with the knowledge of natural product drug discovery and will be able to isolate, identify and extract and the phyto-constituents

OBJECTIVES

Upon completion of the course, the student shall be able to know the,

- different classes of phytoconstituents, their biosynthetic pathways, their properties, extraction and general process of natural product drug discovery
- phytochemical fingerprinting and structure elucidation of phytoconstituents.

THEORY 60 Hrs

1. Biosynthetic pathways and Radio tracing techniques: Constituents & their Biosynthesis, Isolation, Characterization and purification with a special reference to their importance in herbal industries of following phyto-pharmaceuticals containing drugs: 12 Hrs
   a) Alkaloids: Ephedrine, Quinine, Strychynine, Piperine, Berberine, Taxol, Vinca alkoloids.
   b) Glycosides: Digitoxin, Glycyrrhizin, Sennosides, Bacosides, Quercitin.
   c) Steroids: Hecogenin, guggulosterone and withanolides
   d) Coumarin: Umbelliferone.
   e) Terpenoids: Cucurbitacins

2 Drug discovery and development: History of herbs as source of drugs and drug discovery, the lead structure selection process, structure development, product discovery process and drug registration, Selection and optimization of lead compounds with suitable examples from the following source : artemesin, andrographolides. Clinical studies emphasising on phases of clinical trials, protocol design for lead molecules. 12 Hrs

3 Extraction and Phytochemical studies: Recent advances in extractions with emphasis on selection of method and choice of solvent for extraction, successive and exhaustive extraction and other methods of extraction commonly used like microwave 12 Hrs

assisted extraction, Methods of fractionation. Separation of phytoconstituents by latest CCCET, SCFE techniques including preparative HPLC and Flash column chromatography.

4	Phytochemical finger printing: HPTLC and LCMS/GCMS applications in the characterization of herbal extracts. Structure elucidation of phytoconstituents.	12 Hrs
5	Structure elucidation of the following compounds by spectroscopic techniques like UV, IR, MS, NMR (1H, 13C) a. Carvone, Citral, Menthol b. Luteolin, Kaempferol c. Nicotine, Caffeine iv) Glycyrrhizin.	12 Hrs

REFERENCES (Latest Editions of)

1. Organic chemistry by I.L. Finar Vol.II
2. Pharmacognosy by Trease and Evans, ELBS.
3. Pharmacognosy by Tylor and Brady.
4. Text book of Pharmacognosy by Wallis.
5. Clark's isolation and Identification of drugs by A.C. Mottal.
6. Plant Drug Analysis by Wagner & Bladt.
7. Wilson and Gisvolds text book of Organic Medicinnal and Pharmaceutical Chemistry by Deorge. R.F.
8. The Chemistry of Natural Products, Edited by R.H. Thomson, Springer International Edn. 1994.
9. Natural Products Chemistry Practical Manual by Anees A Siddiqui and SeemiSiddiqui
10. Organic Chemistry of Natural Products, Vol. 1&2. Gurdeep R Chatwal.
11. Chemistry of Natural Products- Vol. 1 onwards IWPAC.
12. Modem Methods of Plant Analysis- Peach & M.V. Tracey, Vol. I&II
13. Medicinal Natural products – a biosynthetic approach, Dewick PM, John Wiley & Sons, Toronto, 1998.
14. Chemistry of Natural Products, Bhat SV, Nagasampagi BA, Meenakshi S, Narosa Publishing House, New Delhi.
15. Pharmacognosy & Phytochemistry of Medicinal Plants, 2nd edition, Bruneton J, Interceptt Ltd., New York, 1999.

INDUSTRIAL PHARMACOGNOSTICAL TECHNOLOGY
(MPG 104T)

SCOPE

To understand the Industrial and commercial potential of drugs of natural origin, integrate traditional Indian systems of medicine with modern medicine and also to know regulatory and quality policy for the trade of herbals and drugs of natural origin.

OBJECTIVES

By the end of the course the student shall be able to know,

- the requirements for setting up the herbal/natural drug industry.
- the guidelines for quality of herbal/natural medicines and regulatory issues.
- the patenting/IPR of herbals/natural drugs and trade of raw and finished materials.

THEORY 60 Hrs

1. Herbal drug industry: Infrastructure of herbal drug industry involved in production of standardized extracts and various dosage forms. Current challenges in upgrading and modernization of herbal formulations. Entrepreneurship Development, Project selection, project report, technical knowledge, Capital venture, plant design, layout and construction. Pilot plant scale -up techniques, case studies of herbal extracts. Formulation and production management of herbals. 12 Hrs

2 Regulatory requirements for setting herbal drug industry: Global marketing management. Indian and international patent law as applicable herbal drugs and natural products. Export - Import (EXIM) policy, TRIPS. 12 Hrs

Quality assurance in herbal/natural drug products.
Concepts of TQM, GMP, GLP, ISO-9000.

3 Monographs of herbal drugs: General parameters of monographs of herbal drugs and comparative study in IP, USP, Ayurvedic Pharmacopoeia, Siddha and Unani Pharmacopoeia, American herbal pharmacopoeia, British herbal pharmacopoeia, WHO guidelines in quality assessment of herbal drugs.

4 Testing of natural products and drugs: Herbal medicines - clinical laboratory testing. Stability testing of natural products, protocols. 12 Hrs

5 Patents: Indian and international patent laws, proposed amendments as applicable to herbal/natural products and process. Geographical indication, Copyright, Patentable subject maters, novelty, non obviousness, utility, enablement and best mode, procedure for Indian patent filing, patent processing, grant of patents, rights of patents, cases of patents, opposition and revocation of patents, patent search and literature, Controllers of patents. 12 Hrs

REFERENCES (Latest Editions of)

1. Herbal drug industry by R.D. Choudhary (1996), Eastern Publisher, New Delhi.
2. GMP for Botanicals - Regulatory and Quality issues on Phytomedicine by Pulok K Mukharjee (2003), Ist Edition, Business horizons Robert Verpoorte, New Delhi.
3. Quality control of herbal drugs by Pulok K Mukarjee (2002), Business Horizons Pharmaceutical Publisher, New Delhi.
4. PDR for Herbal Medicines (2000), Medicinal Economic Company, New Jersey.
5. Indian Herbal Pharmacopoeia (2002), IDMA, Mumbai.
6. Text book of Pharmacognosy by C.K. Kokate, Purohit, Gokhlae (1996), Nirali Prakashan, New Delhi.
7. Text book of Pharmacognosy and Phytochemistry by Vinod D. Rangarl (2002), Part I & II, Career Publication, Nasik, India.
8. Plant drug analysis by H.Wagner and S.Bladt, Springer, Berlin.
9. Standardization of Botanicals. Testing and extraction methods of medicinal herbs by V. Rajpal (2004), Vol.I, Eastern Publisher, New Delhi.
10. Phytochemical Dictionary. Handbook of Bioactive Compounds from Plants by J.B.Harborne, (1999), IInd Edition, Taylor and Francis Ltd, UK.
11. Herbal Medicine. Expanded Commission E Monographs by M.Blumenthal, (2004), IST Edition,
12. Drug Formulation Manual by D.P.S.Kohli and D.H.Shah (1998), Eastern Publisher, New Delhi.

PHARMACOGNOSY PRACTICAL - I
(MPG l05P)

1. Analysis of Pharmacopoeial compounds of natural origin and their formulations by UV Vis spectrophotometer
2. Analysis of recorded spectra of simple phytoconstituents
3. Experiments based on Gas Chromatography
4. Estimation of sodium/potassium by flame photometry
5. Development of fingerprint of selected medicinal plant extracts commonly used in herbal drug industry viz. Ashwagandha, Tulsi, Bael, Amla, Ginger, Aloe, Vidang, Senna, Lawsonia by TLC/HPTLC method.
6. Methods of extraction
7. Phytochemical screening
8. Demonstration of HPLC- estimation of glycerrhizin
9. Monograph analysis of clove oil
10. Monograph analysis of castor oil.
11. Identification of bioactive constituents from plant extracts
12. Formulation of different dosage forms and their standardisation.

MEDICINAL PLANT BIOTECHNOLOGY
(MPG 201T)

SCOPE

To explore the knowledge of Biotechnology and its application in the improvement of quality of medicinal plants

OBJECTIVES

Upon completion of the course, the student shall be able to,

- Know the process like genetic engineering in medicinal plants for higher yield of Phytopharmaceuticals.
- Use the biotechnological techniques for obtaining and improving the quality of natural products/medicinal plants

THEORY 60 Hrs

1. Introduction to Plant biotechnology: Historical perspectives, prospects for development of plant biotechnology as a source of medicinal agents. Applications in pharmacy and allied fields. Genetic and molecular biology as applied to pharmacognosy, study of DNA, RNA and protein replication, genetic code, regulation of gene expression, structure and complicity of genome, cell signaling, DNA recombinant technology. 12 Hrs

2 Different tissue culture techniques: Organogenesis and embryogenesis, synthetic seed and monoclonal variation, Protoplast fusion, Hairy root multiple shoot cultures and their applications. Micro propagation of medicinal and aromatic plants. Sterilization methods involved in tissue culture, gene transfer in plants and their applications. 15 Hrs

3 Immobilisation techniques & Secondary Metabolite Production: Immobilization techniques of plant cell and its application on secondary metabolite Production. Cloning of plant cell: Different methods of cloning and its applications. Advantages and disadvantages of plant cell cloning. Secondary metabolism in tissue cultures with emphasis on production of medicinal agents. Precursors and elicitors on production of secondary metabolites. 15 Hrs

4 Biotransformation and Transgenesis: Biotransformation, bioreactors for pilot and large scale cultures of plant cells and retention of biosynthetic potential in cell culture. Transgenic 13 Hrs

plants, methods used in gene identification, localization and sequencing of genes. Application of PCR in plant genome analysis.

5	Fermentation technology: Application of Fermentation technology, Production of ergot alkaloids, single cell proteins, enzymes of pharmaceutical interest.	05 Hrs

REFERENCES (Latest Editions of)

1. Plant tissue culture, Bhagwani, vol 5, Elsevier Publishers.
2. Plant cell and Tissue Culture (Lab. Manual), JRMM. Yeoman.
3. Elements in biotechnology by PK. Gupta, Rastogi Publications, New Delhi.
4. An introduction to plant tissue culture by MK. Razdan, Science Publishers.
5. Experiments in plant tissue culture by John HD and Lorin WR., Cambridge University Press.
6. Pharmaceutical biotechnology by SP. Vyas and VK. Dixit, CBS Publishers.
7. Plant cell and tissue culture by Jeffrey W. Pollard and John M Walker, Humana press.
8. Plant tissue culture by Dixon, Oxford Press, Washington DC, 1985
9. Plant tissue culture by Street.
10. Pharmacognosy by G. E. Trease and WC. Evans, Elsevier.
11. Biotechnology by Purohit and Mathur, Agro-Bio, 3rd revised edition.
12. Biotechnological applications to tissue culture by Shargool, Peter D, Shargoal, CKC Press.
13. Pharmacognosy by Varo E. Tyler, Lynn R. Brady and James E. Robberrt, That Tjen, NGO.
14. Plant Biotechnology, Ciddi Veerasham.

ADVANCED PHARMACOGNOSY - II
(MPG 202T)

SCOPE

To know and understand the Adulteration and Deterioration that occurs in herbal/natural drugs and methods of detection of the same. Study of herbal remedies and their validations, including methods of screening

OBJECTIVES

Upon completion of the course, the student shall be able to know the,

- validation of herbal remedies
- methods of detection of adulteration and evaluation techniques for the herbal drugs
- methods of screening of herbals for various biological properties

THEORY 60 Hrs

1.	Herbal remedies – Toxicity and Regulations: Herbals vs Conventional drugs, Efficacy of Herbal medicine products, Validation of herbal therapies, Pharmacodynamic and Pharmacokinetic issues.	12 Hrs
2	Adulteration and Deterioration: Introduction, Types of Adulteration/ Substitution of Herbal drugs, Causes and Measures of Adulteration, Sampling Procedures, Determination of Foreign Matter, DNA Finger printing techniques in identification of drugs of natural origin, detection of heavy metals, pesticide residues, phytotoxin, microbial contamination in herbs and their formulations.	12 Hrs
3	Ethnobotany and Ethnopharmacology: Ethnobotany in herbal drug evaluation, Impact of Ethnobotany in traditional medicine, New development in herbals, Bio-prospecting tools for drug discovery, Role of Ethnopharmacology in drug evaluation, Reverse Pharmacology.	12 Hrs
4	Analytical Profiles of herbal drugs: Andrographis paniculata, Boswellia serata, Coleus forskholii, Curcuma longa, Embelica officinalis, Psoralea corylifolia.	12 Hrs
5	Biological screening of herbal drugs: Introduction and Need for Phyto-Pharmacological Screening, New Strategies for evaluating	12 Hrs

Natural Products, In vitro evaluation techniques for Antioxidants, Antimicrobial and Anticancer drugs. In vivo evaluation techniques for Anti-inflammatory, Antiulcer, Anticancer, Wound healing, Antidiabetic, Hepatoprotective, Cardio protective, Diuretics and Antifertility, Toxicity studies as per OECD guidelines.

REFERENCES (Latest Editions of)

1. Glimpses of Indian Ethano Pharmacology by P. Pushpangadam. Ulf Nyman. V.George Tropical Botanic Garden & Research Institute.
2. Natural products: A lab guide by Raphael Ikan, Academic Press.
3. Pharmacognosy - G. E. Trease and W.C. Evans. WB. Saunders Edinburgh, New York.
4. Pharmacognosy-Tyler, Brady, Robbers, Lee & Fetiger.
5. Modem Methods of Plant Analysis- Peach & M.V. Tracey, Vol. I & II, Springer Publishers.
6. Herbal Drug Industry by RD. Choudhary, Eastern Publishers, New Delhi.
7. Text book of Pharmacognosy by C.K.Kokate, Purohit, Ghokhale, Nirali Prakashan.
8. Text Book of Pharmacognosy by T.E. Wallis, J & A Churchill Ltd., London.
9. Quality control of herbal drugs by Pulok K Mukherjee, Business Horizons Pharmaceutical Publishers, New Delhi.
10. Indian Herbal Pharmacopoeia, IDMA, Mumbai.
11. Text book of Pharmacognosy and Phytochemistry by Vinod D. RangarI, Part I & II, Career Publication, Nasik, India.
12. Plant drug analysis by H.Wagner and S.Bladt, 2nd edition, Springer, Berlin.
13. Standardization of Botanicals. Testing and extraction methods of medicinal herbs by V. Rajpal (2004), Vol.I, Eastern PublisherS, New Delhi.
14. Herbal Medicine. Expanded Commission E Monographs, M.Blumenthal.

INDIAN SYSTEMS OF MEDICINE
(MPG 203T)

SCOPE

To make the students understand thoroughly the principles, preparations of medicines of various Indian systems of medicine like Ayurveda, Siddha, Homeopathy and Unani. Also focusing on clinical research of traditional medicines, quality assurance and challenges in monitoring the safety of herbal medicines.

OBJECTIVES

After completion of the course, student is able to

- To understand the basic principles of various Indian systems of medicine
- To know the clinical research of traditional medicines, Current Good Manufacturing Practice of Indian systems of medicine and their formulations.

THEORY 60 Hrs

1. Fundamental concepts of Ayurveda, Siddha, Unani and Homoeopathy systems of medicine — 12 Hrs

   Different dosage forms of the ISM.

   Ayurveda: Ayurvedic Pharmacopoeia, Analysis of formulations and bio crude drugs with references to: Identity, purity and quality.

   Siddha: Gunapadam (Siddha Pharmacology), raw drugs/Dhatu/Jeevam in Siddha system of medicine, Purification process (Suddhi).

2 Naturopathy, Yoga and Aromatherapy practices — 12 Hrs

   a) Naturopathy - Introduction, basic principles and treatment modalities.

   b) Yoga - Introduction and Streams of Yoga. Asanas, Pranayama, Meditations and Relaxation techniques.

   c) Aromatherapy – Introduction, aroma oils for common problems, carrier oils.

3 Formulation development of various systems of medicine — 12 Hrs

   Salient features of the techniques of preparation of some of the important class of Formulations as per Ayurveda, Siddha, Homeopathy and Unani Pharmacopoeia and texts. Standardization,

   Shelf life and Stability studies of ISM formulations.

4	Schedule T – Good Manufacturing Practice of Indian systems of medicine Components of GMP (Schedule – T) and its objectives, Infrastructural requirements, working space, storage area, machinery and equipments, standard operating procedures, health and hygiene, documentation and records. Quality assurance in ISM formulation industry - GAP, GMP and GLP. Preparation of documents for new drug application and export registration. Challenges in monitoring the safety of herbal medicines: Regulation, quality assurance and control, National/Regional Pharmacopoeias.	12 Hrs
5	TKDL, Geographical indication Bill, Government bills in AYUSH, ISM, CCRAS, CCRS, CCRH, CCRU	12 Hrs

REFERENCES (Latest Editions of)

1. Ayurvedic Pharmacopoeia, The Controller of Publications, Civil Lines, Govt. of India, New Delhi.
2. Hand Book on Ayurvedic Medicines, H. Panda, National Institute of Industrial Research, New Delhi.
3. Ayurvedic System of Medicine, Kaviraj Nagendranath Sengupata, Sri Satguru Publications, New Delhi.
4. Ayurvedic Pharmacopoeia. Formulary of Ayurvedic Medicines, IMCOPS, Chennai.
5. Homeopathic Pharmacopoeia. Formulary of Homeopathic Medicines, IMCOPS, Chennai.
6. Homeopathic Pharmacy : An introduction & Hand book, Steven B. Kayne, Churchill Livingstone, New York.
7. Indian Herbal Pharmacopoeia, IDMA, Mumbai.
8. British Herbal Pharmacopoeia, bRITISH Herbal Medicine Association, UK.
9. GMP for Botanicals - Regulatory and Quality issues on Phytomedicine, Pulok K Mukharjee, Business Horizons, New Delhi.
10. Indian System of Medicine and Homeopathy in India, Planning and Evaluation Cell, Govt. of India, New Delhi.
11. Essential of Food and Nutrition, Swaminathan, Bappco, Bangalore.
12. Clinical Dietitics and Nutrition, F.P. Antia, Oxford University Press, Delhi.
13. Yoga - The Science of Holistic Living by V.K.Yoga, Vivekananda Yoga Prakashna Publishing, Bangalore.

HERBAL COSMETICS
(MPG 204T)

SCOPE

This subject deals with the study of preparation and standardization of herbal/natural cosmetics. This subject gives emphasis to various national and international standards prescribed regarding herbal cosmeceuticals.

OBJECTIVES

After completion of the course, student shall be able to,

- understand the basic principles of various herbal/natural cosmetic preparations
- current Good Manufacturing Practices of herbal/natural cosmetics as per the regulatory authorities

THEORY 60 Hrs

1.	Introduction: Herbal/natural cosmetics, Classification & Economic aspects. Regulatory Provisions relation to manufacture of cosmetics: - License, GMP, offences & Penalties, Import & Export of Herbal/natural cosmetics, Industries involved in the production of Herbal/natural cosmetics.	12 Hrs
2	Commonly used herbal cosmetics, raw materials, preservatives, surfactants, humectants, oils, colors, and some functional herbs, preformulation studies, compatibility studies, possible interactions between chemicals and herbs, design of herbal cosmetic formulation.	12 Hrs
3	Herbal Cosmetics : Physiology and chemistry of skin and pigmentation, hairs, scalp, lips and nail, Cleansing cream, Lotions, Face powders, Face packs, Lipsticks, Bath products, soaps and baby product, Preparation and standardisation of the following : Tonic, Bleaches, Dentifrices and Mouth washes & Tooth Pastes, Cosmetics for Nails.	12 Hrs
4	Cosmeceuticals of herbal and natural origin: Hair growth formulations, Shampoos, Conditioners, Colorants & hair oils, Fairness formulations, vanishing & foundation creams, anti-sun burn preparations, moisturizing creams, deodorants.	12 Hrs

5	Analysis of Cosmetics, Toxicity screening and test methods: Quality control and toxicity studies as per Drug and Cosmetics Act.	12 Hrs

REFERENCES (Latest Editions of)

1. Panda H. Herbal Cosmetics (Hand book), Asia Pacific Business Press Inc, New Delhi.
2. Thomson EG. Modern Cosmetics, Universal Publishing Corporation, Mumbai.
3. P.P.Sharma. Cosmetics - Formulation, Manufacturing & Quality Control, Vandana Publications, New Delhi.
4. Supriya K B. Handbook of Aromatic Plants, Pointer Publishers, Jaipur.
5. Skaria P. Aromatic Plants (Horticulture Science Series), New India Publishing Agency, New Delhi.
6. Kathi Keville and Mindy Green. Aromatheraphy (A Complete Guide to the Healing Art), Sri Satguru Publications, New Delhi.
7. Chattopadhyay PK. Herbal Cosmetics & Ayurvedic Medicines (EOU), National Institute of Industrial Research, Delhi.
8. Balsam MS & Edward Sagarin. Cosmetics Science and Technology, Wiley Interscience, New York.

HERBAL COSMETICS PRACTICALS
(MPG 205P)

1. Isolation of nucleic acid from cauliflower heads
2. Isolation of RNA from yeast
3. Quantitative estimation of DNA
4. Immobilization technique
5. Establishment of callus culture
6. Establishment of suspension culture
7. Estimation of aldehyde contents of volatile oils
8. Estimation of total phenolic content in herbal raw materials
9. Estimation of total alkaloid content in herbal raw materials
10. Estimation of total flavonoid content in herbal raw materials
11. Preparation and standardization of various simple dosage forms from Ayurvedic, Siddha, Homoeopathy and Unani formulary
12. Preparation of certain Aromatherapy formulations
13. Preparation of herbal cosmetic formulation such as lip balm, lipstick, facial cream, herbal hair and nail care products
14. Evaluation of herbal tablets and capsules
15. Preparation of sunscreen, UV protection cream, skin care formulations.
16. Formulation & standardization of herbal cough syrup.

Semester III

MRM 301T - Research Methodology & Biostatistics

UNIT – I

General Research Methodology: Research, objective, requirements, practical difficulties, review of literature, study design, types of studies, strategies to eliminate errors/bias, controls, randomization, crossover design, placebo, blinding techniques.

UNIT – II

Biostatistics: Definition, application, sample size, importance of sample size, factors influencing sample size, dropouts, statistical tests of significance, type of significance tests, parametric tests(students "t" test, ANOVA, Correlation coefficient, regression), non-parametric tests (wilcoxan rank tests, analysis of variance, correlation, chi square test), null hypothesis, P values, degree of freedom, interpretation of P values.

UNIT – III

Medical Research: History, values in medical ethics, autonomy, beneficence, non-maleficence, double effect, conflicts between autonomy and beneficence/non-maleficence, euthanasia, informed consent, confidentiality, criticisms of orthodox medical ethics, importance of communication, control resolution, guidelines, ethics committees, cultural concerns, truth telling, online business practices, conflicts of interest, referral, vendor relationships, treatment of family members, sexual relationships, fatality.

UNIT – IV

CPCSEA guidelines for laboratory animal facility: Goals, veterinary care, quarantine, surveillance, diagnosis, treatment and control of disease, personal hygiene, location of animal facilities to laboratories, anesthesia, euthanasia, physical facilities, environment, animal husbandry, record keeping, SOPs, personnel and training, transport of lab animals.

UNIT – V

Declaration of Helsinki: History, introduction, basic principles for all medical research, and additional principles for medical research combined with medical care.

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