TEACHING PLAN: INDUSTRIAL ENGINEERING B.Tech. 4th SEM.

SCHOOL OF ENGINEERING AND TECHNOLOGY		**ACADEMIC SESSION: 2022-23**	**FOR STUDENTS' BATCH: 2021-2025**
1	**Course code**	**PCC-ME-214**	
2	**Course Title**	**INDUSTRIAL ENGINEERING.**	
3	**Credits**	**4**	
4	**Learning Hours**	**Contact Hours: 3** **Practical Teaching: 0** **Project, Tutorial, and Assessment: 1** **Total hours: 4**	
5	**Course Objective**	1. To increase productivity 2. To understand and identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics. 3. To eliminate waste and non-value-added activities. 4. To come up with the optimum use of scarce resources that would bring out the best results.. 5. To understand appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions..	
6	**Course Outcomes**	At the end of the course the learners will be able to CO 1: Ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics. CO 2 : An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global Factors. CO 3 : An ability to communicate effectively with a range of audiences. CO 4 : An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives. CO 5 : An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.	
7	**Outline syllabus:** Production system and Productivity, Manufacturing Cost Analysis: Fixed & variable costs, Work Study, Materials Management: Strategic importance, Production Planning & Control (PPC).		

7.01	**Paper Code**	**Unit**	**Introduction**	**Reference number**	**Teaching methods**
	PCC-ME-214	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.	Production & Operations Management – Chary, TMH, New Delhi.	White Board, PPT

			Productivity definition, various methods of measurement, Factors effecting productivity, Strategies for improving productivity.		
		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.	Production & Operations Management – Chary, TMH, New Delhi.	White Board, PPT
		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.	Production & Operations Management – Chary, TMH, New Delhi.	White Board, PPT
		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.	Production & Operations Management – Chary, TMH, New Delhi.	White Board, PPT
		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	Production & Operations Management – Chary, TMH, New Delhi..	White Board, PPT

			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. Cantilever & simply supported beam with concentrated, distributed load.		

8	**Course Evaluation**	
8.10	**CA: 20%**	
8.1	**Attendance**	10%
8.12	**Homework**	10%
8.13	**Quizzes**	-
8.14	**Projects**	-
8.15	**Presentation**	-
8.16	**Any other**	-
8.2	**MTE(IA)**	20%
8.3	**End-term examination: 60%**	
9	**Text Books & References**	
9.1	**Text 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. .
9.2	**References**	1. Production & Operations Management - Martinich, John Wiely SE. 2. Industrial & Systems Engineering - Turner, Mize, Case, Prentice Hall Pub. 3. Industrial Engineering & Operations Management – SK Sharma, Pub-S. K.Kataria 4. Industrial Engineering – Ravi Shankar, Galgotia Pub
9.3	**Video References**	https://nptel.ac.in/courses/112106286 https://www.youtube.com/watch?v=qGpIyQgZdHI

Mapping of Outcomes v. Topics

Course Outcome	Program Outcome												PSO			
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4
CO1	3	3	3	3	3	3	2	1	3	2	2	3	3	3	3	2
CO2	3	3	3	3	3	3	2	1	2	2	2	3	3	3	3	2
CO3	3	3	3	3	3	2	2	1	2	2	2	3	3	3	3	2
CO4	3	3	3	3	3	3	3	1	2	2	2	3	3	3	3	2
CO5	3	3	3	3	3	3	3	1	2	3	2	3	3	3	3	2

QUESTION BANK

1. What should be the ultimate aim of an industrial engineer?
2. What is the interest for industrial engineering?
3. What are the benefits of industrial engineering?
4. What is the main objective of every industry?
5. What are the main objectives of industrial development in India?
6. What is productivity in production system?
7. What is difference between production and productivity?
8. What do you mean by production system?
9. What are the 4 types of production system?
10. What is the difference between production and productivity and efficiency?
11. What are the factors affecting productivity?
12. What is the importance of production system?
13. What is the purpose of a production system?
14. What are the main functions of production system?
15. How do you Analyse manufacturing costs?
16. What are the 3 elements of the manufacturing costs?
17. What are the three types of cost analysis?
18. What is manufacturing cost estimation?
19. What falls under manufacturing costs?
20. What are manufacturing costs examples?
21. What are cost analysis methods?
22. What are cost analysis techniques?
23. What are the cost analysis tools?
24. What are the 4 types of manufacturing?
25. What are the components of work study in industrial engineering?
26. What is included in work study?
27. What is work study and method study?
28. What is work study and its importance?
29. What are the four aspects of work-study?
30. What are the two types of work-study?
31. Which are two main methods of work-study?
32. What are the rules of work-study?
33. What is work-study UTM?
34. What are characteristics of work-study?
35. What are the benefits of a work-study degree?
36. What is work-study in one sentence?
37. What is material management in industrial engineering?
38. What do you mean by materials management?
39. What are the 5 R's of material management?
40. What is the main function of material management?
41. What is the scope of materials management?
42. What are the basic principles of material management?
43. What are the benefits of material management?
44. What are the 4 types of inventory?
45. What are the three objectives of material management?
46. How many types of materials are there?
47. What is the full form of 5r principle?
48. What is production planning and control in industrial engineering?
49. What is production planning and control process?
50. What is the role of production planning and control engineer?
51. What are the 5 steps to production planning?
52. What are the types of production planning and control?
53. What are the main functions of production planning and control?
54. What is the principle of production planning and control *?
55. What are the tools of production planning and control?
56. What are the three phases of production planning and control?
57. What are the 3 sections of production control?