RAFFLES UNIVERSITY

TEACHING PLAN: Rainfed Agriculture and Watershed Management

SCHOOL: (SOAS) SCHOOL OF AGRICULTURAL SCIENCES		**ACADEMIC SESSION: 2023 – 2024**		**FOR STUDENTS' BATCH: 2021-2025**
1	**Course No.**	**AAG-T-303**		
2	**Course Title**	**Rainfed Agriculture and Watershed Management**		
3	**Credits**	**2 (1+1)**		
4	**Learning Hours**	**Contact Hours**	**72**	
		Assessment	**9**	
		Guided Study	**9**	
		Total hours	**90**	
5	**Course Objective**	1. Students learn basic knowledge of rain fed agriculture and water shed management. 2. Study the crop adaptation and mitigation strategies, crop planning and crop management techniques. 3. Main objective is to increase/stabilize production of crops, forage, fruits, fuel and timber in rainfed areas by introduction of improved soil and moisture conservation measures, better crop and range land management practices.		
6	**Course Outcomes**	1. Student can able to understand objective, principles and component of watershed management 2. Student can able to understand about rainfed agriculture and its introduction, problem and prospects in India and management of crops in rainfed areas 3. Student can able to understand about the soil and climatic conditions of rainfed areas 4. Student can able to understand about the drought , crop adaptation and mitigation to drought, water conservation techniques and contingent crop planning for aberrant weather conditions 5. Student can able to understand about the water harvesting and efficient utilization of water through soil and crop management practices		
7	**Outline syllabus:**			

7.01	**Paper Code**	**Unit**	**Introduction**	**Page Numbers**	**Lectures**
7.02	**BL**	Unit I	1. Rainfed agriculture: Introduction, types, History of rainfed agriculture and watershed in India 2. Problems and prospects of rainfed agriculture in India.	245-256	3
		Unit II	1. Soil and climatic conditions prevalent in rainfed areas 2. Soil and water conservation techniques 3. Drought: types 4. Effect of water deficit on physio-morphological characteristics of the plants	257-266	4
		Unit III	1. Crop adaptation and mitigation to drought 2. Water harvesting: importance, its techniques 3. Efficient utilization of water through soil and crop management practices 4. Management of crops in rainfed areas	267-277	4
7.03		Unit IV	1. Contingent crop planning for aberrant weather conditions 2. Concept, objective, principles and components of watershed management	277-300	3

8	**Course Evaluation**	
8.1	**CA: 10%**	
8.11	**Attendance**	--
8.12	**Homework**	2 Assignments- 10%
8.13	**Quizzes**	--
8.14	**Projects**	-
8.15	**Presentation**	-

8.16	**Any other**	Practical examination-30%
8.2	**MTE**	10%
8.3	**End-term examination: 50%**	
9	**Text Books & References**	
9.1	**Text book**	
9.2	**References**	1. Principles of Agronomy, S R Reddy 2. Rainfed Agriculture and Watershed Management by Dr. Rayees Ahmad Shah, Kushal Publication 2017 3. Principles of Agronomy, T. Yellamanda Reddy and G.H. Sankara Reddi 4. Watershed Management, V.V. Dhruva Narayana, G. Sastry and U. S. Patnaik 5. Principles of Crop Production, S R Reddy 6. Sustainable Dryland Farming, Arvind M Dhopte 7. Fundamentals of Watershed Management, Singh G. D. & Poonia T. C. 8. Principles and Practices of Dryland Agriculture, K. Govindan & V. Thirumuruan 9. Dry Farming for Sustainable Agriculture, John A. Widtsoe 10. Watershed Management for Sustainable Agriculture, M. A. Khan 11. Rainfed Farming, M. L. Jat, J.K. Balyan, A.K. Kothari and L. K. Jain
9.3	**Video References**	1. https://www.youtube.com/watch?v=AsCJXzvAjL8 2. https://www.youtube.com/watch?v=ppXLnrcQ2SA 3. https://www.youtube.com/watch?v=YVXBLwA6PRs 4. https://www.youtube.com/watch?v=6ZNYqHa01rk 5. https://www.youtube.com/watch?v=XYp5QnbF2JA 6. https://www.youtube.com/watch?v=zHL83xL9uCA 7. https://www.youtube.com/watch?v=zC6I1IedxBs 8. https://www.youtube.com/watch?v=LYl8bLWccpE 9. https://www.youtube.com/watch?v=Yef1kbJk8w4 10. https://www.youtube.com/watch?v=YJvJdNMPpeY 11. https://www.youtube.com/watch?v=Tn79raFHdU8 12. https://www.youtube.com/watch?v=5Waj-9LAMBQ 13. https://www.youtube.com/watch?v=9_yB0qyscDk&list=PLY2dc7q4qC_xf2GlDGHohUTPsEUGTu2wn&index=4

Mapping of Outcomes v. Topics

Outcome no. → Syllabus topic↓	1	2	3	4	5
Paper Code.Unit I (1)		✓			
Paper Code. Unit I (2)		✓			
Paper Code.Unit II (1)			✓		
Paper Code. Unit II(2)				✓	
Paper Code. Unit II(3)				✓	
Paper Code. Unit II(4)				✓	
Paper Code.Unit III (1)				✓	
Paper Code. Unit III(2)					✓
Paper Code. Unit III(3)					✓
Paper Code. Unit III(4)		✓			
Paper Code.Unit IV (1)				✓	
Paper Code. Unit IV(2)	✓				

LEADING CASES:

QUESTION BANK

1. Explain aberrant weather conditions in dryland areas?
2. Define agroforestry. Discuss its importance in dryland agriculture?
3. What is watershed management? What are its components?
4. Discuss the objectives and importance of watershed management in brief.
5. Explain antitranspirants and their types. Discuss detail about the practical utility of antitranspirants in agriculture.

6. Define atmospheric drought. Suggest an appropriate crop plan for a farm which is situated under dry land conditions.
7. What is rainfed farming? Discuss the technologies for stabilizing agriculture production in rainfed areas.
8. What is multiple cropping? Give its significance in increasing the crop production.
9. Discuss the effect of environmental factors on crop distribution and production.
10. Discuss how contingent crop planning helps in dryland agriculture.
11. Discuss the significance of advance farm planning for optimum use of resources.
12. Write short notes on water harvesting?
13. Explain the objectives of water harvestings?
14. Write the principles of watershed management?
15. Explain the components of watershed management?
16. Write the Concept of watershed management?
17. Write the objective, of watershed management?
18. Write the drought adaptation mechanism of crops to drought conditions?
19. Write the rainfall pattern of rainfed areas?
20. Effect of drought on morpho-physiological characteristics of plants?
21. What is drought? Classify different types of drought?
22. Define Agriculture drought and its types?
23. Contingent crop planning for aberrant weather conditions in Alwar region of Rajasthan?
24. Write the techniques of soil and water conservation?
25. Write the problems and prospects of rainfed agriculture in India.
26. Write short notes on efficient utilization of water through soil and crop management practices?
27. Management of crops in rainfed areas?
28. Write the importance of water harvesting?
29. Strategies for sustained production in rainfed agriculture
30. Difference between rainfed farming, dryland farming and dry farming?

PROJECTS (To be given to group of students)
