



FORMAT FOR COURSE CURRICULUM

Course Title: Principles and Practices of Water Management

Credit Units: 04

Course Level: PG

Course Code: AGRI 607

Course Objectives: To teach the basic principles of water management and practices to enhance water productivity

Pre-requisites: Fundamental understanding of water management and basic practices to enhance water productivity in field.

L	T	P/S	SW/FW	No. of PSDA	TOTAL CREDIT UNITS
2	0	2	2	4	4

Course Contents/Syllabus:

	Weightage (%)
Module I Introduction Descriptors/Topics <ul style="list-style-type: none"> • Water and its role in plants; water resources of India, major irrigation projects, extent of area and crops irrigated in India and different states. • Soil-plant-atmosphere continuum, soil water movement in soil and plants, transpiration, soil-water- plant relationships, water absorption by plants, plant response to water stress, crop plant adaptation to moisture stress condition. 	25%
Module II Descriptors/Topics <ul style="list-style-type: none"> • Soil, plant and meteorological factors determining water needs of crops; scheduling, depth and methods of irrigation; micro-irrigation system; fertigation; management of water in controlled environments and polyhouses. • Water management of crops and cropping systems, management of soil moisture stress and plant growth, strategies of using limited water supply, quality of irrigation water and management of saline water for irrigation, water-use efficiency. 	25%
Module III	25%

Descriptors/Topics <ul style="list-style-type: none"> • Water stress – deficit and excess, its effect on growth and development, water stress injury and resistance, 25management of water stress through soil and crop manipulations, excess soil water and plant growth; water management in problem soils. • Drainage - concept and classification. Field drainage systems with special emphasis on crop production and soil salinity. Inter-relationship of drainage with cropping patterns and types of farming. Drainage requirement of crops and methods of field drainage, their layout and spacing. 	
Module IV	25%
Descriptors/Topics <ul style="list-style-type: none"> • Land suitability for irrigation, land classification; integrated water management in command areas, institution of water management in commands, farmer’s participation in command areas; irrigation legislation. • Precision Farming Concept. 	

Student Learning Outcomes:

- Understand basic principles of water management and practices to enhance water productivity.
- Develop and understanding various practices to enhance water productivity in field
- Analyze and understand inter-relationship of drainage with cropping patterns and types of farming

Pedagogy for Course Delivery:

The course pedagogy will consist of 4 quadrants as per 4 quadrant approach of e-content. The first quadrant will include e-tutorial of the topics; the second quadrant will include notes/handouts/course materials; the third quadrant involves discussion of the topics; and, the final quadrant will include assessment. In addition, the course involves experiments and self-work by students on application of the topics covered.

List of Professional Skill Development Activities (PSDA):

1. Estimation of drain spacing under surface and sub-surface method. (Case Study)
2. Soil moisture constants and measurement. (Case Study)
3. Measurement of evapo- transpiration and water requirement of crops. (Home Assignment)
4. Water management experiments – planning, conduct, recording of data and interpretation. (Class Presentation)

List of Experiments:

- Measurement of soil water potential by using tensiometer and other methods.
- Preparation of soil-moisture characteristic curves.
- Water flow measurements using different devices.

- Determination of irrigation requirement and irrigation efficiency.
- Determination of infiltration rate, saturated/unsaturated hydraulic conductivity

Assessment/ Examination Scheme:

Theory L/T (%)	Lab/Practical/Studio (%)
75	25

Theory Assessment (L&T):

Continuous Assessment/Internal Assessment (__%)					End Term Examination (__%)
Components (Drop down)	HA	Q	C	A	End Sem Exam
Linkage of PSDA with Internal Assessment Component, if any	PSDA-1 to 4		PSDA-1 to 4		
Weightage (%)	10	15	10	05	60

Lab/ Practical/ Studio Assessment:

Continuous Assessment/Internal Assessment (__%)					End Term Examination (__%)	
Components (Drop down)	CT/quiz	Viva Voce	P	A	EE	TP
Weightage (%)	15	5	15	5	60	100

Mapping Continuous Evaluation Components/PSDA with CLOs:

Bloom's Level >	Remembering	Understanding	Applying	Analysing	Evaluating	Creating
Course Learning Outcomes	CLO1	CLO2	CLO3	CLO4	CLO5	CLO 6
Assessment type/PSDA						
Case Study	✓		✓		✓	✓
Case Study		✓			✓	
Class Presentation	✓					✓

Home Assignment	✓	✓	✓	✓		
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Text Reading:

- Lenka, D. 1999. Irrigation and Drainage. Kalyani Publ.
- Michael, A.M. 1978. Irrigation: Theory and Practice. Vikas Publ.
- Panda, S.C. 2003. Principles and Practices of Water Management. Agrobios.
- Prihar, S.S. and Sandhu, B.S. 1987. Irrigation of Food Crops - Principles and Practices. ICAR. Reddy, S.R. 2000. Principles of Crop Production. Kalyani Publ.
- Singh, Pratap and Maliwal, P.L. 2005. Technologies for Food Security and Sustainable Agriculture. Agrotech Publ.
- References:

Additional Reading:

Any other Study Material

