GUJARAT TECHNOLOGICAL UNIVERSITY

Master of Engineering Syllabus

Subject Code : 3726503

Subject Name : IRRIGATION WATER MANAGEMENT

WEF Academic Year:	2023-24
Semester:	II
Category of the Course:	Program Elective II

Prerequisite :	Fundamental knowledge of irrigation engineering, soil water plant relationship, consumptive use of water.
Rationale :	Students will be able to understand irrigation efficiency, methods of irrigation, surface and sub-surface drainage system, automation and regulation of canal.

Course Scheme:

Teaching Scheme			Total Credits	Assessment Pattern and Marks				Total Marks
				Theory		Practical		
L	T	PR	C	ESE (E)	PA(M)	ESE (V)	PA (I)	
3	0	2	4	70	30	30	20	150

Course Content:

Sr. No.	Course Content	No. of Hours	% of Weightage
1	Water resource availability; Concept of crop water requirement; Direct and Indirect measurements/estimation of crop water requirement, water quality, Irrigation water standards, Soil water-plant relationship, Crop planning and crop patterns, Determination of consumptive use of crops, Conjunctive use of surface water and groundwater	12	30
2	Irrigation efficiency, Irrigation scheduling, Methods of crop improvement, Soil and fertility management, Irrigation water application methods-surface methods, Simulation of flow in surface irrigation systems, Performance evaluation, Sensitivity analysis, parameter estimation, sprinkler and drip irrigation method	11	30
3	Drainage of water-logged areas, Surface and subsurface drainage systems, Saline and alkaline soils, Plants response to saline soils, Salt-tolerant crops, Reclamation and management of salt-affected soils, Measurement of irrigation water, Water Quality modelling, Desalination of irrigation water, Remote Sensing.	10	20

4	Automation and control and regulation of canals, Operation and management of irrigation projects, Command area development organization and their role in water management, Modernization of existing irrigation projects.	9	20
	Total	**42**	**100**

Reference Book:

1. Irrigation-Theory and practice - A.M.Michael
2. Modern irrigated soils - D.W. James, R.J. Hanks & Jurinak
3. Crop water requirements FAO publications No. 24
4. Arid Land Irrigation in Developing countries, Environmental problems & effects Pergamon press Oxford University 1977
5. Sprinkler Irrigation – Melvyn Kay
6. Drip Irrigation – S. K. Sharma
7. Surface Irrigation Systems – Walker & Skogerboe
8. Drainage Manual

Course Outcome:

After Completion of the Course, Student will able to:

No	Course Outcomes	RBT Level*
01	Implement quality and efficient use of irrigation water.	25
02	Apply soil-water-plant relationship and determine consumptive use of crops.	25
03	Design irrigation methods.	20
04	Analyze automation and control of canals.	15
05	Operate and maintain irrigation projects	15

List of Practical's based on:

1. Water use management
2. The methods of irrigation
3. Soil water relationship in detail
4. Determination of consumptive use of water
5. Study of: (a) Irrigation scheduling (b) Soil fertility management (c) Sprinkler irrigation (d) Drip irrigation (e) Conjunctive use of surface water and ground water (f) How the salt affected soil can be reclaimed
6. Command area development demarcation

List of Open Source Software/learning website:

1. http://en.wikipedia.org/wiki/Category:Hydraulic_engineering

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