

Branch Name:	Civil engineering
Program Code:	ET401
Course Name:	Irrigation Engineering
Course Code:	2ET4010603
Pre-requisite Course:	---

COURSE OBJECTIVE:

The content should be taught and implemented with the aim to develop skills so that students are able to acquire following competencies:

1. To learn estimation of hydrological parameters.
2. To understand water demand of crops and provisions to meet the same.
3. To know planning of reservoirs and dams.
4. To know about irrigation projects, canals and other diversion works.
5. To know about water logging and land reclamation.

TEACHING AND EVALUATION SCHEME:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)			
Lecture	Tutorial	Practical	Credit	Theory		Practical	
				University Assessment	Continuous Assessment	University Assessment	Continuous assessment
03	-	02	04	60	40	20	30

DETAILS OF COURSE CONTENTS:

S.NO.	TOPIC	Total Hrs.	WEIGHTAGE
1	Water Requirement of Crops 1.1 Need and scope of irrigation Engineering, related terms: Duty, Delta, Base period, Crop period, Kor period, Core depth, Demand, Gross command area, Cultivable Command area, Intensity of Irrigation, Time factor, Capacity factor and Overlap allowance. 1.2 Types of irrigation projects 1.3 Methods of irrigation 1.4 Ill effects of over irrigation 1.5 Soil characteristics: Suitability for crops, Water holding capacity, Soil moisture, Quality of irrigation water 1.6 Consumptive use of water 1.7 Efficiencies- assessment of irrigation water	09	22%

2	Advanced Irrigation Methods 2.1. Advanced irrigation Methods: Sprinkler irrigation Drip irrigation 2.2. Differentiate between sprinkler and drip irrigation 2.3. State the precautions and maintenance of sprinkler and drip irrigation system	08	18%
3	Reservoir Planning 3.1. Survey for irrigation project 3.2. Methods of calculating capacity of Reservoir 3.3. Data collected for irrigation project 3.4. Area capacity curve 3.5. Sedimentation of reservoir 3.6. Reservoir sediment control	07	16%
4	Dams and Spillways 4.1. Various types of dams and the various factors affecting their site selection 4.2. Differentiate the earthen and gravity dams 4.3. State types of failures of dams and their remedial measures 4.4. Major features of different types of spillways and their appropriate locations 4.5. Types of failures of Spillways and their remedial measures	07	18%
5	Diversion Head Works 5.1. Purpose of diversion headwork 5.2. Component of headwork 5.3. Bligh's and Khosla's theory 5.4. Causes of failure of weirs and their remedies 5.5. Design of impervious floor for sub-surface flow	07	16%
6	Water Logging and Land Reclamation 6.1 Water logging: causes, ill-effects, Preventive measures 6.2 Flood control 6.3 Design flood, maximum possible flood 6.4 Salt efflorescence 6.5 Reclamation of land	04	10%

LIST OF PRACTICAL:

Sr. No.	Experiment / Exercises
1	Draw Sketches of 1. Methods of Irrigation 2. Layout of drip irrigation 3. Layout of sprinkler irrigation 4. Types of Spillways 5. Diversion head work
2	Solve Numerical From Given Data to 1. Compute base period, duty and delta 2. Calculate CCA, GCA, IA 3. Design sprinkler Irrigation system 4. Design drip Irrigation system 5. Calculate the reservoir capacity
3	Visit Field and Prepare Report 1. Arrange field visit to irrigation department. 2. Arrange field visit to nearby irrigation project.
4	Case study A case study of water distribution system and prepare report.

LIST OF REFERENCES:

Sr.No	Title	Author
1	Irrigation Theory and Practice	A.M.Mitchel
2	Irrigation, Water Resources and Water Power Engg.	Dr. P.N. Modi
3	Hydrology and Water Resources	R.K. Sharma
4	Hydrology and Water Resources Engg.	S.K.Garg
5	Water Resources Engg. Principles and Practice	C. Satyanarayan Murthy

LIST OF OPEN SOURCE SOFTWARE/LEARNING WEBSITE:

- 1) www.academia.edu
- 2) www.nptel.iitm.ac.in
- 3) "https://en.wikipedia.org/w/index.php?title=Dumbwaiter_(elevator)&oldid=621761813"
- 4) www.bis.org.in/sf/nbc.htm
- 5) cpwd.gov.in/Units/handbook.pdf
- 6) <https://www.civilengineeringnews.tk/2014/07/methods-of-demolition-of-building.html>
thecontractor.org

Course Learning Outcomes (CLO): On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	Explain various methods of irrigation.	1 Remembering 2 Understanding
CLO2	Compute water requirement for crops.	2 Understanding 4 Analyzing
CLO3	Implement sprinkler irrigation system and drip irrigation system.	1 Remembering 2 Understanding
CLO4	Select relevant diversion head works for the specific site conditions.	2 Understanding 3 Apply
CLO5	Explain the methods to control the level in Reservoir Planning.	2 Understanding 3 Apply
CLO6	Explain about the water logging and land reclamation.	1 Remembering 2 Understanding 3 Apply

Course Learning Outcomes	Program Outcomes(Pos)											
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CLO1	I		L		L			L				
CLO2												
CLO3	H		I		L	L	I	M		I		
CLO4	M											
CLO5			H					L		L		
CLO6	H	L		I	I	M			H			

H: High, M: Medium, L: Low