GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Master of Engineering

Level: PG

Branch: Civil Engineering

Subject Code: ME02065041

Subject Name: Water Resources Planning

w. e. f. Academic Year:	2024-2025
Semester:	2
Category of the Course:	Professional Elective Course

Prerequisite:	Fundamental knowledge of irrigation, benefit cost analysis, reservoir operations and reservoir capacity.
Rationale :	Students will be able to understand economic analysis of a water resources project, benefit cost analysis and allocation of cost to various elements of project

Course Outcome:

After Completion of the Course, Student will able to:

No	Course Outcomes	RBT Level
01	Plan water resources project	U, R
02	Carry out economics Analysis of water resources project.	U, A
03	Optimize allocation of water for different purposes .	A, E
04	Determine reservoir capacity and operate reservoir for optimum benefits.	A, N, C
05	Apply water laws and policies for dispute resolution.	A , R

**Revised Bloom's Taxonomy (RBT)*

Teaching and Examination Scheme:

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

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Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1	River valley development projects, estimation of available water resources and demand patterns, Fixing objectives, Data required for project formulation, Study of various alternatives, Feasibility, Planning of multipurpose projects, Economics of water resources projects, Benefit-cost analysis, case discount flow methods, Dynamics of project analysis	22	50
2	Economic planning by project purpose, Methods of allocation, cost to various purposes of project, Reservoir capacity, reservoir working tables, Reservoir operation for optimum benefits, simulation techniques, Water law and policies, Interstate and international problems, Economic, environmental and social impact on water resources projects, Risk and uncertainty considerations in water resources planning, financing of water development projects.	23	50
	Total	**45**	**100**

Suggested Specification Table with Marks (Theory):

Distribution of Theory Marks (in %)					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
20	15	20	20	20	5

Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (as per Revised Bloom's Taxonomy)

References/Suggested Learning Resources:

(a) Books:

1. Economics of water resources planning – L. Douglas James
2. Water resources engineering – Linsley&Franzini
3. Water resources project economics - Edward Kuiper
4. Water resources development - Edward Kuiper
5. Principles of Water Resources Planning – S. Goodman
6. Management of water projects – OECD
7. Water Resources Planning – N.S.Grigg

8. Water Resources Planning and Management – Helweg O. G

(b) Open source software and website:

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

Suggested Course Practical List: If any

List of experiments:

(i) River valley project study
(ii) Economic analysis of water resource project
(iii) Reservoir operation
(iv) Environmental impact of water resource project.
(v) Risk factor analysis and impact

List of Laboratory/Learning Resources Required:

Major equipment: Open Cannel

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