GUJARAT TECHNOLOGICAL UNIVERSITY

CIVIL (WATER RESOURCES ENGINEERING) (33)
Master of Engineering
Subject Code: 3733303
Semester – III
Subject Name: Flood Management

Type of course: Program Elective-V

Prerequisite: Hydrology and channel hydraulics

Rationale:
Students will be able to understand flood assessment and management using various Geo-spatial techniques and mathematical modeling. They will also be able to understand flood warning system and flood forecasting methods.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks				Total Marks
L	T	P	C	Theory Marks		Practical Marks		
				ESE (E)	PA (M)	ESE (V)	PA (I)	
2	0	2	3	70	30	30	20	150

Content:

Sr. No.	Content	Total Hrs
1	Criteria for sustainable water management, integrated catchment management.	3
2	Flows in catchments, water resources and floods and its causes, damages caused by flood	3
3	Principles of flood management, strategies of intervention, comparing the options, stakeholder's involvement and project appraisal, structural and non-structural measures.	5
4	Flood assessment using Geo-spatial techniques and mathematical modelling	3
5	Flood routing in channels and reservoirs. Flood routing using numerical methods, HEC-RAS applications.	6
6	Reservoir operations, Real-time flood warning system and flood forecasting.	3
7	Flood management as changing risks, frequency approaches vs. time series, risk vs. uncertainty, flood and ecosystem.	6
8	Vulnerability to floods, impact of floods, assessing the risk, flood damage analysis and flood control measures.	2

GUJARAT TECHNOLOGICAL UNIVERSITY

CIVIL (WATER RESOURCES ENGINEERING) (33)
Master of Engineering
Subject Code: 3733303

Reference Books:

1 Ashley R., Garvin S., Pasche E. and Vassilopoulos A., Advances in Urban Flood Management, Balkema, 2007
2 Saul A, Floods and Flood Management, Springer, 1992.
3 Schanze J., Zeman E., and Marsalek J., Flood Risk Management, NATO Science Series IV: Earth and Environmental Science, 2006.
4 Applied hydrology by V.T chow, David R maidment, and Larry W mays
5 Engineering hydrology by Raghunath Engineering hydrology by K. Subramanya

Course Outcomes: At the end of the course, Student will be able to

Sr. No.	CO statement	Marks % weightage
CO-1	Perform flood management analysis.	20
CO-2	Compare different strategies for project appraisal.	20
CO-3	Apply geo-spatial techniques for flood analysis.	20
CO-4	Understand risk analysis in flood management.	20
CO-5	Analyse flood control measures.	20

Suggested Specification table with Marks (Theory): (For ME only)

Distribution of Theory Marks					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
10%	**20%**	**20%**	**20%**	**15%**	**15%**

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

GUJARAT TECHNOLOGICAL UNIVERSITY

CIVIL (WATER RESOURCES ENGINEERING) (33)
Master of Engineering
Subject Code: 3733303

List of Practial:

The practical may include study of different flood routing and management methods. Data Collection for design of flood warning systems. Study of various literatures of practice and implementation for Flood damage analysis. The students will work in group for the design work based on syllabus such as;

1. Study of catchments area features
2. Estimation of flood
3. Flood warning system
4. Flood routing and flood management
5. Flood impact assessment
6. Flood damage analysis
7. Flood control measures

List of Open Source Software/learning website:

1. http://www.nptel.iitm.ac.in/courses/
2. https://en.wikipedia.org/wiki/Flood_control www.water.ca.gov/floodmgmt/
3. HEC-RAS