GUJARAT TECHNOLOGICAL UNIVERSITY

CIVIL (WATER RESOURCES ENGINEERING) (33)
Master of Engineering
Subject Code: 3723303
Semester – II
Subject Name: FLUVIAL HYDRAULICS

Type of course: Program Elective III

Prerequisite: Fundamental knowledge of channel hydraulics, uniform and non-uniform flow and channel resistance.

Rationale:
Students will be able to understand incipient motion of sediment, bed load and suspended load transport, design of stable channel

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks				Total Marks
				Theory Marks		Practical Marks		
L	T	P	C	ESE (E)	PA (M)	ESE (V)	PA (I)	
3	**0**	**2**	**4**	**70**	**30**	**30**	**20**	**150**

Content:

Sr. No.	Content	Total Hrs
1	Sediment origin and problems, Properties of sediments, incipient motion of non-uniform and uniform sediments, Bed forms, regimes and channel resistance, Bed load transport, suspended load transport and total load transport equations.	**24**
2	Sediment sampling, stable channel design and sediment control, aggradation, degradation and reservoir sedimentation, physical and mathematical models, local scour and bank protection	**22**

Reference Books:

1. Mechanics of sediment transport – R .J.Garde and Ranga Raju K.G.
2. Fluvial hydraulics – W.H. Graph
3. Sediment transport – Yalin

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

Sr. No.	CO statement	Marks % weightage
CO-1	Understand sediment transport process	25

CO-2	Measure sedimentation flow rate	20
CO-3	Estimate rate of sediment transport	20
CO-4	Analyse control of sedimentation, bed level variation in river	25
CO-5	Utilise mathematical models to analyse bed level variation	10

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%	**25%**	**20%**	**15%**	**20%**	**10%**

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.

List of experiments: Based on syllabus

Major equipment: Open Cannel

List of Open Source Software/learning website:

1. HEC-RAS, HEC-GeoRAS, HEC-HMS
2. http://en.wikipedia.org/wiki/Category:Hydraulic_engineering