

GUJARAT TECHNOLOGICAL UNIVERSITY

CIVIL (WATER RESOURCES ENGINEERING) (33) FLUVIAL HYDRAULICS

SUBJECT CODE: 2723304

SEMESTER: II

Type of course: Sediment transport

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 C	Examination Marks						Total Marks
L	T	P		Theory Marks		Practical Marks				
			ESE (E)	PA (M)	PA (V)		PA (I)			
					ESE	OEP	PA	RP		
3	2#	2	5	70	30	20	10	10	10	150

Content:

Sr.No	Topics	Teaching Hrs.	Module Weightage
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	60
2	Sediment sampling, stable channel design and sediment control, aggradation, degradation and reservoir sedimentation, physical and mathematical models, local scour and bank protection	18	40

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 Outcome:

After learning the course the students should be able to: understand sediment transport process, measurement and estimation methods and control measures.

List of Experiments:

Based on Syllabus

Open Ended Projects: cases studies of water resources projects, laboratory measurement of various cases.

Major Equipments: open channel

List of Open Source Software/learning website: HEC-RAS

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

Review Presentation (RP): The concerned faculty member shall provide the list of peer reviewed Journals and Tier-I and Tier-II Conferences relating to the subject (or relating to the area of thesis for seminar) to the students in the beginning of the semester. The same list will be uploaded on GTU website during the first two weeks of the start of the semester. Every student or a group of students shall critically study 2 papers, integrate the details and make presentation in the last two weeks of the semester. The GTU marks entry portal will allow entry of marks only after uploading of the best 3 presentations. A unique id number will be generated only after uploading the presentations. Thereafter the entry of marks will be allowed. The best 3 presentations of each college will be uploaded on GTU website.