

GUJARAT TECHNOLOGICAL UNIVERSITY

CIVIL (GEOTECHNICAL ENGINEERING) (43)

OFF-SHORE STRUCTURES

SUBJECT CODE: 2724311

SEMESTER: II

Type of course: Elective

Prerequisite: Advanced Geotechnical Engineering.

Rationale: Off Shore structure are typical structures which requires understanding and through knowledge of behaviour of the structure under tidal condition and continuous exposure to water currents. In developments near costal region the knowledge of the subject is very necessary.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks						Total Marks
L	T	P		Theory Marks		Practical Marks				
			ESE (E)	PA (M)	ESE (V)		PA (I)			
					ESE	OEP	PA	RP		
3	2#	0	4	70	30	30	0	10	10	150

Content:

Sr. No.	Topics	Teaching Hrs	% Weightage
1.	Wave Mechanics: Wave generation process, small and finite amplitude wave theories	6	15
2	Wind forces: Wave forces on vertical, inclined cylinders, structures – current forces and use of Morison equation.	12	25
3	Off-Shore Structures: Different types of offshore structures, foundation modelling, structural modelling, Static method of analysis, Foundation analysis, Dynamics analysis of offshore structures, Design of platforms, Jacket tower and mooring cables and pipe lines.	24	60

Reference Books:

1. Hydrodynamics of Offshore Structures - Chakrabarti, S.K. Computational Mechanics Publications, 1987.
2. Offshore Structural Engineering - Thomas H. Dawson, Prentice Hall Inc Englewood Cliffs, N.J. 1983
3. Recommended Practice for Planning, Designing - API, American Petroleum Institute and Constructing Fixed Offshore Platforms Dalls, Tex. Publication, RP2A,
4. Oceanographical Engineering - Wiegel, R.L., Prentice Hall Inc, Englewood Cliffs, N.J. 1964.
5. Dynamic Analysis of Offshore Structures, - Brebia, C.A.Walker, S., New-nes Butterworths, U.K. 1979.
6. Offshore Structures, Vol.1, - Reddy, D.V. and Arockiasamy, M.,Krieger Publishing Company, Malabar, Florida, 1991.

Course Outcome:

After learning the course the students should be able to: Modelling and analysis of foundation and design off shore structures with dynamic analysis

List of Experiments/ Tutorials:

Minimum 15 problems from above topics

List of Open Source Software/learning website:

1. NPTEL lecture series

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