

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E. Semester: III

Civil Engineering (Water Resources Management)

Subject name: **Coastal Engineering**

Sr.No	Course content
1	Motion parameters – wind, tide, current and data collection and analysis.
2	Formulation of wave motion problem, assumption made in two dimensional cases, small amplitude wave theory, orbital motion and pressure, wave energy, finite amplitude wave theory, Stocke's wave theory (third order), mass transport, Gerstner theory, solitary wave theory, generation of waves, wave forecasting, decay of waves.
3	Reflection of waves, clapotis or standing waves, superposition of waves, refraction, refraction diagrams, wave fronts and orthogonal methods, diffraction of waves around semi infinite break waters, detached break water of finite length, diffraction through openings.
4	Forces on vertical walls due to non breaking waves, breaking waves and broken waves base on linear theory, forces on circular cylinders.
5	Long term and short term changes of shores, factors influencing beach characteristics , beach wave interaction, beach profile modification ,littoral drift, stability of shores, shore erosion due to sea level, on shore and off shore transport, long shore transport, interaction of shore structures, shore erosion in Kerala, mud banks.
6	Coastal structures, description and effects of break waters, sea walls, groynes of various types, beach nourishment, design of sea walls, break waters, tetra pod, tribar etc.
7	Harbour types and features, ship Features related to port planning, site investigation & selection, port layout, on-shore and offshore structures, cargo handling equipments, Navigational aids, Causes and occurrences of Tsunami and storms.

List of Tutorial:

- 1 Study of parameter of coastal engineering and planning
- 2 Wave theory
- 3 Related diff-shore structures
- 4 Shore erosion and coastal protection
- 5 Coastal structure and pair design parameter
- 6 Port-layout and planning as per ship serape
- 7 Tsunami & Storms
- 8 Negotiation Aids

Reference Books:

1. Arthar, T. Ippen, Estuary and coastline hydrodynamics , McGraw Hill Book Co.(1964)
2. Alonzo Def. Quinn, Design and Construction of Ports and Marine Structures, McGraw Hill Book Company. (1972).
3. Henry F. Cornik, Dock and Harbour Engineering Vol.–I to IV, Charles Griffin & Company Ltd.London,(1988)
4. Robert, L. Weigel, Oceanographical Engineering, Prentice Hall Inc.(1964)
5. Robert M.Sorensen, Basic Coastal Engineering , Springer, (2006)
6. Ojha S. P. Docks and Harbour engineering., Fourth revised and enlarged edition