

# Elements of Ocean Engineering - Video course

## COURSE OUTLINE

It is an introductory course in ocean engineering for undergraduate students. The topics covered are of a general and introductory type. The course applies the knowledge of wave mechanics and structural mechanics to solve problems related to the ocean.

It starts with a description of the ocean environment and estimation of environmental loads on offshore structures. The various types of offshore structures in use are described and their design requirements are discussed.

Various engineering systems such as buoys, moorings, mining and energy systems are discussed. Lastly, the safety aspects very crucial to ocean engineering are presented.

## COURSE DETAIL

Sl No.	Topic/s	Hours
1	Physical Oceanography – Description of World's Oceans, currents, salinity, ocean floor characteristics	2
2	Metocean Engineering – wind, wave and current loads on offshore structures	4
3	Types of Platforms – Jackets, TLPs, Semisubmersibles, Jack-ups, Concrete Gravity	2
4	Floating Platforms – Sizing, stability, structural design of TLPs, semisubmersibles	10
5	Fixed Offshore structures – Sizing and layout, structural design of Jackets, Breakwaters and Seawalls	10
6	Design of Offshore Pipelines – Hydrostatic, hydrodynamic analysis and structural design	4
7	Buoys and Mooring systems – mooring configurations, advantages and disadvantages	2
8	Ocean mining and energy systems – description and systems	2
9	Safety of offshore structures – reliability and risk assessment, failure modes	4



NP-TEL

# NPTEL

<http://nptel.iitm.ac.in>

## Ocean Engineering

### Pre-requisites:

1. Wave mechanics
2. Theory of Structures

### Additional Reading:

Offshore Technology Conference Proceedings, SNAME and RINA journals.

### Coordinators:

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**References:**

1. Chakraborty S.K., "Handbook of Offshore Engineering Vols. I and II".
2. Dean & Dalrymple, "Water Wave Mechanics for Engineers & Scientists".
3. Kamphuis J.W. , " Introduction to Coastal Engineering & Management".