



DYNAMICS OF OCEAN STRUCTURES

PROF. SRINIVASAN CHANDARSEKARAN

Department of Ocean Engineering
IIT Madras

TYPE OF COURSE : Rerun | Core | UG

COURSE DURATION : 12 weeks (20 Jul' 20 - 9 Oct' 20)

EXAM DATE : 18 Oct 2020

PRE-REQUISITES : UG/PG/Ph.D of all engg branches and PG of applied sciences; Diploma students can also register

INTENDED AUDIENCE : Engg faculty, students & researchers

INDUSTRIES APPLICABLE TO : All academic institutes, all consultancy organizations like Technip, L&T etc

COURSE OUTLINE :

The course will give a brief overview of different types of ocean structures that are deployed in sea for exploiting oil, gas and minerals. While fundamentals of structural dynamics are discussed, detailed mathematical modeling of ocean structures and their dynamic analysis under waves, wind and current are highlighted with special emphasis to fluid-structure interaction. Introduction to stochastic dynamics of ocean structures is also discussed with lot of tutorials and sample papers that shall intuit self-learning through the course. Focus is on the explanation of fundamental concepts as addressed to graduate students.

ABOUT INSTRUCTOR :

Prof. Srinivasan Chandrasekaran is an Assistant Professor of Ocean Engineering Department, IIT Madras.

COURSE PLAN :

Week 1: Fundamentals of Structural dynamics, Introduction to different types of ocean structures, Development of structural forms for deep and ultra-deep waters, Environmental forces, structural action of ocean structures, Introduction to structural dynamics

Week 2: Application of structural dynamics to offshore structures: Fluid-structure interaction, Dynamic analysis of offshore jacket platforms, Dynamic analysis of articulated towers, Iterative frequency domain, Multi-legged articulated towers(MLAT), Response control of multi-legged articulated

Week 3: Introduction to stochastic dynamics, Introduction to stochastic dynamics of ocean structures, Random environmental processes, Stationary process, Response spectrum, Narrow band process, Return period