COMPUTER METHODS OF STRUCTURAL ANALYSIS OF OFFSHORE STRUCTURES

PROF. SRINIVASAN CHANDRASEKARAN
Department of Ocean Engineering
IIT Madras

INTENDED AUDIENCE : Civil, Mech, Aero, Appl. Mech., Naval arch., Structures
INDUSTRIES APPLICABLE TO : ONGC, Reliance, UGC, Technip

COURSE OUTLINE :
The course will give a brief overview of different types of offshore structures that are deployed in sea for exploiting oil, gas and minerals. Detailed analysis methods, as applicable to both 2d and 3d will be discussed. While fundamentals of advanced structural analysis are discussed, detailed mathematical modeling of problem formulation and solution using MATLAB coding will be discussed. Codes for numeric examples will be also provided in the lecture notes. Hands-on experience of using Matlab will also be discussed. Focus is on explanation of fundamental concepts of advanced structural analysis, with special emphasis to its application to offshore structures.

ABOUT INSTRUCTOR :

Prof. Srinivasan Chandrasekaran is a full professor (HAG) and is well-known academician with a teaching and research experience of about 30 years. He has authored about 17 text books, and 170 journal papers in the domain of structural engineering. His NPTEL courses are very popular and has benefitted more than about 50,000 participants, in both India and abroad. Lectures of the course will be delivered in class-room style, for which the instructor is very popular. Extensive support for Matlab program with computer codes and solved examples will be discussed by the dels-developed codes by the instructor.

COURSE PLAN :

Week 1: Indeterminate structures
Week 2: Stiffness method: Planar orthogonal structures
Week 3: Stiffness method: Planar non-orthogonal structures
Week 4: Stiffness method: Planar truss systems
Week 5: Stiffness method: 3D analysis
Week 6: Space frames
Week 7: Types of offshore structures
Week 8: Environmental loads
Week 9: Dynamic analysis
Week 10: New-generation offshore platforms
Week 11: Random process, Response spectrum
Week 12: Analysis under fatigue loads