OFFSHORE STRUCTURES UNDER SPECIAL ENVIRONMENTAL LOADS INCLUDING FIRE RESISTANCE

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INTENDED AUDIENCE : Applied Mech, Aerospace Engg, Civil Engg, Structural Engg, Mech. Engg, Naval Arch, Ocean Engg, Petroleum Engg, Chem Engg, Engineering Design
INDUSTRIES APPLICABLE TO : All oil companies and Structural consultancy organizations, both in India and abroad

COURSE OUTLINE :
This course deals with novelty of offshore structures and their response behaviour under special loads. These loads include earthquake loads, ice loads, shock and impact loads, ringing and springing wave loads and loads caused by crticial sea states. The course also deals with advanced structural analyses methods including unsymmetric bending and estimate of shear centre. It also deals with analysis of curved beams, crane hooks, chain links and rings and marine risers under Vortex induced motion. Fire in one of the major hazard in offshore industry. Fire-resistant design is a mandatory requirement for members exposed to high fire hazards. This course will expose participants to fundamentals and explain the fire-resistant design concepts through a variety of examples. A full black-board teaching model, with illustrated examples and tutorials is followed with 24x7 active discussion forum to clarify doubts. This course also supports MATLAB program source coding for computing various environmental loads that act on offshore structures. Further, computer programs using MATLAB code is also extended for analyzing problems with unsymmetric bending and estimate of stresses in curved beams.

ABOUT INSTRUCTOR :
Prof. Srinivasan Chandarsekaran is currently a Professor in the Dept. of Ocean Engineering, Indian Institute of Technology Madras, India. He has teaching, research and industrial experience of about 23 years during which he has supervised many sponsored research projects and offshore consultancy assignments both in India and abroad. His active areas of research include dynamic analysis and design of offshore platforms, Development of geometric forms of complaint offshore structures for ultra-deep water oil exploration and production, sub-sea engineering, Rehabilitation and retrofitting of offshore platforms, structural health monitoring of ocean structures, seismic analysis and design of structures and risk analyses and reliability studies of offshore and petroleum engineering plants. He has been also a visiting fellow under the invitation of Ministry of Italian University Research to University of Naples Federico II, Italy for a period of two years during which he conducted research on advanced nonlinear modelling and analysis of structures under different environmental loads with experimental verifications. He has about 110 research publications in International journals and refereed conferences organized by professional societies around the world. Four text books authored by him are quite popular amongst graduate students of civil and ocean engineering and recommended as reference material for class room studies and research as well. He also delivered four web-based courses namely: i) Dynamic analysis of ocean structures; ii) Ocean structures and materials; iii) Advanced marine structures; and iv) Health, safety and Management in offshore and petroleum engineering. He is a member of many National and International professional bodies and delivered many invited lectures and key note address in the international conferences, workshops and seminars in India and abroad.

COURSE PLAN :
Week 1**:** Novelty of offshore structures
Week 2**:** Environmental loads
Week 3**:** Special loads-I
Week 4**:** Special loads-II
Week 5**:** Advanced structural analysis-I
Week 6**:** Advanced structural analysis -II
Week 7**:** Advanced structural analysis - III
Week 8**:** Advanced structural analysis - IV
Week 9**:** Fire safety
Week 10**:** Blast resistance
Week 11**:** Material properties
Week 12**:** Fire resistant design