

Course Number: 28927**Course Name: Advanced Vibrations of Offshore Structures**

Course Type: Theory
Prerequisite: Wave Theory
Level: Graduate
Group: Marine Engineering

Type & Max Unit: 3
Corequisite:
First Presentation: 1400
Last Edition:

Objectives:

Vibrational Concepts and applications of marine and offshore structures under wave, wind, current and seismic loads

Topics:

1. Conceptual discussion on SDOF and MDOF and their application
2. Application of Shock spectrum (wave in deck)
3. Linearization of Morrison equation
4. Mean wave (drift) forces
5. Nonlinear waves and their effect on structural vibrations
6. Added mass and buoyancy fluctuation effects
7. Coupling type problems
8. Response Amplitude Operator (RAO)
9. Vibration of continuous systems
10. Tendon vibrations
11. Risers and VIV

References:

1. Brebbia, C.A., Walker, S., "Dynamic Analysis of Offshore Structures", Elsevier Science, 1979.
2. Wilson, J.F., "Dynamics of Offshore Structures", John Wiley & Sons, Inc, 1984.
3. Barltrop, N.D.P., Adams, A.J., "Dynamics of Fixed Marine Structures", Butterworth-Heinemann, 1991.
4. Patel, M.H., Witz, J.A., "Compliant Offshore Structures", Butterworth-Heinemann, 1991.
5. Patel, M.H., "Dynamics of Offshore Structures", Butterworth-Heinemann, 1991.
6. Faltinsen, O.M., "Sea Loads on Ships and Offshore Structures", Cambridge University Press, 1993.