

OE5300: ADVANCED DYNAMICS OF FLOATING BODIES

Course Content:

Review of Linear equations of motion; Oscillations of floating bodies – Concepts of small bodies and large bodies- Morisons for wave –current interactions- Added mass and Moment of Inertia and hydrodynamic damping, Exciting forces and moments due to waves - Froude Krylov theory Diffraction - MacCamy and Fuchs solution - Radiation Theory -General motion analysis of floating bodies - Time and frequency domain approaches – Response amplitude operators -strip theory for slender bodies with forward speed- Symmetric and unsymmetric coupled motions Directional spectra for waves - 3 D waves and responses Random response theory – Random response of linear systems under wave loading – response statistics – time frequency and probabilistic approach Introduction to multi-body structure - Two floating structures formulation

Text Books:

1. **Chakrabarti, SK.** 1994. Hydrodynamics of Offshore Structures, WIT Press, Southampton, UK. ISBN: 978-0-90545-166-4
2. **Turget Sarpkaya and Michael Isaacson.** 1981. Mechanics of wave forces on offshore structures, Van Nostrand Reinhold Company, USA, ISBN: 978-044-22-5402-5

Reference Books:

1. **Chakrabarti, SK.** 2005. Handbook of Offshore Engineering, Elsevier, ISBN: 978-008-05-2381-1
2. **Michael E. McCormick.** 2010. Ocean Engineering Mechanics with Applications Cambridge University Press, pp. 580, ISBN: 978-052-1859-523

Prerequisite:

NIL