Indian Institute of Technology
Course Details Report

Course No: OE4111

Course Name: Laboratory Modelling In Marine Hydrodynamics

Course Type:

Lab

Description:

To give an overview about laboratory models of marine structures and sea going vessels, as well as different instruments in the laboratory scale.

Course Content:

Dimensional Analysis with special reference to Model Studies in Marine Hydrodynamic. Principles of Similitude. Design of Models and Fabrication. Hydrodynamic test facilities, Wave makers, Wave absorbers, Modeling of Environment:Transfer function, 2-D and 3-D Wave generation, Regular and Irregular waves, Correction for Sub and Super Harmonics. Hydrodynamic models: Short-wave and Long wave hydrodynamic models. Modeling of Marine Structures: Fixed and floating structures. Measurement Techniques for Drag and Inertia Forces, Cavitation. Towing tank experiments: ship resistance and propulsion, manoeuvring and seakeeping experiments, correction factors in upscaling. Laboratory measurement techniques.

Text Books:

1. Steven A.Hughes, Physical Models and Laboratory Techniques in Coastal Engineering, World Scientific, Singapore, 1993
2. Chakrabarti, S.K., Offshore Structure Modeling, World Scientific, Singapore, 1994

Reference Books:

1.Clayton, B.R. and Bishop, R.E.D., Mechanics of Marine Vehicles, Gulf Publishing Co., USA, 1982
2. Hanna, R.L. and Reed, S.E., Strain Gauge-User's Handbook, 1992
3. Beckwith,T.G., Marangoni, R.D. and Lienhard, J.H., Mechanical Measurements, Addison Wesley, USA, 1993
4. Collacot, R.A., Structural Integrity Monitoring, Chapman and Hall, London, 1985
5. ITTC reports.