



Indian Institute of Technology

Course Details Report

Course No: OE5520

Course Name: DOCK ENGINEERING BASICS AND APPLICATIONS

Course Type:

Theory

Description:

Dock facilities and ship repair centres are vital for the safe inspection of vessels and further certificate for sailing, This course is intended to elaborate on basics of dock engineering, functional requirements and design of slips ways, graving docks (fixed) and floating docks including infrastructure for successful operations, Learning outcomes: This course shall offer comprehensive knowledge and learning skills on dry docks, slipways and ship fabrication and repair yards with respect to new ship fabrication, repair and maintenance operations;

Course Content:

Shipyards and functions; annual and periodical inspection requirements; elements of shipyard; repair and retrofitting of ships and sea going vessels; Ship repair berths; layouts for typical ship repair yards and its components.

Slipways; ship lifts; basic arrangement of ship pulling and reaving for sideways; winches and motors; Multi-wheel supports and bogies; parking yards and rail track system;

Introduction to dry docks; Basin layout and functional requirements; sizing of dry dock; diaphragm walls and base floor construction and integration technique, Sheet piles walls; touch piles; composite piles; Design of lock gates; Lock gates; flap gate; Caisson gates; mitre gate; intermediate gates, Lamda and A frame gates; construction materials for watertight Integrity; keel blocks and design loads on floor. Ballast pumps and pumps house.

Floating dry docks; infrastructure for floating docks; mooring system; guided floating docks; loading and positioning ships; ballast and de-ballast; movement guides during tidal movement; loading and unloading operations of ships; Fenders and mooring systems.

Code provisions and examples and case studies.

Text Books:

1. Dock and Harbour Engineering, Hasmukh P. Oza and Gautam H. Oza, Charotar Publishing House (P) Ltd, Anand
2. John W. Garthwaite, 2016, Design of marine facilities, ASCE Press. Van Nostrand

Reference Books:

1. A course in Dock and Harbour Engineering, S. P. Bhindra, Dhanpat Rai Publications (P) Ltd, New Delhi
2. Harbour, dock and tunnel engineering, R Srinivasan, Charotar Publishing House (P) Ltd, Anand
3. Port Design - Guidelines and recommendations by C. A. Thoresen, Tapir Publications.
4. Agerschou, H., Lundgren, H., Sorensen, T., Ernst, T., Korsgaard, J. Schmidt, L.R. and Chi, W.K., (1983), "Planning and Design of Ports and Marine Terminals", A Wiley-Interscience Publication.
5. Per Brun (1983), "Port Engineering" Gulf Publishing Co.
6. BS 6349-Part 3 - 2013 A code of practice for design of shipyards and sea locks.