

Major Elective – 2
(Group – 3)
Docks and Harbour Engineering

Course Objectives:

1. To enhance the knowledge of Docks and Harbour Engineering for the water transportation in the context of regional and intercontinental transportation.
2. To provide techniques of planning and designing the infrastructures required for Harbour and Port area.
3. To impart the know-how regarding cargo and passenger demand forecasting, cargo handling capacity of ports and economic evaluation of port project.
4. Also, to make the students aware of the environmental and other impacts impeded due to water transportation and port activities.

Course Contents:

1. Water Transportation: Scope, Merits, Developments of Water Transportation in India, Inland waterways, River, Canal, Inland water transportation, Development of ports & Harbours, Harbour classification, Site selection, Harbour dimensioning.
2. Natural Phenomena: Tides, Water waves, Wave decay & port, wave diffraction, breaking, reflection, Littoral drift, sediment transport.
3. Harbour Infrastructures: Types of breakwaters, jetty, dock fenders, piers, wharves, dolphin, mooring accessories, Repair facilities, wet docks, lift docks, dry docks, gates for graving docks, floating docks, slipways, locks and gates.
4. Port facility: transit shed, warehouses, cargo handling, container handling, Inland port facility, Navigational aids, types, requirements of signals, lighthouses, beacon light, buoys. Dredging & coastal protection: Types of dredgers, choices, usage of dredged material, sea wall protection-sea wall revetment, bulkhead.
5. Planning of ports for regional and intercontinental transportation development, forecasting cargo & passenger demand, regional connectivity, cargo handling capacity of port, economic evaluation of port project, impacts of port activities.

Tutorials:

1. Problems based on cargo and passenger demand forecasting for the ports.
2. Problems based on planning and design of harbour infrastructures.
3. Problems based on planning and design of port area infrastructure.
4. Problems based on cargo handling capacity of port.
5. Problems based on economic evaluation of port project.

Field Visit:

Visit to the major Port: Port area and Harbour area infrastructures.

Review the existing facilities and capacity of port. Arrange presentation with group discussion for the suggestions of improvement if any.

References:

1. Bindra S.P., *Docks & Harbour Engineering*, Dhanpat Rai Publications,
2. Srinivasan R., *Harbours, Docks & Tunnel Engineering*, Charotar Publishing House, Anand, 1999.