

PORTS AND HARBOUR STRUCTURES**(Elective – II)**

Course Code: 13CE2115

L P C**4 0 3**Course Educational Objectives:

1. To impart the knowledge on planning of ports and Harbours.
2. To inculcate in students the understanding of port operations and construction aspects of ports and Harbors.

Course Outcomes:

1. Student will demonstrate the ability to design the infrastructure facility for port and Harbour for a given area.
2. Students will be able to understand the port operations and construction aspects.

UNIT-I

Introduction: Ports and harbours – an infrastructure layer between two transport media, planning of ports and harbours.

The fundamentals: Waves, Tide and current conditions inside harbour, water circulation; breakwaters, jetties and quay walls; mooring, berthing and ship motion inside the port; model studies, physical and mathematical studies.

UNIT-II

Design Issues: Sea port layout with regards to (1) wave action (2) siltation (3) navigability berthing facilities.

Design of Port Infrastructures: Design of port infrastructures with regards to (1) cargo handling (2) cargo storage (3) integrated transport of goods, planning multipurpose port terminals.

UNIT-III

Port operations: Allowable wave conditions for cargo handling, wave conditions for human safety on quays and breakwaters, forecasting/nowcasting of wave and current conditions for port operations, dredging and navigability, hazard scenarios; VTMS and management of computerized container terminal, safety and environment (handling of fire, oil spill, rescue, etc.).

UNIT-IV

Inland Waterways and Ports: Maintenance of waterways, construction of environmentally engineered banks, dredging and disposal processing and storing of polluted dredged materials, development of river information services.

UNIT-V

Construction aspects: Planning and construction, expansion and renovation of port and Inland Port Infrastructure.

Sustainability: Global trade and port restructuring/reforms, impact of possible climate change scenarios, sustainable development strategies for cities and ports.

TEXT BOOKS

1. Muir Wood, A.M., and Fleming. C.A., “*Coastal Hydraulics Sea and Inland Port Structures*”, 1st Edition, Hallstead Press, , 2002
2. Ozha & Ozha, “*Dock and Harbour Engineering*”, 1st Edition, Charotar Books, Anand., 1990

REFERENCES

1. S.Seetharaman, “*Construction Engineering and Management*”, 4th Edition, Umesh publications, New Delhi, 1999
2. Richard L. SilIster, “*Coastal Engineering Volume I & II*”, Elsevier Publishers, 2000
3. Pera Brunn, “*Port Engineering*”, 1st Edition, Gulf Publishing Company, 2001.
