

PORTS AND HARBOURS

(Professional Elective- I)

Course code: 15CE1115

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Course Outcomes:

At the end of the course the student will be able to:

- CO 1** Explain the significance of port and harbours as a mode of transport
- CO 2** Demonstrate the fundamental principles of wave hydrodynamics and port cargo handling.
- CO 3** Demonstrate the basic design of port layout
- CO 4** Design, plan and integrate port and harbour infrastructure.
- CO 5** Explain the construction, maintenance and renovation aspects of ports and inland waterways

UNIT-I (10 Lectures)

INTRODUCTION:

Ports and harbours as the interface between the water and land infrastructure – an infrastructure layer between two transport media.

UNIT-II (10 Lectures)

THE FUNDAMENTALS:

Wave conditions inside harbour, water circulation; breakwaters, jetties & quay walls; mooring, berthing and ship motion inside the port; cargo handling – bulk material storage & handling.

UNIT-III (10 Lectures)

DESIGN ISSUES:

Sea port layout with regards to (1) Wave action (2) Siltation (3) Navigability berthing facilities

UNIT-IV**(10 Lectures)****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-V**(10 Lectures)****CONSTRUCTION ASPECTS:**

Planning and construction of expansion and renovation of existing Inland Port Infrastructure. Inland Waterways and ports: Maintenance of waterways, Construction of environmentally engineered banks, Dredging, Processing and storing of polluted dredged materials, development of river information services.

TEXT BOOK:

1. Ozha & Ozha, “*Dock and Harbour Engineering*”, 1st Edition, Charotar Books, Anand., 1990.

REFERENCES:

1. S.Seetharaman, “*Construction Engineering and Management*” , 4 th 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.