



NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI
DEPARTMENT OF CIVIL ENGINEERING

COURSE PLAN – PART I			
Name of the Programme and Specialization	M. Tech, Transportation Engineering and Management		
Course Title	Waterway Transportation		
Course Code	CE616	No. of Credits	3
Course Code of Pre-requisite subject(s)	-		
Session	July 2021	Section (If applicable)	-
Name of Faculty	Dr Darshana O	Department	Civil Engineering
Email	darshana@nitt.edu	Telephone	-
Name of Course Coordinator(s) (If applicable)	-		
Email	darshana@nitt.edu	Telephone	-
Course Type	Core course <input type="checkbox"/> Elective course <input checked="" type="checkbox"/>		
Syllabus (approved in BoS)			
<p>Harbour Planning: Types of water transportation, water transportation in India, requirements of ports and harbours, classification of harbours, selection of site and planning of harbours, location of harbour, traffic estimation, master plan, ship characteristics, harbour design, turning basin, harbour entrances, type of docks, its location and number, Site investigations – hydrographic survey, topographic survey, soil investigations, current observations, tidal observations.</p> <p>Docks and Repair Facilities: Design and construction of breakwaters, berthing structures - jetties, fenders, piers, wharves, dolphins, trestle, moles, Harbour docks, use of wet docks, design of wet docks, repair docks, lift docks, dry docks, keel and bilge blocking, construction of dry docks, gates for dry docks, pumping plant, floating docks, slipways, locks, size of lock, lock gates, types of gates.</p> <p>Navigational Aids: Requirements of signals, fixed navigation structures, necessity of navigational aids, light houses, beacon lights, floating navigational aids, light ships, buoys, radar.</p> <p>Dredging and Coastal Protection: Classification, types of dredgers, choice of dredger, uses of dredged materials, coastal erosion and protection, sea wall, revetment, bulkhead, coastal zone and beach profile.</p> <p>Port facilities: Port development, port planning, port building facilities, transit sheds, warehouses, cargo handling facilities, container handling terminal facilities, shipping terminals, inland port facilities. Inland waterways, Inland water transportation in India, classification of waterways, economics of inland waterways transportation, national waterways</p>			

References

1. Bindra, S.P. *A Course in Docks and Harbour Engineering*, Dhanpat Rai & Sons, New Delhi, India, 1992.
2. Seetharaman, S. *Dock and Harbour Engineering*, Umesh Publications, New Delhi, India, 1999.
3. Srinivasan, R., *Harbour, Dock and Tunnel Engineering*, Charotar Publishing House, Anand, India, 2009.

COURSE OBJECTIVES

- To know about water transport and harbour planning
- To learn about different docks and repair systems
- To understand the navigational aids
- To understand dredging and coastal protection
- To learn about port facilities

COURSE OUTCOMES (CO)

Course Outcomes	Aligned Programme Outcomes (PO)
On completion of the course, the students will be able to:	
1. Understand the aspects of harbour design	1 2 3 6 7 8 9
2. Design and construction of breakwater and docks	1 2 4 7 8 10
3. Understand the navigational aids	1 3 4 5 6 8
4. Understand dredging and coastal protection	2 3 4 6 7 10
5. Plan port and other facilities in the port	2 3 4 6 7 9 11

COURSE PLAN – PART II

COURSE OVERVIEW

The course gives overall idea of port planning, design of harbours, various navigational aids and dredging methods.

COURSE TEACHING AND LEARNING ACTIVITIES

Sl.No.	Week/Contact hour	Topic
1	Week 1	Types of water transportation, water transportation in India
2	Week 2	Classification of harbours, selection of site and planning of harbours, location of harbour, traffic estimation, master plan

3	Week 3	Ship characteristics, harbour design, turning basin, harbour entrances, type of docks, its location and number
4	Week 4	Site investigations – hydrographic survey, topographic survey, soil investigations, current observations, tidal observations.
5	Week 5	Design and construction of breakwaters
		Berthing structures - jetties, fenders, piers, wharves, dolphins, trestle, moles
6	Week 6	Harbour docks, use of wet docks, design of wet docks, Repair docks, lift docks, dry docks, keel and bilge blocking
7	Week 7	Construction of dry docks, gates for dry docks, pumping plant, floating docks, slipways, locks, size of lock, lock gates, types of gates
8	Week 8	Requirements of signals, fixed navigation structures, necessity of navigational aids,
9	Week 9	Light houses, beacon lights, floating navigational aids
		Light ships, buoys, radar.
10	Week 10	Dredging and Coastal Protection: Classification, types of dredgers, Choice of dredger, uses of dredged materials, coastal erosion and protection
11	Week 11	Sea wall, revetment, bulkhead, coastal zone and beach profile.
		Port development, port planning, port building facilities, transit sheds, warehouses,
12	Week 12	Cargo handling facilities, container handling terminal facilities, Shipping terminals, inland port facilities.
		Inland waterways, Inland water transportation in India, economics of inland waterways transportation, national waterways
13	Week 13	Seminar
14	Week 14	Seminar

COURSE ASSESSMENT METHODS

Sl.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Mid semester examination	Week 10	1.5 hours	30
2	Assignments	3 assignments		15
3	Quiz	3 quizzes		15
3	Seminar	Week 13 and 14		10

4	Compensation Assessment		1.5 hours	30
5	Final Assessment	Week 15	1.5 hours	30

COURSE EXIT SURVEY (mention the ways in which the feedback about the course is assessed and indicate the attainment also)

- Feedback from students during Class committee meetings
- Anonymous feedback through questionnaire at the end of the semester

COURSE POLICY (preferred mode of correspondence with students, policy on attendance, compensation assessment, academic honesty and plagiarism etc.)

MODE OF CORRESPONDENCE (email/ phone etc.)

- Mode of correspondence would be through phone/ email only to the class representatives and vice versa.

ATTENDANCE POLICY

- At least 75% attendance in each course is mandatory.

COMPENSATION ASSESSMENT POLICY

Retest would be given to those students who have missed mid semester examination because of genuine reasons.

ACADEMIC DISHONESTY AND PLAGARISM

- Possessing a mobile phone, carrying bits of paper, talking to other students, copying from others during an assessment will be treated as punishable dishonesty.
- Zero mark to be awarded for the offenders. For copying from another student, both students get the same penalty of zero mark.
- The departmental disciplinary committee including the course faculty member, PAC chairperson and the HoD, as members shall verify the facts of the malpractice and award the punishment if the student is found guilty. The report shall be submitted to the Academic office.

The above policy against academic dishonesty shall be applicable for all the programmes.

ADDITIONAL INFORMATION

- The Course Coordinator is available for consultation during office hours.
- Queries, if any, can be emailed to Course Coordinator directly at darshana@nitt.edu

FOR APPROVAL

Dr Darshana O

Course Faculty 

CC-Chairperson 

HOD 

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