

Construction & Building Engineering Courses (CB)

Water Resources & Coastal Engineering Courses Group

CB 584 – Special Topics in Hydraulic & Coastal Structures

COURSE INFORMATION

Course Title: Special Topics in Hydraulic & Coastal Structures

Code: CB 584

Hours: Lecture – 2 Hrs. Tutorial – 2 Hrs. Credit –3.

Prerequisite: CB 483

GRADING

Class Performance/Attendance: 10%

Midterm # 1/Assignments – (7th Week): 30%

Midterm # 2/Assignments – (12th Week): 20%

Final Exam: 40%

COURSE DESCRIPTION

Overview of environmental design parameters related to ambient water, soil and air; Design criteria and construction aspects of major river and estuary structures which include lined open channel, river training, bridge piers, flow control structures, submerged tunnel and storm surge barriers; Design criteria and construction methods of some selected coastal structures are presented which embrace pile-supported structures, bulkheads & quaywalls, breakwaters and submarine pipelines.

TEXT BOOK

Hydraulic Structures by Novak, K., Moffat, A., Nalluri, C. and Narayanan, R., Spon Publisher: Press, New York, USA, 2004.

Introduction to Coastal Engineering and Management by J.W. Kamphuis Publisher: World Scientific Publishing Co., NJ, USA, 2004.

REFERENCE BOOKS

Coastal Defense-ICE design and practice guide by A. Brampton Publisher: Thomas-Telford, London, 2002.

Construction of Marine and Offshore Structures by Ben C. Gerwick, Jr., CRC Publisher: Press, New York, USA, 2nd edition, 2002.

Construction Risk in Coastal Engineering by ed. J. Simm and I. Cruickshank
Publisher: Thomas Telford, U.K., 1998.

C O U R S E A I M

This course is designed to provide the seniors in construction engineering program with the design criteria and construction methods of major structures and operations in rivers, estuary and coastal waters.

S P E C I F I C O U T C O M E S O F I N S T R U C T I O N

- The student should be aware with the design criteria and construction methods of major structures and operations in rivers, estuary and coastal waters.
- The student should be aware with the physical environmental design parameters related to the design and construction of hydraulic and coastal structures.

C O U R S E O U T L I N E

- Week Number 1:* Engineering projects for river and estuary structures.
- Week Number 2:* Engineering projects for coastal structures.
- Week Number 3:* Design criteria and construction of lined open channels.
- Week Number 4:* Design and construction of water intake and navigation structures.
- Week Number 5:* Design criteria and construction of piers for over water bridges and scour mitigation methods.
- Week Number 6:* Design criteria and construction of river flow diversion structures.
- Week Number 7:* Design and construction of drainage structures.
- Week Number 8:* Integrated coastal zone management.
- Week Number 9:* Design criteria and installation of marine pile-supported and bulkhead structures.
- Week Number 10:* Design criteria and types of coastal protection works (rigid and flexible).
- Week Number 11:* Construction methods of shore-connected and offshore protection structures.
- Week Number 12:* Construction methods of shore-connected and offshore protection structures.
- Week Number 13:* Beach nourishment techniques and equipment.
- Week Number 14:* Ecological and social impacts of river and coastal construction.
- Week Number 15:* Term report presentation.

Week Number 16: Final Exam.

COURSE COORDINATOR AND DEMAND

Course Coordinator: Dr. Wael Mohamed Hamdy Khadr.

Course Demand: *Elective*