IZTECH CIVIL ENGINEERING DEPARTMENT
CE 479 COASTAL HYDRAULICS /SPRING 2024-2025

COURSE OUTLINE

Objectives: 1. Introduction to coastal hydraulics. 2. To learn the basic wave mechanics. 3. To learn the fundamentals of the Small Amplitude Wave Theory. 4. To learn the concepts of deep and shallow water and wave transformation like refraction, shoaling, diffraction, and wave breaking phenomenon. 5. To learn the wave structure interactions. 6. To learn the nearshore numerical wave model (SWAN)

Text Book:
Ergin A. (2019) Coastal Engineering, METU Press, 2nd edt

Dean R.G., Dalrymple R.A. 'Water wave mechanics for engineers and scientists' Adv. Series on ocean eng. vol. 2. 1991. ISBN 981-02-0421-3,

Goda, Y. (2010), 'Random Seas and Design of Maritime Structures', Advanced Series of Ocean Engineering, Volume 33, World Scientific.

References:
- 'Coastal Engineering Manual' (2003), Coastal Engineering Research Center, Dept. of Army Corps of Engineers, US

Course topics	Week
• Introduction and review of vector analysis	1
• Review of the equation of continuity and motion	2
• Small amplitude wave theory (formulation and solution)	3-4
• Wave length, celerity, water particle motion, pressure and energy	5-6
• Random wave concept	7
• Wave prediction	8
• Random wave transformation (shoaling and refraction)	9
• Random wave transformation (breaking and diffraction)	10
• Exam	11
• Nearshore numerical wave model (SWAN)	12-14

Class Requirements and Grading Policy:
- 3 hours per a week
- One midterm exam (50%)
- Assignments (20%)
- Project (30%)

Computer Usage:
When applicable, writing code will be a plus.

Instructor:
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