

Coastal Structures

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- Textbook:
Goda, Y. (2010). Random Seas and Design of Maritime Structures, 3rd ed., World Scientific.

- Topics (weeks)
 1. Introduction (1)
 2. Statistical properties and spectra of sea waves (1-2)
 3. Transformation and deformation of random sea waves (3-5)
 4. Design of vertical breakwaters (6)
 5. Design of coastal dikes and seawalls (7)
 6. Probabilistic design of breakwaters (8-9)
 7. Harbor tranquility (10)
 8. Hydraulic model tests with irregular waves (11)
 9. Description of random sea waves (12)
 10. Statistical theory of irregular waves (13)
 11. Techniques of irregular wave analysis (14)
 12. Statistical analysis of extreme waves (15)

- References:
 1. Shore Protection Manual, (1984). Coastal Engineering Research Center, Waterways Experiment Station, U.S. Army Corps of Engineers
 2. Water wave mechanics for engineers and scientists. Dean, R.G. and Dalrymple, R.A., 1991, World Scientific.
 3. Basic coastal engineering (3rd ed.), Sorensen, R.M., 2006, Chapman & Hall.
 4. Burcharth, H. F. (2002). Reliability Based Design of Coastal Structures. In: Hughes, S. (editor), Coastal Engineering Manual, Part VI , Design of Coastal Project Elements, Chapter VI-6 , Engineer Manual 1110-2-1100, U.S. Army Corps of Engineers, Washington, DC. (downloadable at <http://chl.erdc.usace.army.mil/>)

- Exam: Mid-term and final exams

- Homeworks: 8 homeworks
- Term Paper: Each student is required to prepare a term paper, which may be in the nature of a review of a topic not fully covered in class or more concentrated efforts dealing with a specific problem. Students are allowed (indeed encouraged) to treat a problem within the scope of their thesis research, if it is related to the topics in this class. The efforts may be theoretical, numerical, or experimental.