



Course Syllabus

Course Code	Course Title	ECTS Credits
CEE-444	Coastal Engineering	5
Prerequisites	Department	Semester
MENG-280	Engineering	Fall, Spring
Type of Course	Field	Language of Instruction
Elective	Civil & Environmental Engineering	English
Level of Course	Lecturer(s)	Year of Study
1 st Cycle	Dr Antonis Toumazis	4 th
Mode of Delivery	Work Placement	Corequisites
Face-to-face	N/A	None

Course Objectives:

The main objectives of the course are to:

- Introduce fundamental ocean wave theories and to apply them to coastal engineering problems.
- Introduce the various analysis and design techniques used in the field of coastal engineering.
- Analyze the physical processes affecting the coastal environment.
- Explain the coastal water level fluctuations, the wave processes and the design procedures of important coastal structures.
- Apply engineering principles to solve coastal engineering issues (flooding, erosion etc).

Learning Outcomes:

After completion of the course students are expected to be able to:

- Acquire the basic knowledge of wave mechanics and coastal processes along with the fundamentals that underline the practice of coastal engineering .
- Understand the relationship between the important factors affecting the coastal environment.
- Be able to solve simple two-dimensional analytical problems of wave propagation theory, associated with coastal engineering problems.
- Learn how to formulate engineering problems to common coastal issues.

- Examine solutions and evaluate how these affect the coastal environment.

Course Content:

- Introduction: coastal environment, problems, challenges, the scope of the field of coastal engineering.
- Basics of two-dimensional ocean wave theory.
- Linear water waves and kinematics, pressure, wave energy and power, group celerity.
- Coastal water level fluctuations: storm surge, tides, tsunamis, seasonal and long-term fluctuations.
- Wind-generated waves, wave hind casting and forecasting.
- Wave transformations, shoaling, refraction, diffraction, breaking, reflection, wave run-up.
- Coastal structures and hydrodynamic forces: revetments, bulkheads/seawalls, groins, and breakwaters.
- Coastal processes; Cross-shore and long-shore currents, sediment transport, beach response and profiles.
- Engineering design and risk analysis.
- Coastal management issues.

Learning Activities and Teaching Methods:

Lectures, Projects, Experiments, in-class assignments, discussion.

Assessment Methods:

Homework, Project, mid-term exam, final exam.

Required Textbooks / Readings:

Title	Author(s)	Publisher	Year	ISBN
Coastal Engineering	Dominic Reeve Andrew Chadwick Christopher Fleming	Routledge; 3 edition	2018	978-1138060432

Recommended Textbooks / Readings:

Title	Author(s)	Publisher	Year	ISBN
Basic Coastal Engineering	Sorensen, RM	Springer	2006	978-0387233321