



**Course Name:**

Coastal and Port Engineering

<b>Course Number:</b> 20-257	<b>Credit:</b> 3
<b>Program:</b> Undergraduate	<b>Course Type:</b> Technical elective
<b>Prerequisite:</b> Hydraulics	<b>Corequisite:</b> -

**Course Description (Objectives):**

Introduction to analysis of water waves, wave forces on coastal and offshore structures, design of coastal and port features

**Course Content (outline):**

- Governing equations of fluid motion under wave, wave energy and momentum, kinematic and dynamic properties of waves
- Wave breaking and shore-wave interaction
- Wave transformation between deep water and shallow water: wave refraction, diffraction, and reflection. Computation models
- Coastal water level fluctuations: tide, storm surge, computation methods
- Wind-generated waves: equations, probabilistic models, design waves
- Wave forces on piles, pipelines, offshore structures, and coastal structures.
- Design of breakwaters
- Coastal sediment processes, shore protection, erosion control structures

**References:**

- Sorensen, R. (2008), Basic Coastal Engineering, 3<sup>rd</sup> Ed., Springer
- Kamphius, W. (2010), Introduction to Coastal Engineering and Management, 2nd Edition, World Scientific.
- Sarpkaya, T. and Isaacson, M. (1981), *Mechanics of Wave Forces on Offshore Structures*, Van Nostrand Reinhold.