MSc in Water and Sustainable Development
MODULE

Fundamentals: waves, tides and sediment budget
This module introduces the ocean elements, namely tides and wind waves, their physics and dynamics, as well as beach sediment budgets, and introduces approaches how to manage coastal zones. Students will apply the basics of coastal engineering and the sediment balance concept to concrete coastal situations, and explain when and where to (or not to) apply different management approaches to ensure coastline protection. The key concepts will be explained of wave generation, wave propagation and breaking (deep and shallow waters) from linear theory, observations and models, and the concept of radiation stress and its importance in forcing currents and shallow water level gradients at the coast will be described. Students will work with wave statistics and spectra, identify the basics of wave climates at various scales and explain the origin and generation of tides, tide propagation and tidal currents.