

The beach: processes of creation and destruction – 2 credits

Course Number: 224.4009

Lecturer: Prof. Michael Lazar

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Course Type: Lecture

Course Level: MSc/ PhD

Prerequisites: No

Course Description:

The course focuses on understanding the processes effecting the coastal environment and their connection to the morphology of the beach. The course addresses such issues as waves, tides, currents and coastal construction and examines the physical and geological processes, which are involved with weathering, transportation and deposition of sediment along the coasts, as well as the role of sea level fluctuations as result of climate changes.

Topics:

1. Introduction to the coastal system.
2. Waves–wave theory (Airy, Stokes equations, solitary wave theory).
3. Currents – shore-normal and longshore.
4. Tides, their formation, and role in the coastal system.
5. Sediment – types, mechanism of transport.
6. The beach – definitions, seasonal changes, cross-section, and map view.
7. Dunes, their construction, and role in beach replenishment.
8. Sea level and climate change.
9. Models of the coastal environment – physical, numerical, and combined.
10. Coastal construction – failings and challenges.
11. The Israeli coast.