

Ocean Engineering Emphasis: Course Suggestions

2022-2026 Catalog

This list of classes is a suggestion for you as you build your Emphasis. You will have to make sure you have the pre-requisites and in some cases you also might need to get permission from the faculty teaching the class.

CE 431,432 Coastal Hydraulics I and II. Waves and their characteristics, submerged pipelines and vertical flat barriers (sea walls), wave uprush, rubble mound breakwaters. Wave setback analysis. Pile height determination. Criteria for types of breaking waves.

CHEM 302. Marine Chemistry. Introduction to chemical processes in the ocean including chemical oceanography and marine chemical ecology.

STAT 313. Applied Experimental Design and Regression Models. Analysis of variance including one-way classification, randomized blocks, and factorial designs; multiple regression, model diagnostics, and model comparison.

ME 341,347: Fluid Mechanics I and II. Fluid properties and fluid statics. Viscous flow, boundary layer concepts, lift and drag, compressible flow, turbomachinery.

GEOL 201. Physical Geology. Processes responsible for the Earth's rocks, structural surface features, geologic hazards, and natural resources.

PHYS 313. Introduction to Atmospheric Physics. Properties of the atmosphere, atmospheric motions, solar and terrestrial radiation. Emphasis on conservation laws of momentum, energy and mass applied to understanding the Earth's atmospheric motions.

PHYS 314. Ocean Dynamics. Physics governing ocean circulation and transport processes. Physical environment, dynamics of fluid motion in the presence of rotation and stratification, balanced flows, heat budgets, ocean waves, mixing/transport, and applications to climate processes and the biological environment.

PSC 201. Physical Oceanography. Introduction to the motions of the ocean. Physical environment and sea floor features; seawater properties; atmosphere and ocean interactions; ocean currents and circulation; waves and tides; the El Nino cycle; coastal ocean processes; climate change and ocean stressors; ocean resources and marine life.

MSCI 330. Technologies for Ocean Discovery. Survey of ocean sensor systems and emerging technologies that provide new understanding of the ocean. Current issues in marine science. Social context, societal implications of discoveries in ocean sciences.

MSCI 403. Ocean Sampling Techniques. Introduction to techniques in oceanography and marine sciences. Hands-on technical training in sampling, measuring, tagging and tracking of bathymetry and geography; waves, tides and currents; salinity, temperature and pressure; dissolved oxygen and pH;

irradiance and light scattering; phytoplankton and zooplankton; and benthic fauna and marine macrofauna.

