EXPLORING AND UNDERSTANDING THE WORLD’S OCEANS (11:628:125, 3 credits)

Instructor
Professor Daphne Munroe

Prerequisites
None

Course Materials
All materials available through course website

Topics
Navigation
Human Exploration of the Ocean
Birth of Oceanography
Formation of the Earth
Continental Drift
Plate Tectonics
Ocean Structures & the Seafloor
Water’s Chemistry (why water is awesome!)
Salt in the Ocean
Ocean Currents and Tides
Light in the Ocean
Carbon Chemistry in the Ocean
Phytoplankton
Zooplankton
Invertebrates
Fish
Marine Mammals
Deep Sea Communities
Sea Monsters – Marine Creatures in Pop Culture
Changing Ocean (pH)
Changing Ocean (fisheries & aquaculture)
Law of the Sea
Changing Ocean (Geoengineering)

Course Learning Goals and Assessment
The Learning Goals for the Marine Science Program are posted on our website at http://marine.rutgers.edu/main/academics/undergraduate/program-description. The learning goals for this course apply to Program Learning Goal 1 (master the basic biological, chemical, physical, and geological principles of marine science), Goal 3 (show evidence of scientific literacy and to communicate the information effectively both orally and in writing), and Goal 5 (evaluate contemporary global issues and the ethics of how the ocean’s resources are used).

Students completing this course will be able to:
Goal A. Explain how the oceans are connected to and drive the Earth’s climate
   Instructional Activities: lectures, assigned readings
   Assessment Method: performance on quizzes and weekly homework assignments

Goal B. Identify the relationships among the biological, physical, chemical and geological
   features of different regions of the world’s oceans
   Instructional Activities: lectures; assigned readings
   Assessment Method: performance on quizzes and weekly homework assignments

Goal C. Explain the theory of plate tectonics, its relationship to how oceans form and change
   over time, and its relationship to the distribution of tectonic activity on Earth
   Instructional Activities: lectures; assigned readings
   Assessment Method: performance on quizzes and weekly homework assignments

Goal D. Explain how waves, currents, and tides are created
   Instructional Activities: lectures; assigned readings
   Assessment Method: performance on quizzes and weekly homework assignments

Goal E. Classify the major groups of marine organisms and explain their roles in food webs
   Instructional Activities: lectures; assigned readings
   Assessment Method: performance on quizzes and weekly homework assignments

Goal F. Assess how humans use marine resources and evaluate human’s effects on the oceans
   Instructional Activities: lectures; assigned readings
   Assessment Method: performance on quizzes and weekly homework assignments

Goal G. Develop a white paper on a controversial marine policy
   Instructional Activities: rubric for white paper including a detailed breakdown of
   required content and structure
   Assessment Method: paper scored based on explanation of the controversy,
   discussion of pros and cons, and closing argument for or against

Grading
   Weekly homework assignments 25%
   Online quizzes 40%
   White paper 35%