



NORTHWEST FLORIDA STATE COLLEGE

Course Syllabus

Course Name: Oceanography

Course Number: OCE1001C

Section: 10140

Credit Hours: 4

Instructor Name: Dr. Jonathan Bryan

Instructor Office Location: 350/217 Niceville Campus

Instructor Email: bryanj@nwfsc.edu

Course Curriculum

Using the scientific method, critical thinking skills, data analysis, this course will examine the fundamental processes of the ocean system, composed of an atmosphere, hydrosphere, lithosphere, and biosphere, through time. The course will also explore interactions between these spheres, including critical analysis of scientific theories and emphasize oceanic connections with humanity

Goals

- Students will become familiar with the major subfields of oceanography (i.e., geological, chemical, physical, biological), the history of ocean science, the geography of the global ocean, and the use and interpretation of ocean charts and bathymetric maps.
- Students will understand the Theory of Plate Tectonics and its importance in the origin of ocean basins.
- Students will examine and classify a variety of ocean floor sediments and understand their importance in the reconstruction of the geologic history of ocean basins.
- Students will demonstrate (by experiment) an understanding of the chemical composition and properties of seawater, ocean salinity and chemical equilibrium, and biogeochemical cycles.
- Students will review the structure and general circulation of the atmosphere and its role in ocean circulation and climate, major surface ocean currents and the origin of geostrophic currents (gyres), the stratified nature of ocean water, and the origin of thermohaline circulation.
- Students will review the nature and classification of ocean waves, the origin and classification of tides (in the Gulf of Mexico), and various types of coastal circulation (longshore drift, cell circulation, estuarine circulation).
- Students will demonstrate a basic understanding of major types of ocean-atmospheric interactions such as hurricanes and the Southern Oscillation, and the major causes of sea level change through time.
- Students will observe (in laboratory exercises) the morphology and classification of the major groups of marine organisms, including phyto- and zoo-plankton, benthic macroalgae and macroinvertebrates, and nekton (marine vertebrates).

- Students will gain a basic understanding of ocean primary productivity, trophic structure, and limiting factors in of ocean ecology, with special emphasis on coral reef and deep-sea ecosystems.
- Students will become familiar with various issues in marine conservation and the economic use of oceans, including the protection of rare and endangered species, the role of marine sanctuaries and parks, coastal zone management, fisheries, etc.

Objectives

Student Learning Outcomes:

- *Students will use critical thinking to recognize the rigorous standards of scientific theories.*
- *Students will analyze and synthesize oceanographic data to draw scientifically valid conclusions.*
- *Students will recognize the different time scales associated with different ocean processes.*
- *Students will effectively communicate the importance of the interactions between humans and the ocean realm.*
- *Students will apply their understanding of these oceanographic principles to various Marine issues.*

Student Expectations of the Course

In this course, student may expect:

- To work with a qualified professor with graduate degrees in relevant oceanographic fields, who is committed to undergraduate education and hands-on experience.
- To be fully and clearly informed of all course requirements and expectations (due dates, study guides for exams, time allotted for laboratory work, etc.)
- To have an on-campus professor, readily available in-person, by phone, or e-mail, for consultation and review of any aspect of the course.
- To be motivated, challenged, and proficient in the broadly interdisciplinary field of introductory oceanography

How Student Performance will be Measured

Student performance will be assessed by:

- 5 or 6, 100-point, in-class exams. Exams cover each major section of the course (no exams, including the final exam, are comprehensive)
- Up to 16 or more laboratory exercises. The point value of each lab varies, but the cumulative point value of all labs is approximately 200 points (equivalent to two exams). Lab work may include a local field trip (during normal class time) to the Gulf of Mexico coast for observations and sampling of coastal environments, sediments, and beach geomorphology, and collection of nearshore plankton using a (using a plankton tow net) for laboratory work in biological oceanography.