

**NVCC COLLEGE-WIDE COURSE CONTENT SUMMARY
GOL 112 - OCEANOGRAPHY II (4 CR.)**

Course Description

Examines the dynamics of the oceans and ocean basins. Applies the principles of physical, chemical, biological, and geological oceanography. Part II of II. Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

General Course Purpose

The course covers an expanding and increasingly multidisciplinary field-study of the oceans. The student taking the course will obtain knowledge of a broad spectrum of scientific concepts and techniques and will be challenged to use them to solve wide-ranging problems. The course is best suited for the student who already has a background in one or more of the sciences and who is interested in pursuing a career in science. The course provides an opportunity for the student of diverse interest and viewpoints to come together with other students and share new experiences and expand their knowledge. Practical working experience in the laboratory and in the field, along the shore and on boats, will be emphasized. The student will learn to use sampling and measuring equipment and to collect process and identify water, sedimentary and biological specimens.

Course Prerequisites/Co-requisites

Prerequisite is instructor permission.

Course Objectives

Upon completion of GOL 112, the student will be able to:

- trace in a general way the history of the oceans
- describe the operation of oceanic sampling devices
- read record of biogeochemical changes in ancient oceans, i.e. paleoceanography
- discuss the biochemical and geological evidence for the origin of life in the oceans and generally trace the evolutionary history of life to the present time
- diagram the classification of main environments, labeling the major depth and water zones
- demonstrate techniques for sampling and processing marine organisms
- identify the major groups (kingdoms, phyla, classes) of marine organisms
- discuss the interactions among producers, consumers, and decomposers in the marine realm and tell how external environmental factors influence this system
- converse or write intelligently about food and mineral resources of the ocean, pollution problems, fisheries rights, coastal development power from the sea, and desalination

Major Topics to be Included

- A. Biological Oceanography
 1. basic concepts of life
 2. origin and brief history of life in the oceans
 3. classification of marine environments
 4. techniques for sampling marine life
 5. plants in the ocean (phytoplankton, higher plants, distribution, production, factors influencing population density)
 6. animals in the ocean (zooplankton, larger animals adaptations to environmental parameters)
 7. roles of bacteria and fungi
 8. interrelationships of marine organisms (natural associations, food webs, communities)

9. coral reef community
10. food resources of ocean

B. Special Topics

1. coastal development
2. pollution (oil spills, other chemicals, nuclear wastes)
3. territorial zones, fisheries conflicts
4. future of the oceans