

# MARINE SCIENCES (MAR)

## Courses and Descriptions

### MAR 120 Oceanography 3 Credits

In this course, students will investigate the geological, chemical, physical, and biological processes that shape the ocean. Emphasis will be placed on how these processes interact with each other and with human populations. These interactions influence important global phenomena that impact all our lives, including weather and climate, the distribution of marine organisms and other natural resources, and coastal processes. Understanding these phenomena will enable students to make more informed decisions and contribute to serious global marine issues. Students will learn through a combination of hands-on exercises designed to foster a deeper understanding of the scientific content as well as the scientific process, practical experiences with real data, readings, and some lectures. CLAS general education areas addressed: DP & GP.

### MAR 121 Introductory Oceanography Lab 1 Credits

This lab course introduces students to the fundamental aspects of geological, chemical, physical and biological oceanography. Students learn through inquiry-based, hands-on exercises and activities using actual data collected in the lab and in the field. Independent projects and local field trips during lab and on weekends may be required. One three-hour lab per week. This course counts towards the fulfillment of the Disciplinary Perspectives element of the CLAS general education curriculum.

### MAR 290 Directed Research and Study in Marine Sciences 1-4 Credits

Provides an opportunity for freshman and sophomore students to gain hands-on research experience in the marine sciences. This is an individual program of study and each student will work with a selected faculty member on a topic of mutual interest. The course consists of a combination of project meetings, supervised research, and guided readings. The focus will be on formulating research questions, designing and conducting experiments, collecting the necessary data, reviewing the scientific literature as it relates to each student's research topic in a weekly meetings with the instructor, and communicating the findings by writing a final project report.

### MAR 340 Marine Processes and Environments: Seminar 3 Credits

This course is designed as a seminar course. Therefore, students will learn to lead class discussions, to analyze and critique peer-reviewed journal articles, and to enhance their presentation skills. Students will interpret graphical, spatial, and numerical data to support their positions. Content will emphasize the interactions among marine processes, biological features, and geologic landforms.

**Prerequisite(s):** A minimum grade of D in MAR 120 and GEO 100 or GEO 113.

### MAR 401 Marine Ecology 4 Credits

The purpose of this course is to introduce students to fundamental principles in ecology, as it relates to marine systems. Topics include the marine environment and its influence on the organisms living there; biodiversity and speciation; factors regulating population dynamics in marine systems; larval and fisheries ecology; species interactions such as predation, competition, and symbiosis; factors regulating productivity and energy flow in marine systems; and marine conservation. Hands-on laboratory exercises will provide students with the opportunity to design and conduct experiments related to marine ecology, and to collect, analyze, and interpret data from those experiments. Ecosystem modeling will also be introduced. Three hours of lecture and one three-hour lab per week. Weekend field trips may be required.

**Prerequisite(s):** D or better in MAR 120 and either BIO 115 or 116.

### MAR 401L Marine Ecology Lab 0 Credits

This lab is a co-requisite and must be taken with the corresponding course.

**Corequisite(s):** MAR 401.

### MAR 410 Physical Oceanography 3 Credits

Introduction to the physical aspects and processes of the oceans and their influence on marine ecosystems and Earth processes. Topics include distribution of salinity and water temperature and their effect on water movement, the oceanic heat budget, atmospheric and oceanic interactions, ocean currents including surface and deep water circulation, waves, tides, and medium- to small-scale circulation features. Throughout the course, emphasis is placed on how these physical processes affect the biology and chemistry of the ocean. Three hours of lecture per week. Weekend field trips may be required.

**Prerequisite(s):** MAR 120.

### MAR 480 Senior Thesis 3 Credits

A senior thesis is optional for marine sciences majors. However, a senior thesis is required for eligibility to graduate with honors in marine sciences. The topic for investigation will be chosen by the student in consultation with the faculty of the Department of Geological, Environmental, and Marine Sciences. The student must initiate consideration of a proposal to the Department. The proposal must contain a discussion of the proposed project and a timetable to be followed in the study. A departmental committee consisting of a major and minor advisor will evaluate the written paper submitted at the conclusion of the study or other approved venue. An oral presentation before the department at the conclusion of the semester in which the study is completed is required. Proposals must be submitted in final form no later than the end of the ninth week of the semester prior to the semester in which the study is undertaken.

**Prerequisite(s):** senior standing in the marine sciences major and permission of department chair.

### MAR 490 Independent Study: Research and Creative Expression 1-4 Credits

Immerses the student in field or laboratory research. The student learns to organize material, use the literature, make precise measurements, and obtain reproducible data. If possible, the student will publish the results or present them at a scientific meeting.

**MAR 491 Internship in Marine Sciences 1-4 Credits**

A supervised work experience in an approved organization where qualified students gain real-world knowledge and utilize their academic training in a professional environment. Placements may be in private, public, non-profit, or governmental organizations. These can include consulting firms, regulatory agencies, advocacy groups, and educational or research institutions. Normally, 50 hours of internship per credit is required. A mutually agreed upon method of evaluation will be formalized prior to the approval of the internship by the sponsoring faculty and could include a term paper or project report and a poster presentation.

**Prerequisite(s):** 2.5 GPA and permission of instructor.