

# MARINE SCIENCES, MINOR

Requirements for a minor may be completed at any campus location offering the specified courses for the minor. Students may not change from a campus that offers their major to a campus that does not offer their major for the purpose of completing a minor.

## Program Description

This program provides an excellent opportunity for undergraduates to pursue their interests in the study of the oceans and make more informed decisions about future graduate studies in marine sciences. Although Penn State does not award degrees in this field, a number of faculty pursue research interests in the marine sciences, and a varied selection of undergraduate courses in the marine sciences is available. The student can either complete the requirements for the minor at University Park (UP) or participate in an intensive semester-long oceanography experience at the Southampton, UK, Oceanography Centre (SOC) through education abroad:

The latter option may be of particular interest to students from non-UP locations. SOC has designed a program for PSU students that provides abundant opportunity to participate in shipboard oceanographic research, including a week of day-cruises in the spring and a 2-week series of cruises in June. Students who elect to pursue that minor at UP have the opportunity to receive training as scientific scuba divers through Penn State's Science Diving Program and participate in a number of other field experiences in the marine sciences.

**MARINE SCIENCES MINOR:** The Marine Sciences Committee is authorized to award a minor certificate to any undergraduate student regularly enrolled in a degree program at the University who, in addition to satisfying the degree requirements of his or her baccalaureate major, satisfies the requirements for the Marine Sciences minor. The completion of the minor is reflected by a formal notation on the student's official record at the time of graduation.

## What is Marine Sciences?

Undergraduate students in the marine science minor pursue their interests in the study of the oceans across a broad range of disciplines including marine biology/ecology, chemical oceanography/marine chemistry, marine geosciences, and meteorology. Marine Scientists often work at the interface of these disciplines to study the physical, chemical and biological processes that govern oceans and marine life from the scale of entire ocean basins to the fate of microscopic particles. Applications of this research range from food and energy security to defense. Penn State has a group of world-class faculty pursuing research interests from the coastal zones to the deep sea and from the tropics to the polar regions. An important goal of Penn State marine scientists is to study the impacts of global change and ocean exploration on marine ecosystems.

## You Might Like This Program If...

- You have an interest in the oceans and marine life and are considering a career in marine science.
- You enjoy laboratory and field-work and/or science diving.
- You are interested in studying abroad.

## Entrance to Minor

To enter the program, a student must have attained at least fourth-semester standing, completed CHEM 112, MATH 111 or MATH 141, and

BIOL 110 or their equivalents, and have earned a cumulative grade-point average of at least 2.50. To ensure adequate advising and record keeping, the student must apply for the minor in the Marine Sciences program office and must then complete the requirements shown on the program requirements tab.

In addition to the entrance requirements shown above, there are prerequisite credits required for courses listed under Supporting Courses and Related Areas.

## Program Requirements

Requirement	Credits
Requirements for the Minor	19

Courses offered by other institutions may be substituted for any of the required courses listed below, if accepted for transfer by the student's major department and approved by the Marine Sciences Committee. This includes up to 16 transfer credits from SOC. Upon completion of the requirements and no later than the tenth week of the semester in which the student is to graduate, he or she must verify in the Marine Sciences program office that the requirements have been met.

## Requirements for the Minor

A grade of C or better is required for all courses in the minor, as specified by Senate Policy 59-10 (<https://senate.psu.edu/students/policies-and-rules-for-undergraduate-students/59-00-minors-and-certificates/>). In addition, at least six credits of the minor must be unique from the prescribed courses required by a student's major(s).

Code	Title	Credits
<b>Prescribed Courses</b>		
<i>Prescribed Courses: Require a grade of C or better</i>		
GEOSC 40	The Sea Around Us	3
<b>Supporting Courses and Related Areas</b>		
<i>Supporting Courses and Related Areas: Require a grade of C or better</i>		
Select at least 6 credits of field studies of the following: <sup>1</sup>		6
BIOL 450W	Experimental Field Biology	
BIOL 483	Coastal Biology Travel Experience	
BIOL 499A	Tropical Field Ecology	
EARTH 240	Coral Reef Systems	
EMSC 440	Science Diving	
EMSC 441	Advanced Science Diving	
ERM 496	Independent Studies	
GEOSC 410	Marine Biogeochemistry	
or BIOL 496	Independent Studies	
GEOSC 496	Independent Studies	
METEO 496	Independent Studies <sup>2</sup>	
Select 10 credits from the following list:		10
BIOL 406	Symbiosis	
BIOL 417	Invertebrate Zoology	
BIOL 482	Coastal Biology	
GEOSC 419	The Organic Geochemistry of Natural Waters and Sediments	
GEOSC 440	Marine Geology	
METEO 451	Introduction to Physical Oceanography	
WFS/ERM 435	Limnology	
WFS/ERM 436		

WFS/ERM 450	Wetland Science and Sustainability
WFS 452	Ichthyology
WFS 453	Ichthyology Laboratory

<sup>1</sup> Students may also wish to transfer 6 credits of field-oriented course work from another institution with prior approval of the chair of the Marine Sciences minor.

<sup>2</sup> Students may select METEO 496 with consent of instructor and Marine Sciences minor.

## Academic Advising

The objectives of the university's academic advising program are to help advisees identify and achieve their academic goals, to promote their intellectual discovery, and to encourage students to take advantage of both in-and out-of class educational opportunities in order that they become self-directed learners and decision makers.

Both advisers and advisees share responsibility for making the advising relationship succeed. By encouraging their advisees to become engaged in their education, to meet their educational goals, and to develop the habit of learning, advisers assume a significant educational role. The advisee's unit of enrollment will provide each advisee with a primary academic adviser, the information needed to plan the chosen program of study, and referrals to other specialized resources.

READ SENATE POLICY 32-00: ADVISING POLICY (<https://senate.psu.edu/students/policies-and-rules-for-undergraduate-students/32-00-advising-policy/>)

## University Park

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## Career Paths

Marine Scientists work for universities, governments, non-profits and private industry in a range of functions. For example, they develop tools and methods to manage ocean resources such as fisheries, protect shorelines from erosion, and guide ocean exploration for minerals and oil. There are also a wide range of opportunities for graduate studies in the marine sciences, which include master's and Ph.D. degrees.

## Contact

### University Park

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