Bachelor of Science

Ocean and Earth Science with a Major in Biological Oceanography (BS)

Richard Hale, Advisor

Students in the Ocean and Earth Science program focus on global systems that control environmental conditions on the planet. They also learn to develop solutions to complex environmental problems by working in interdisciplinary teams. All majors in the department complete courses in the basic sciences and mathematics and core courses in Earth systems science. Students majoring in Biological Oceanography, Chemical Oceanography, Physical Oceanography, and Geology complete a capstone field research experience. In addition, students complete a suite of specialty courses specified in each major. A minimum grade of C or higher in all major and prerequisite courses is required for graduation.

Ocean and Earth Science with a Major in Biological Oceanography

The Biological Oceanography major is designed for students considering graduate work or employment in the pure and applied fields of oceanography. Students in this major are strongly encouraged to minor in biology and select 12 credits from 300/400 level biology courses.

Requirements

Lower-Division General Education

- Written Communication (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees#written) 6
- Oral Communication (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees#oral) 3
- Mathematics (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees#math) 3
- Language and Culture (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees#language) 0-6
- Information Literacy and Research (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees#information) 3
- Human Behavior (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees#behavior) 3
- Human Creativity (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees#creativity) 3
- Interpreting the Past (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees#interpret) 3
- Literature (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees#literature) 3
- Philosophy and Ethics (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees#philosophy) 3
- The Nature of Science (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees#nature) 8
- Impact of Technology (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees#impact) 3
- Written Communication: grade of C or better required in both courses
- Oral Communication: met in the major by OEAS 441
- Mathematics: MATH 211.
- Information Literacy and Research: met in the major by OEAS 130G
- The Nature of Science: CHEM 121N & CHEM 122N, CHEM 123N & CHEM 124N

Upper-Division General Education

- Option A. Approved Disciplinary Minor (a minimum of 12 hours determined by the department), or second degree or second major.
- Option B: Interdisciplinary Minor (specifically 12 hours, 3 of which may be in the major)
- Option C. An approved Certification Program such as teaching licensure
- Option D. Two Upper-Division Courses from outside the College of Sciences and not required by the major (6 hours)

Requirements for Graduation

Requirements for graduation include the following:

- Option A.
- Option B.
- Option C.
- Option D.

Biological Oceanography Major

General Education

Complete lower-division requirements 36-42
Complete upper-division requirements (minimum of 6 credit hours) 6

Biological Oceanography

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
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<tbody>
<tr>
<td>BIOL 121N</td>
<td>General Biology I</td>
</tr>
<tr>
<td>&amp; BIOL 122N</td>
<td>General Biology I Lab</td>
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<tr>
<td>BIOL 123N</td>
<td>General Biology II</td>
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<tr>
<td>&amp; BIOL 124N</td>
<td>General Biology II Lab</td>
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<tr>
<td>MATH 212</td>
<td>Calculus II</td>
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<tr>
<td>OEAS 111N</td>
<td>Physical Geology</td>
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<tr>
<td>OEAS 130G</td>
<td>Research Skills and Information Literacy</td>
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<td>for the Natural Sciences</td>
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<tr>
<td>OEAS 306</td>
<td>Oceanography</td>
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<td>OEAS 307</td>
<td>Oceanography Laboratory</td>
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<tr>
<td>PHYS 231N</td>
<td>University Physics I</td>
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<tr>
<td>&amp; PHYS 232N</td>
<td>University Physics II</td>
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<td>OEAS 310</td>
<td>Global Earth Systems</td>
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<td>STAT 310</td>
<td>Introductory Data Analysis</td>
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<tr>
<td>OEAS 406</td>
<td>Matlab</td>
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<tr>
<td>OEAS 440</td>
<td>Biological Oceanography</td>
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<td>BIOL 292</td>
<td>Evolution</td>
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<td>BIOL 415W</td>
<td>Marine Ecology</td>
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<tr>
<td>or OEAS 451W</td>
<td>Data Collection and Analysis in Oceanography</td>
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<tr>
<td>CHEM 211</td>
<td>Organic Chemistry I Lecture</td>
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<tr>
<td>CHEM 212</td>
<td>Organic Chemistry I Laboratory</td>
</tr>
<tr>
<td>CHEM 213</td>
<td>Organic Chemistry II Lecture</td>
</tr>
<tr>
<td>CHEM 441</td>
<td>Biochemistry Lecture</td>
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<tr>
<td>OEAS 441</td>
<td>Ocean and Earth Sciences Field Study I</td>
</tr>
<tr>
<td>&amp; OEAS 442W</td>
<td>Ocean and Earth Sciences Field Study II</td>
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<tr>
<td></td>
<td>(satisfies oral and upper-division written communication requirement)</td>
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<tr>
<td>Select two of the following electives:</td>
<td>6</td>
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<tr>
<td>OEAS 303</td>
<td>Paleontology</td>
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</tbody>
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The Nature of Science: CHEM 121N & CHEM 122N, CHEM 123N & CHEM 124N
OEAS 350 Where Rivers Meet the Sea: Ecology and Climate
OEAS 403W Aquatic Pollution
OEAS 405 Physical Oceanography
OEAS 410 Chemical Oceanography
OEAS 412 Global Environmental Change
OEAS 413 Environmental Geochemistry
OEAS 415 Waves and Tides
OEAS 416 Electronics and Oceanographic Instrumentation
OEAS 418 Limnology: Biogeochemistry of Lakes
OEAS 420 Hydrogeology
OEAS 425 Marine Geology
OEAS 444 Communicating Ocean Science to Informal Audiences
OEAS 452 Microbial Ecology of the Oceans
OEAS 451W Data Collection and Analysis in Oceanography (if not taken in lieu of BIOL 415W)
OEAS 453W Marine Molecular Ecology
OEAS 466W Introduction to Mitigation and Adaptation Studies
OEAS 467 Sustainability Leadership
OEAS 490 Paleooceanography

Total Credit Hours 115-122

Elective Credit
Elective credit may be needed to meet the minimum requirement of 120 credit hours.

Honors Program in Ocean and Earth Science
Students admitted by the faculty to the Ocean and Earth science honors program engage in supervised individual study in areas of their interest. Honors students must complete all courses required by the department with a minimum grade point average of 3.50 and a total of at least three credits in one of the following courses:

- OEAS 487 Honors Research in Ocean and Earth Sciences 1-3
- OEAS 497 Special Problems and Research 1-3

Degree Program Guide
The Degree Program Guide is a suggested curriculum to complete this degree program in four years. It is just one of several plans that will work and is presented only as broad guidance to students. Each student is strongly encouraged to develop a customized plan in consultation with their academic advisor. Additional information can also be found in Degree Works.
BA or BS to MBA (Master of Business Administration) Linked Program

The linked BA/MBA or BS/MBA program is an early entry to the MBA program of study. The early-entry program is designed for well qualified non-business undergraduate ODU students to start their MBA program prior to completing their undergraduate degree. Well qualified non-business undergraduate students may take MBA-level courses as early as three semesters prior to graduation and count up to 12 graduate credits toward their undergraduate degree. Students participating in the early-entry program must earn a minimum of 150 credit hours (120 discrete credit hours for the undergraduate degree and 30 discrete credit hours for the graduate degree). Early-entry program students should carefully consider their undergraduate degree program requirements when planning their course of study. Students in the early-entry program work in close consultation with the MBA Program Office and should refer to information in the Strome College of Business section in the graduate catalog (http://catalog.odu.edu/graduate/stromecollegeofbusiness/) to develop an individualized plan of study based on the required coursework.

BA or BS to MPA (Master of Public Administration) Linked Program

The linked BA/MPA or BS/MPA program provides qualified Old Dominion University undergraduate students with the opportunity to earn a master's degree in public administration while taking credits in the MPA program as an undergraduate student. The program is designed for highly motivated students with the desire to immediately continue their education after the bachelor's degree. The program is especially relevant to individuals seeking to work (or currently working) in the public or non-profit sectors, but is suitable for students from any undergraduate major. Graduate courses may be taken during the fall and spring semester of the student's senior undergraduate year. Up to 12 graduate credits can count toward both the undergraduate and graduate degree and can meet upper-level General Education requirements. After receiving the undergraduate degree, a student will continue with the MPA program, taking MPA courses until completing the required 39 credit hours. Students in the linked program must earn a minimum of 150 credit hours (120 discrete credit hours for the undergraduate degree and 30 discrete credit hours for the graduate degree).

Requirements for admission to the graduate program can be found in the School of Public Service section of the Graduate Catalog (http://catalog.odu.edu/graduate/business/public-service/). For additional information, please contact the School of Public Service in the Strome College of Business.