Bachelor of Science

Biology with a Major in Marine Biology (BS)

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

Mathematics: Select MATH 205 or MATH 211; C or better required

Information Literacy and Research: CS 121G, CS 126G or OEAS 130G required

Nature of Science: met by CHEM 121N-CHEM 122N and CHEM 123N-CHEM 124N

Upper-Division General Education Requirements

The Professional Education core satisfies this requirement for the secondary education concentration.

- 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 (300-level or above) courses from outside the College of Sciences and not required by the major (6 hours)

Requirements for Graduation

Requirements for graduation include the following:

- Minimum of 120 credit hours.
- Minimum of 30 credit hours overall and 12 credit hours of upper-level courses in the major program from Old Dominion University.
- Minimum overall cumulative grade point average of C (2.00) in all courses taken.
- Minimum overall cumulative grade point average of C (2.00) in all courses taken toward the major.
- Minimum overall cumulative grade point average of C (2.00) in all courses taken toward a minor.
- Completion of ENGL 110C, ENGL 211C or ENGL 231C, and the writing intensive (W) course in the major with a grade of C or better. The W course must be taken at Old Dominion University.
- Completion of Senior Assessment.

Biology Core

Required Biology Core Courses (C or better required in each course)		
BIOL 121N & BIOL 122N	General Biology I and General Biology I Lab	4
BIOL 123N & BIOL 124N	General Biology II and General Biology II Lab	4
Upon completion of the above sequences, students must complete the following core courses, some of which are prerequisites or corequisites for upper-level biology courses (see course descriptions for individual courses):		
BIOL 291	Ecology	3
BIOL 292	Evolution	3
BIOL 293	Cell Biology	3
BIOL 294	Genetics	3
Total Credit Hours		**20**

Biology with a Major in Marine Biology

The marine biology major provides students with coursework, specialized advising, and practical experience in marine biology while ensuring a strong, balanced education in one of the traditional natural sciences in which students major. A research, practicum, or internship experience in marine biology is strongly encouraged. Marine biology students may also select a minor in ocean and earth science.

General Education		
Complete lower-division requirements		33-40
Complete upper-division requirements (minimum of 6 credit hours)		6
Biology Core		
Complete biology core requirements		20
Marine Biology Major [1]		
BIOL 331	Marine Biology	3
OEAS 306	Oceanography	3
Select 9 credits from the following:		9
BIOL 307	Invertebrate Zoology	
BIOL 367	Cooperative Education	
BIOL 368	Internship	
BIOL 369	Practicum	
BIOL 402	Scientific Diving Methods for Marine Research	
BIOL 415W	Marine Ecology	
BIOL 420	Ichthyology	
BIOL 424	Comparative Animal Physiology	
BIOL 435	Marine Conservation Biology	
BIOL 444	Field Studies in Marine Biology	
BIOL 453	Molecular Ecology	
BIOL 471W	Marine Vertebrate Ecology, Management & Conservation	
BIOL 487	Honors Research in Biology	
BIOL 488W	Honors Research in Biology	
BIOL 497	Undergraduate Research (Counts towards lab credit if 3 credits are earned.)	
BIOL 498	Independent Study	
Select 4 credits of biology electives		4
Select a writing intensive course:		3
BIOL 405W	Biology Seminar	
BIOL 415W	Marine Ecology	

BIOL 471W	Marine Vertebrate Ecology, Management & Conservation	
BIOL 488W	Honors Research in Biology	
CHEM 121N	Foundations of Chemistry I Lecture	3
CHEM 122N	Foundations of Chemistry I Laboratory	1
CHEM 123N	Foundations of Chemistry II Lecture	3
CHEM 124N	Foundations of Chemistry II Laboratory	1
CHEM 211	Organic Chemistry I Lecture	3
OEAS 110N	Earth Science	4
or OEAS 111N	Physical Geology	
PHYS 111N	Introductory General Physics	4
STAT 130M	Elementary Statistics	3
or STAT 310	Introductory Data Analysis	
Total Credit Hours		**103-110**

[1] All required, elective, and writing intensive courses must be passed with a C (2.0) or better. A passing grade (P) is required in courses graded pass/fail.

Elective Credit

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

Honors Program in Biology

A. Honors Research

Undergraduates with junior or senior standing and a GPA of 3.00 or better are eligible to participate in Honors Research. After consultation with the program director (Dr. Deborah A. Waller), students select a professor who agrees to oversee the research project. Students then enroll in two courses, BIOL 487 and BIOL 488W. The courses may be taken in any sequence: fall-spring, spring-summer, summer-summer, summer-fall. Normally both semesters are required but a student may receive credit for only one semester. The research project, time commitment by the student and the basis for the grade are mutually determined by the student and professor. Because first-semester research results are often preliminary, the grade for BIOL 487 is based on a review paper and/or research proposal, which provides the student with an overview of the field. The second semester is graded on the final research paper and a seminar presented to the honors committee and interested faculty. Professors should encourage students to publish results and present papers at scientific meetings when appropriate. Students should also be urged to apply for funds from agencies that provide seed money to undergraduates. The program director can provide information on scientific societies that sponsor meetings and/or offer small grants. Successful completion of both courses with a C (2.0) or better will allow the student to use BIOL 488W as a lab course in meeting his/her requirements.

B. Bachelor's Degree with Honors in Biological Sciences and Honors Designation for Biology courses

Students maintaining an overall GPA of at least 3.25 and of 3.50 in biology can receive a "Bachelor's Degree with Honors in Biological Sciences" subject to satisfaction of the minimum University standards for the Honors degree and completion of one of the following two options:

Option 1: Successful completion of two semesters of biological research taken as BIOL 487 / BIOL 488W (Honors Research).

Option 2: Successful completion of three upper-division courses in Biological Sciences and achievement of the "Honors" designation in each.

Students petitioning for designation of an upper-division biology course as "Honors" must have a minimum overall GPA of 3.25 and a GPA of at least 3.50 in biology.

To receive the "Honors" designation for a course, students must achieve a final course score of at least 95% or the equivalent of an "A" on the University grade scale.

Faculty are encouraged to assign and work with students on other activities deemed appropriate for an "Honors" course designation and utilize the results of these activities in the assignment of a course grade.

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.

Course	Title	Credit Hours
Freshman		
First Semester		
ENGL 110C	English Composition (Grade of C or better required)	3
MATH 163	Precalculus II	3
CHEM 121N and CHEM 122N		4
BIOL 121N & BIOL 122N		4
	Credit Hours	**14**
Second Semester		
ENGL 211C or ENGL 231C	Writing, Rhetoric, and Research (Grade of C or better required) or Writing, Rhetoric, and Research: Special Topics	3
MATH 205 or MATH 211	Calculus for Life Sciences or Calculus I	3-4
CHEM 123N and CHEM 124N		4
BIOL 123N & BIOL 124N		4
	Credit Hours	**14-15**
Sophomore		
First Semester		
CS 121G or CS 126G or OEAS 130G	Introduction to Information Literacy and Research for Scientists or Honors: Introduction to Information Literacy and Research or Research Skills and Information Literacy for the Natural Sciences	3
BIOL 291	Ecology	3
BIOL 293	Cell Biology	3
CHEM 211	Organic Chemistry I Lecture	3
PHYS 111N	Introductory General Physics	4
	Credit Hours	**16**
Second Semester		
Human Behavior		3
Philosophy and Ethics		3
OEAS 111N or OEAS 110N	Physical Geology or Earth Science	4
BIOL 292	Evolution	3
BIOL 294	Genetics	3
	Credit Hours	**16**

Junior		
First Semester		
BIOL 331	Marine Biology	3
Oral Communication		3
Literature		3
300/400-level Marine BIology Elective		3
Human Creativity		3
Elective or Language and Culture I (May be waived, see requirement details)		0-3
	Credit Hours	**15-18**
Second Semester		
STAT 130M or STAT 310	Elementary Statistics or Introductory Data Analysis	3
OEAS 306	Oceanography	3
300/400-level Marine Biology Elective		3
Interpreting the Past		3
Impact of Technology		3
Elective or Language and Culture I (May be waived, see requirement details)		0-3
	Credit Hours	**15-18**
Senior		
First Semester		
Biology Writing Intensive (W) course (C or better required)		3
300/400-level Biology Elective		4
300/400-level Marine Biology Elective		3
Minor or Elective		3
Upper-Division General Education course or Minor		3
	Credit Hours	**16**
Second Semester		
Upper-Division General Education course or Minor		3
Minor or Elective		3
Minor or Elective		2
Elective		6
	Credit Hours	**14**
	Total Credit Hours	**120-127**

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.