

## Bachelor of Science

# Ocean and Earth Science with a Major in Middle School Science Education (6-8) (BS)

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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, as well as 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 Middle School Science Education (6-8)

The middle school science education major is designed for students preparing to teach middle school science. This program meets the requirements for teacher licensure in Virginia as established by the Virginia Board of Education licensure regulations.

Due to changing University requirements, national accreditation standards, and the Virginia Board of Education licensure regulations, the teacher preparation programs in the College of Sciences are under constant revision. Any changes resulting from these factors supersede the program requirements described in this Catalog. Students are encouraged to obtain current program information from their advisors and the Office of Clinical Experiences website at [www.odu.edu/oce](http://www.odu.edu/oce) (<http://www.odu.edu/oce/>).

## Admission

Students must first declare Ocean and Earth Science with a major in middle school science education with the chief departmental advisor. All students must apply for and be admitted into the approved middle school science education program. Students must meet the required criteria for admission by earning the minimum required grade point averages (GPA).

### Required grade point averages (GPA)

- A cumulative GPA of 2.75 is required.
- A major/content GPA of 2.75 is required - all Ocean and Earth Science courses and all other science and mathematics content courses must be passed with a grade of C (2.0) or higher.
- A professional education GPA of 2.75 is required – all professional education courses must be passed with a grade of C- or higher.

Although students may enroll in a limited number of education courses, students must be admitted into the approved Earth science teacher preparation program prior to enrolling in any instructional strategies practicum education course. Students must also meet with an education advisor in the Office of Clinical Experiences.

## Continuance

Students must maintain a cumulative GPA of 2.75, a major/content GPA of 2.75 and a professional education GPA of 2.75. Ocean, Earth and Atmospheric Sciences content courses must be passed with a grade of C (2.0) or higher. Courses in the professional education core must be completed with a grade of C- or higher for continuance. A professional education GPA of 2.75 is required for continuance. Students must take and pass the Praxis Subject Assessment, Earth and Spaces Sciences content knowledge (formerly Praxis II) prior to or while enrolled in the instructional

strategies course. All assessments must be passed prior to the start of the Teacher Candidate Internship Orientation session.

## Background Clearance Requirement

Old Dominion University requires a background clearance check of candidates interested in many of the professional education programs. Professional education programs have several field experiences that are required for continuance and graduation from the program. The background clearance must be successfully completed prior to a field experience placement. Candidates will be provided a field experience placement when the background check process is completed with resolution of any issues. The process to complete the ODU clearance background check is located at: <https://www.odu.edu/clinical-experiences/placement/background-checks> (<https://www.odu.edu/clinical-experiences/placement/background-checks/>). The ODU clearance process includes: an FBI fingerprint, a child protective service/social service review, and a Virginia State Police sex offender registry review. Candidates interested in the professional education programs are advised to complete this clearance process immediately upon entry into the program since the clearance process takes a minimum of eight weeks to complete.

## Virginia Board of Education Prescribed Assessments for Licensure

Praxis Subject Assessment, Earth and Spaces Sciences content knowledge (test code: 5442) – passing score of 147 required.

Students are encouraged to complete the following courses (or their approved equivalents) prior to taking the Praxis content knowledge licensure tests:

Nature and Impact of Science and Engineering: OEAS 130G, STAT 310  
Physical Science: CHEM 121N, CHEM 122N, CHEM 123N, CHEM 124N, PHYS 111N, PHYS 112N, PHYS 309  
Life Science: BIOL 121N, BIOL 122N, BIOL 123N, BIOL 124N, BIOL 291, BIOL 292, BIOL 294, OEAS 452  
Earth & Space Science: ASTP 408, OEAS 111N, OEAS 112N, OEAS 220T, OEAS 306, OEAS 310

Please consult with your academic advisor with any questions and before registering for your licensure test.

To review more information on the Virginia Board of Education prescribed assessments visit the Office of Clinical Experiences website, [www.odu.edu/oce](http://www.odu.edu/oce) (<http://www.odu.edu/oce/>).

## Requirements

### Lower-Division General Education

Written Communication ( <a href="https://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#written">https://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#written</a> )	6
Oral Communication ( <a href="https://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#oral">https://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#oral</a> )	3
Mathematics ( <a href="https://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#math">https://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#math</a> )	3
Language and Culture ( <a href="https://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#language">https://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#language</a> )	0-6
Information Literacy and Research ( <a href="https://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#information">https://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#information</a> )	3
Human Behavior ( <a href="https://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#behavior">https://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#behavior</a> )	3
Human Creativity ( <a href="https://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#creativity">https://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#creativity</a> )	3
Interpreting the Past ( <a href="https://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#interpret">https://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#interpret</a> )	3
Literature ( <a href="https://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#literature">https://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#literature</a> )	3
Philosophy and Ethics ( <a href="https://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#philosophy">https://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#philosophy</a> )	3

The Nature of Science ( <a href="https://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#nature">https://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#nature</a> )	8
Impact of Technology ( <a href="https://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#impact">https://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#impact</a> )	3

Written Communication: grade of C or better required in both courses

Oral Communication: met in the major by OEAS 444.

Mathematics: MATH 211 or MATH 205

Information Literacy and Research: met in the major by OEAS 130G

The Nature of Science: CHEM 121N & CHEM 122N, CHEM 123N & CHEM 124N

Impact of Technology: met in the major by OEAS 220T

## Upper-Division General Education

The professional education core satisfies the Upper-Division General Education requirement.

### Requirements for Graduation

Requirements for graduation include 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, completion of the Senior Assessment, a minimum cumulative 2.75 GPA, in the major area, and in the professional education core, with no grade less than a C in the major and C- in the professional education core; successful completion of the Teacher Candidate Internship and a minimum of 121 credit hours, which must include both a minimum of 30 credit hours overall and 12 credit hours in upper-level courses in the major program from Old Dominion University. Note that a C (2.0) must be earned in all Ocean and Earth Science courses used to satisfy departmental requirements.

Licensure requirements also include certificate of completion in First Aid/AED/CPR, Dyslexia Awareness Training, Child Abuse and Neglect Recognition and Intervention Training, and Regulations Governing the Use of Restraint and Seclusion in Elementary and Secondary Schools, and Cultural Competence Training.

## Professional Education Core Courses

STEM 103	Foundations of STEM Teaching: An Inquiry-Based Approach	2
STEM 201	Knowing and Learning in STEM Education	3
STEM 202	Classroom Interactions in STEM Education	3
STEM 401	Project Based Instruction in STEM Education	3
STEM 485	Apprentice Teaching	9
SPED 400	Foundations of Special Education: Legal Aspects and Characteristics	3
TLED 408	Reading and Writing in Content Areas	3
<b>Total Credit Hours</b>		<b>26</b>

## Middle School Science Education Major (6-8)

### General Education

Complete lower-division requirements 32-39

Complete upper-division requirements (met by the professional education core)

### Professional Education Core

Complete professional education core requirements 26

### Middle School Science Education

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

STAT 310	Introductory Data Analysis	3
PHYS 111N & PHYS 112N	Introductory General Physics and Introductory General Physics	8
OEAS 111N	Physical Geology	4
OEAS 112N	Historical Geology	4
OEAS 130G	Research Skills and Information Literacy for the Natural Sciences	3
OEAS 220T	Introduction to Meteorology	3
OEAS 306	Oceanography	3
OEAS 310	Global Earth Systems	4
OEAS 444	Communicating Ocean Science to Informal Audiences (satisfies oral communication requirement)	3

Additional upper-division science electives; 20 credits chosen from the following options. One course must be a writing intensive, "W", course.

OEAS 303	Paleontology	
OEAS 315	Minerals and Rocks	
OEAS 320	Sedimentology and Stratigraphy	
OEAS 344W	Geomorphology	
OEAS 403W	Aquatic Pollution	
OEAS 452	Microbial Ecology of the Oceans	
OEAS 453W	Marine Molecular Ecology	
OEAS 466W	Introduction to Mitigation and Adaptation Studies	
ASTP 408	Astronomy for Teachers	
BIOL 291	Ecology	
BIOL 292	Evolution	
BIOL 294	Genetics	
BIOL 307	Invertebrate Zoology	
BIOL 308	Botany	
PHYS 309	Physics on the Back of an Envelope	

**Total Credit Hours 121-128**

## Ocean and Earth Sciences Survey

The Ocean and Earth Sciences Survey will be sent to students via email during their graduating semester approximately one month prior to graduation. Students must complete the survey in the time frame (typically two weeks) provided in the email. Students must have applied for graduation in order to receive the survey.

## 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.

Course	Title	Credit Hours
<b>Freshman</b>		
<b>Fall</b>		
ENGL 110C	English Composition (C or better required)	3
BIOL 121N and BIOL 122N		4
Human Creativity		3
Philosophy and Ethics		3
STEM 103	Foundations of STEM Teaching: An Inquiry-Based Approach	2
<b>Credit Hours</b>		<b>15</b>
<b>Spring</b>		
BIOL 123N and BIOL 124N		4
ENGL 211C or ENGL 231C	Writing, Rhetoric, and Research (C or better required) or Writing, Rhetoric, and Research: Special Topics	3
MATH 211 or MATH 205	Calculus I or Calculus for Life Sciences	3-4
OEAS 130G	Research Skills and Information Literacy for the Natural Sciences (Meets Information Literacy and Research)	3
Literature		3
<b>Credit Hours</b>		<b>16-17</b>
<b>Sophomore</b>		
<b>Fall</b>		
CHEM 121N and CHEM 122N		4
PHYS 111N	Introductory General Physics	4
OEAS 111N	Physical Geology	4
STEM 201	Knowing and Learning in STEM Education	3
<b>Credit Hours</b>		<b>15</b>
<b>Spring</b>		
CHEM 123N and CHEM 124N		4
PHYS 112N	Introductory General Physics	4
OEAS 112N	Historical Geology	4
STEM 202	Classroom Interactions in STEM Education	3
<b>Credit Hours</b>		<b>15</b>
<b>Junior</b>		
<b>Fall</b>		
STAT 310	Introductory Data Analysis	3
OEAS 220T	Introduction to Meteorology (Meets Impact of Technology)	3
OEAS 306	Oceanography	3
Upper-Division Science Electives (2)		6-7
<b>Credit Hours</b>		<b>15-16</b>
<b>Spring</b>		
OEAS 310	Global Earth Systems	4
Interpreting the Past		3
Upper-Division Science Electives (2 - including a "W" course)		6-7

OEAS 444 (satisfies oral communication)		3
<b>Credit Hours</b>		<b>16-17</b>
<b>Senior</b>		
<b>Fall</b>		
STEM 401	Project Based Instruction in STEM Education	3
SPED 400	Foundations of Special Education: Legal Aspects and Characteristics	3
Human Behavior		3
Upper-Division Science Elective (3)		8-9
<b>Credit Hours</b>		<b>17-18</b>
<b>Spring</b>		
TLED 408	Reading and Writing in Content Areas	3
STEM 485	Apprentice Teaching	9
<b>Credit Hours</b>		<b>12</b>
<b>Total Credit Hours</b>		<b>121-125</b>

Language and Culture I & II may be met in high school and are not included in this four-year plan. Please see requirement details.

## BA or BS to MBA (Master of Business Administration) Dual Dominion Program

The Dual Dominion 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 (<https://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) Dual Dominion Program

The Dual Dominion 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 Dual Dominion 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 (<https://catalog.odu.edu/graduate/business/public-service/>). For additional

information, please contact the School of Public Service in the Strome  
College of Business.