

# Bachelor of Science Ocean and Earth Science with a Major in Secondary Earth Science Education (6-12) (BS)

## Bachelor of Science—Ocean and Earth Science Major

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 Secondary Earth Science Education (6-12)

The secondary Earth science education major is designed for students preparing to teach Earth science in secondary schools. 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 secondary Earth science education with the chief departmental advisor. All students must apply for and be admitted into the approved secondary Earth science education program. Students must meet the required criteria for admission by earning the minimum required grade point averages (GPA).

### Prescribed Virginia Board of Education Assessment for Admission to an Approved Teacher Education Program

Old Dominion University students seeking admission to an approved teacher education program must satisfy the Virginia Board of Education required assessment for admission into an approved teacher education program. The requirement can be satisfied by meeting a passing score in the following:

- Virginia Communication and Literacy Assessment (VCLA): Scaled passing score of 235 for the reading subtest and score of 235 for the writing subtest OR a composite score of 470 for the assessment.

For the most current information on the prescribed Virginia Board of Education admission assessment, visit the Virginia Department of Education at <https://www.doe.virginia.gov/>.

### Required grade point averages (GPA)

- A cumulative GPA of 2.75 is required.
- A major/content GPA of 2.75 is required - all Ocean, Earth and Atmospheric Sciences 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 and Earth Science 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: <http://www.odu.edu/success/academic/teacher-education/placement/background-checks> (<http://www.odu.edu/success/academic/teacher-education/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: 5571) – passing score of 156 required.

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="http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#written">http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#written</a> )	6
Oral Communication ( <a href="http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#oral">http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#oral</a> )	3
Mathematics ( <a href="http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#math">http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#math</a> )	3
Language and Culture ( <a href="http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#language">http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#language</a> )	0-6
Information Literacy and Research ( <a href="http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#information">http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#information</a> )	3

Human Behavior ( <a href="http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#behavior">http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#behavior</a> )	3
Human Creativity ( <a href="http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#creativity">http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#creativity</a> )	3
Interpreting the Past ( <a href="http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#interpret">http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#interpret</a> )	3
Literature ( <a href="http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#literature">http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#literature</a> )	3
Philosophy and Ethics ( <a href="http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#philosophy">http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#philosophy</a> )	3
The Nature of Science ( <a href="http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#nature">http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#nature</a> )	8
Impact of Technology ( <a href="http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#impact">http://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 120 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

STEM 101	Step 1 – Inquiry Approaches to Teaching STEM	1
STEM 102	Step 2 - Inquiry Based STEM Lesson Design	1
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 402	Perspectives on STEM	3
STEM 485	Apprentice Teaching	9
OEAS 468W	Research Methods in Math and Sciences	3
<b>Total Credit Hours</b>		<b>26</b>

## Secondary Earth Science Education Major (6-12)

### General Education

Complete lower-division requirements	32-39
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Complete upper-division requirements (met in the major by the professional education core)

<b>Professional Education Core</b>		
Complete professional education core requirements		26
<b>Earth Science Education</b>		
BIOL 121N & BIOL 122N	General Biology I and General Biology I 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 303	Paleontology	3
OEAS 306	Oceanography	3
OEAS 310	Global Earth Systems	4
OEAS 315	Minerals and Rocks	4
OEAS 320	Sedimentology and Stratigraphy	4
OEAS 344W	Geomorphology	3
PHYS 408	Astronomy for Teachers	3
OEAS 444	Communicating Ocean Science to Informal Audiences (satisfies oral communication requirement)	3
<b>Total Credit Hours</b>		<b>114-121</b>

## 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.

Course	Title	Credit Hours
<b>Freshman</b>		
<b>Fall</b>		
ENGL 110C	English Composition	3
BIOL 121N and BIOL 122N		4
Human Creativity		3
Philosophy and Ethics		3
STEM 101	Step 1 – Inquiry Approaches to Teaching STEM	1
<b>Credit Hours</b>		<b>14</b>

<b>Spring</b>		
MATH 211 or MATH 205	Calculus I or Calculus for Life Sciences	4
ENGL 211C or ENGL 231C	Writing, Rhetoric, and Research or Writing, Rhetoric, and Research: Special Topics	3
OEAS 130G	Research Skills and Information Literacy for the Natural Sciences (Meets Information Literacy and Research)	3
Literature		3
STEM 102	Step 2 - Inquiry Based STEM Lesson Design	1
<b>Credit Hours</b>		<b>14</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 320	Sedimentology and Stratigraphy	4
OEAS 315	Minerals and Rocks	4
OEAS 306	Oceanography	3
<b>Credit Hours</b>		<b>17</b>
<b>Spring</b>		
OEAS 303	Paleontology	3
OEAS 310	Global Earth Systems	4
Interpreting the Past		3
OEAS 344W	Geomorphology	3
OEAS 444 (satisfies oral communication)		3
Elective (OEAS 300/400 recommended)		2
<b>Credit Hours</b>		<b>18</b>
<b>Senior</b>		
<b>Fall</b>		
PHYS 408	Astronomy for Teachers	3
STEM 401	Project Based Instruction in STEM Education	3
OEAS 468W	Research Methods in Math and Sciences	3

Human Behavior		3
Elective		3
<b>Credit Hours</b>		<b>15</b>
<b>Spring</b>		
STEM 402	Perspectives on STEM	3
STEM 485	Apprentice Teaching	9
<b>Credit Hours</b>		<b>12</b>
<b>Total Credit Hours</b>		<b>120</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) 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.