ENVIRONMENTAL STUDIES, BACHELOR OF SCIENCE (B.S.)

The Bachelor of Science in Environmental Studies requires a minimum of 120 credits.

Along with the general education requirements of VCU Life Sciences, this curriculum requires 32-33 credits in core science and mathematics courses and 37-38 credits in environmental studies core courses.

Student learning outcomes

Upon completing this program, students will be able to demonstrate the following:

- Life sciences – Recall and transfer fundamental life science concepts (biology, ecology, evolution) to the conservation and management of natural resources
- Social sciences – Recall and transfer fundamental social science concepts (policy, economics, politics) to the conservation and management of natural resources
- Physical sciences – Recall and transfer fundamental physical science concepts (geology, climate, physics) to the conservation and management of natural resources
- Research skills (geospatial, quantitative and field) – Identify and implement the correct tools/skills to collect, visualize and analyze environmental data
- Synthesis (combinations of previous entries and communication) – Implement interdisciplinary problem solving by combining concepts and skills to address contemporary environmental challenges

Special requirements

The Bachelor of Science in Environmental Studies requires a minimum 2.0 cumulative average in all major course work and a minimum of 34 credits of upper-level (e.g., 3XX, 4XX, or 5XX) approved courses. To meet the capstone requirement, students are required to complete ENVS 499 and an additional course as approved by the unit. This additional course credit will count toward the electives for this major.

Degree requirements for Environmental Studies, Bachelor of Science (B.S.)

Course	Title	Hours
General education (http://bulletin.vcu.edu/undergraduate/undergraduate-study/general-education-curriculum/)		
Select 30 credits of general education courses in consultation with an adviser.		30
Major requirements		
• Major core requirements		
BIOL 152 & BIOZ 152	Introduction to Biological Sciences II and Introduction to Biological Science Laboratory II	4
BIOL 317	Ecology	3
CHEM 102 & CHEZ 102	General Chemistry II and General Chemistry Laboratory II	4
ECON 325	Environmental Economics	3
ENVS 101	Introduction to Environmental Studies I	3
ENVS 102	Introduction to Environmental Studies II	3
ENVS 222	Electronic Portfolios	1
ENVS/POLI 311	Politics of the Environment	3
ENVS 321	Cartography	3
ENVS 330	Environmental Pollution	3
ENVS 343	Data Literacy	4
ENVS 355	Water	3
ENVS 401	Meteorology and Climatology	3
ENVS 499	Environmental Studies Capstone Experience	0
• Additional major requirements		
ENVS 105	Physical Geology	3
or URSP 204	Physical Geography	
• Major electives		
Select from list below.		12
Ancillary requirements		
BIOL 151 & BIOZ 151	Introduction to Biological Sciences I and Introduction to Biological Science Laboratory I	4
CHEM 101	General Chemistry I (satisfies general education BOK for natural sciences and AOI for scientific and logical reasoning)	3
CHEZ 101	General Chemistry Laboratory I (satisfies general education BOK for natural sciences and AOI for scientific and logical reasoning)	1
MATH 151	Precalculus Mathematics (satisfies general education quantitative foundations)	4
PHYS 201	General Physics I (satisfies general education BOK for natural sciences and AOI for scientific and logical reasoning)	4-5
or PHYS 207	University Physics I	
Open electives		
Select any course.		31
Total Hours		**120**

The minimum number of credit hours required for this degree is 120.

Possible major electives

Select any ENVS or ENVZ course or choose from the courses listed below.

Course	Title	Hours
BIOL 103	Global Environmental Biology	3
BIOL 307	Aquatic Ecology	3
BIOL 312	Invertebrate Zoology	3
BIOL 313	Vertebrate Natural History	3
BIOL 314	Animal Reproduction	3
BIOL 320	Biology of the Seed Plant	4
BIOL 321	Plant Development	3
BIOL 322	Plants, People and Culture	3
BIOL 324	Medicinal Botany	3
BIOL 332	Environmental Pollution	3

BIOL 333	Evolution of the Angiosperms	3
BIOL 335	Global Change Biology	3
BIOL 402	Comparative Vertebrate Anatomy	5
BIOL 403	Primatology	4
BIOL 411	Physiology	3
BIOL 415	Mangrove Avian Field Ecology	4
BIOL 416	Ornithology	3
BIOL 422	Forest Ecology	4
BIOL 423	Plant Physiology	3
BIOL 425 Play course video for Field Botany	Field Botany	3
BIOL 430	Invasion Biology	3
BIOL 431	Introduction to Marine Biology	3
BIOL 459	Infectious Disease Ecology	3
BIOL 480	Animal-Plant Interactions	3
BIOL 497	Ecological Service Learning	1
BIOL 498	Insects and Plants Service-learning	2
BIOL 507	Aquatic Microbiology	4
BIOL 508	Barrier Island Ecology	3
BIOL 510	Conservation Biology	3
BIOL 512	Plant Diversity and Evolution	4
BIOL 514	Stream Ecology	4
BIOL 516	Population Genetics	3
BIOL 518	Plant Ecology	4
BIOL 519	Forest Ecology	4
BIOL 520	Population Ecology	3
BIOL 521	Community Ecology	3
BIOL 522	Evolution and Speciation	3
BIOL 535	Wetlands Ecology	4
BIOL 545	Biological Complexity	3
BIOL 550	Ecological Genetics	3
BIOZ 307	Aquatic Ecology Laboratory	1
BIOZ 312	Invertebrate Zoology Laboratory	1
BIOZ 313	Vertebrate Natural History Laboratory	1
BIOZ 317	Ecology Laboratory	2
BIOZ 324	Medicinal Botany Laboratory	1
BIOZ 416	Ornithology Laboratory	2
ENGL 368	Nature Writing	3
POLI 386	Environmental Security	3
SOCY 350	Environmental Sociology	3
SOCY 420	Environmental Racism	3
URSP 332	Environmental Management	3
URSP 545	Sustainable Energy Policy and Planning	3

What follows is a sample plan that meets the prescribed requirements within a four-year course of study at VCU. Please contact your adviser before beginning course work toward a degree.

Freshman year

Fall semester		**Hours**
ENVS 101	Introduction to Environmental Studies I	3
ENVS 222	Electronic Portfolios	1
MATH 141	Algebra with Applications	4
UNIV 111 Play course video for Focused Inquiry I	Focused Inquiry I (satisfies general education UNIV foundations)	3
General education courses		6
	Term Hours:	**17**
Spring semester		
CHEM 101 & CHEZ 101	General Chemistry I and General Chemistry Laboratory I (both satisfy general education BOK for natural sciences and AOI for scientific and logical reasoning)	4
ENVS 102	Introduction to Environmental Studies II	3
MATH 151	Precalculus Mathematics (satisfies general education quantitative foundations)	4
UNIV 112 Play course video for Focused Inquiry II	Focused Inquiry II (satisfies general education UNIV foundations)	3
	Term Hours:	**14**

Sophomore year

Fall semester		
BIOL 151 & BIOZ 151	Introduction to Biological Sciences I and Introduction to Biological Science Laboratory I	4
CHEM 102 & CHEZ 102	General Chemistry II and General Chemistry Laboratory II	4
UNIV 200	Advanced Focused Inquiry: Literacies, Research and Communication (satisfies general education UNIV foundations)	3
Open elective		3
	Term Hours:	**14**
Spring semester		
BIOL 152 & BIOZ 152	Introduction to Biological Sciences II and Introduction to Biological Science Laboratory II	4
ENVS 105 or URSP 204	Physical Geology or Physical Geography	3
Open electives		8
	Term Hours:	**15**

Junior year

Fall semester		
BIOL 317	Ecology	3
ENVS/POLI 311	Politics of the Environment	3
ENVS 330	Environmental Pollution	3
PHYS 201	General Physics I (satisfies general education BOK for natural sciences and AOI for scientific and logical reasoning)	4
Open elective		2
	Term Hours:	**15**
Spring semester		
ENVS 321	Cartography	3

ECON 325	Environmental Economics	3
ENVS 355	Water	3
General education course		3
Major electives		3
	Term Hours:	**15**
Senior year		
Fall semester		
ENVS 343	Data Literacy	4
ENVS 499	Environmental Studies Capstone Experience (taken with capstone appropriate corequisite)	0
Major electives		6
Open electives		5
	Term Hours:	**15**
Spring semester		
ENVS 401	Meteorology and Climatology	3
Major elective		3
Open electives		9
	Term Hours:	**15**
	Total Hours:	**120**

The minimum number of credit hours required for this degree is 120.

Accelerated B.S. and M.Envs.

The accelerated B.S. and M.Envs. program allows qualified students to earn both the B.S. in Environmental Studies and the Master of Environmental Studies in a minimum of five years by completing approved graduate courses during the senior year of their undergraduate program. Students in the program may count up to 12 hours of graduate courses toward both the B.S. and M.Envs. degrees. Thus, the two degrees may be earned with a minimum of 141 credits rather than the 153 credits necessary if the two degrees are pursued separately.

Entrance to the accelerated program

Interested undergraduate students should consult with the master's program director (See contact information (http://bulletin.vcu.edu/graduate/vcu-life-sciences/center-environmental-studies/environmental-studies-menvs/#contacttext) on the graduate program page.) as early as possible, but no later than the fall semester of their junior year, to receive specific information about the accelerated program and determine academic eligibility. Minimum qualifications for entrance to this accelerated program include completion of 90 undergraduate credit hours, an overall GPA of 3.0, and a GPA of 3.3 in courses required by the environmental studies major.

Requests for entrance to the accelerated program in environmental studies must include the three following items, each of which must be completed or submitted by the last day of scheduled classes (and before the final exam period begins) for the fall semester of the junior year:

1. Schedule and complete an interview with the graduate program director.
2. Prepare and submit a personal statement to the graduate program director that explains why the applicant wishes to join the environmental studies master's program.
3. Prepare and submit an updated CV to the graduate program director.

By February of the following year, a panel of environmental studies faculty members will review materials from each of the potential accelerated program students. The program director will then notify each student of the panel's decision. At this time, students who have been approved for entrance into the accelerated B.S. and M.Envs. program will complete and submit an official Accelerated Program Declaration Form to the graduate program director. Successful applicants will enter the accelerated program in the fall semester of their senior year.

Once enrolled in the accelerated program, students must meet the standards of performance applicable to graduate students as described in the "Satisfactory academic progress (http://bulletin.vcu.edu/academic-regs/grad/satisfactory-academic-progress/)" section of the Graduate Bulletin, including maintaining a 3.0 GPA. Guidance to students admitted to the accelerated program is provided by both the undergraduate environmental studies adviser and the faculty adviser to the graduate program.

Admission to the graduate program

Entrance to the accelerated program enables the student to take the approved shared courses that will apply to the undergraduate and graduate degrees. However, entry into an accelerated program via an approved Accelerated Program Declaration Form does not constitute application or admission into the graduate program. Admission to the graduate program requires a separate step that occurs through a formal application to the master's program, which is submitted through Graduate Admissions no later than a semester prior to graduation with the baccalaureate degree, that is, before the end of the fall semester of the senior year. In order to continue pursuing the master's degree after the baccalaureate degree is conferred, accelerated students must follow the admission to graduate study requirements outlined in the VCU Bulletin. Two reference letters (at least one from an environmental studies faculty member) must accompany the application.

Degree requirements

The Bachelor of Science in Environmental Studies degree will be awarded upon completion of a minimum of 120 credits and the satisfactory completion of all undergraduate degree requirements as stated in the Undergraduate Bulletin.

A maximum of 12 graduate credits may be taken prior to completion of the baccalaureate degree. Three of these graduate credits will be allowed to substitute for a required undergraduate core course (see table below).

The remaining nine credits may be chosen from the approved list below to satisfy major electives. These courses are shared credits with the graduate program, meaning that they will be applied to both undergraduate and graduate degree requirements. The graduate courses that may be taken as an undergraduate, once a student is admitted to the program, are:

Course	Title	Hours
ENVS 543	Environmental Data Literacy (satisfies the undergraduate core requirement for ENVS 343)	3
Select remaining credits (to satisfy major electives) from:		
ENVS 521	Introduction to Geographic Information Systems	3
ENVS 591	Topics in Environmental Studies	1-4

ENVS 601	Survey in Environmental Studies	3
ENVS 603	Environmental Research Methods	3

Recommended course sequence/plan of study

What follows is the recommended plan of study for students interested in the accelerated program beginning in the fall of the junior year prior to admission to the accelerated program in the senior year. A list of approved graduate electives is found on the graduate program bulletin for the M.Envs. program.

Course	Title	Hours
Junior year		
Fall semester		
BIOL 317	Ecology	3
ENVS 311	Politics of the Environment	3
ENVS 330	Environmental Pollution	3
ENVS 521	Introduction to Geographic Information Systems	3
PHYS 201	General Physics I	4
Term Hours:		16
Spring semester		
ECON 325	Environmental Economics	3
Major electives		7
Open electives		5
Term Hours:		15
Senior year		
Fall semester		
ENVS 499	Environmental Studies Capstone Experience (taken with capstone appropriate corequisite)	0
ENVS 543	Environmental Data Literacy (satisfies ENVS 343 requirement)	3
ENVS 601	Survey in Environmental Studies	3
Major elective		3
Open electives		3
University Core course (humanities/fine arts)		3
Term Hours:		15
Spring semester		
ENVS 401	Meteorology and Climatology	3
ENVS 411	Oceanography	3
ENVS 603	Environmental Research Methods	3
Open electives		6
Term Hours:		15
Fifth year		
Fall semester		
OVPR 601	Scientific Integrity	1
ENVS 692	Independent Study	3
or ENVS 693	Internship in Environmental Studies	
Gradaute electives (500 and 600 level)		8
Term Hours:		12
Spring semester		
Graduate electives (500 or 600 level)		9
Term Hours:		9