BACHELOR OF ARTS

Environmental Science is the study of people's role in our natural systems. Using an interdisciplinary approach, the Environmental Science program approaches complex environmental issues across multiple perspectives. Environmental Science students study ecology, soil and water sciences, and natural resource management as well as environmental ethics, economics, policy, and law.

About this Program

- **College:** Agricultural and Life Sciences (http://catalog.ufl.edu/UGRD/colleges-schools/UGAGL/)
- **School:** Natural Resources and Environment (http://catalog.ufl.edu/UGRD/colleges-schools/UGNTR/)
- **Degrees:** Bachelor of Arts (p. 1) | Bachelor of Science (http://catalog.ufl.edu/UGRD/colleges-schools/UGNTR/EVS_BA_BS/EVS_BS/)
- **Credits for Degree:** 120
- **More Info**

To graduate with this major, students must complete all university, college, and major requirements.

School Information

The School of Natural Resources and Environment (SNRE) offers campus-wide, interdisciplinary degree programs at both the undergraduate and graduate levels. SNRE is governed by the SNRE Advisory Board and advised by the SNRE Faculty Advisory Council. Website (http://snre.ifas.ufl.edu/)

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Map (http://campusmap.ufl.edu/#/index/0724)

Curriculum

- Combination Degrees
- Environmental Science
- Environmental Science Minor

The environmental science degree approaches complex environmental issues with reliable knowledge and interdisciplinary perspectives, and provides the full range of knowledge relevant to complex environmental problems. This includes biological and physical sciences, ethics, economics, policy and law.

The degree prepares graduates for jobs in environmental consulting companies, government environmental offices or land and water management agencies, or non-government organizations. About one-third of environmental science students advance to graduate or professional degree programs. The combination of the school's broad undergraduate degree with a subsequent degree is highly marketable.

The school also offers a combination-degree program offering a bachelor's degree in environmental science and a Master of Science in interdisciplinary ecology.

Core Requirements for Both Degrees

Students take a core of courses, including a general course in environmental science and courses in ethics, ecology, chemistry, earth science, global science, hydrologic systems, and policy and natural resource management.

The core provides 31-32 credits of coursework in physical, biological and social sciences. The B.S. and B.A. tracks are similar. The B.S. includes one course in policy and one in organic chemistry; the B.A. includes two policy courses and no organic chemistry.

Beyond the core requirement, each student selects 21-27 additional credits from electives for the major. During the fourth year, all students take a capstone course where critical thinking skills are developed.

The freshmen and sophomore years lay a foundation of coursework for building later expertise. Students need to know the natural sciences of physics, chemistry and biology, with laboratory experience in each area. Study of microeconomics and macroeconomics are required to understand the human economy. Introductory statistics empowers students to independently evaluate sets of numbers. College algebra and an introduction to calculus enable students to work with rates of change, the heart of ecological science.

Coursework in the core of the major provides a base of common knowledge and experience in subjects essential to environmental science. Then students diverge into electives chosen according to individual interest. Senior-year students return to a common course that develops critical-thinking skills by confronting conflicts of ecological and economic paradigms, synthesizing across physical, biological and social systems, and engaging diverse knowledge and views to help resolve key environmental problems.

The preprofessional courses for the Bachelor of Science prepare students for a more science-oriented major. The requirements for the Bachelor of Arts include less chemistry, physics and mathematics, in preparation for a major that is more focused on the sociopolitical aspects of environmental science.

Code	Title	Credits
Required Foundation Course		
EVS 3000 & 3000L	Environmental Science and Environmental Science Laboratory	4
Environmental Ethics		
Select one:		3
AEB 4126	Agricultural and Natural Resource Ethics (Gen Ed Humanities or Social and Behavioral Sciences)	
PHM 3032	Ethics and Ecology (Gen Ed Humanities)	
POT 3503	Environmental Ethics and Politics	
REL 2104	Environmental Ethics (Gen Ed Humanities)	
REL 3492	Religion Ethics and Nature (Gen Ed Humanities)	
Ecology		
Select one:		3-4
ALS 3153	Agricultural Ecology	
FOR 3153C	Forest Ecology (Gen Ed Biological Sciences)	
PCB 3601C	Plant Ecology	
PCB 4043C	General Ecology (Gen Ed Biological Sciences)	
Organic Chemistry		
Select one for the B.S.; B.A. select none:		0-4
BCH 3023	Elementary Organic and Biological Chemistry	
CHM 2200	Fundamentals of Organic Chemistry	

EES 4203	Phase Partitioning in the Environment	
CHM 2210	Organic Chemistry 1	
Earth and Soil Science		
Select one:		3-4
GEO 2200 & 2200L	Physical Geography and Physical Geography Laboratory (Gen Ed Physical Sciences)	
GLY 2010C	Physical Geology (Gen Ed Physical Sciences, B.S. only)	
GLY 2030C	Environmental and Engineering Geology (Gen Ed Physical Sciences)	
GLY 2100C	Historical Geology (Gen Ed Physical Sciences; B.S. only)	
SWS 3022 & 3022L	Introduction to Soils in the Environment and Introduction to Soils in the Environment Laboratory (Gen Ed Physical Sciences)	
SWS 4231C	Soil, Water and Land Use (Gen Ed Physical Sciences) [1]	
Global Systems		
Select one:		3
GEO 2242	Extreme Weather	
GEO 3250	Climatology (Gen Ed Physical Sciences)	
GLY 3074	Oceans and Global Climate Change	
OCE 1001	Introduction to Oceanography	
Hydrologic Systems		
Select one:		3-4
AOM 4643	Environmental Hydrology: Principles and Issues	
FNR 4343C	Forest Water Resources	
GEO 3280	Principles of Geographic Hydrology (Gen Ed Physical Sciences)	
GLY 3882C	Hydrogeology and Human Affairs	
SWS 4244	Wetlands	
SWS 4245	Water Resource Sustainability	
Environmental Policy		
Select one for the B.S.; B.A. select two:		3-6
AEB 4123	Agricultural and Natural Resource Law	
AEB 4283	International Development Policy (Gen Ed Social and Behavioral Sciences)	
FNR 4660	Natural Resource Policy and Economics	
INR 3034	Politics of the World Economy	
INR 3502	International Institutions (Gen Ed Social and Behavioral Sciences and International)	
Natural Resource Management		
Select one:		3
AGG 3501	Environment, Food and Society	
ALS 3133	Agricultural and Environmental Quality	
EES 3008	Energy and Environment (Gen Ed Physical Sciences; B.A. only)	
FAS 4305C	Introduction to Fishery Science	
FOR 3004	Forests, Conservation and People	
FOR 3200C	Foundations of Natural Resources and Conservation	
FOR 4621	Forest Economics and Management (Gen Ed Physical Sciences)	
LEI 3546	Park Management	
PLS 3004C	Principles of Plant Science	
SWS 4231C	Soil, Water and Land Use (Gen Ed Physical Sciences) [1]	
SWS 4932	Special Topics in Soil and Water Science (Forest and Soil Ecosystem Services)	
Required Capstone Course		
EVS 4021	Critical Thinking in Environmental Science	3
Total Credits		**28-38**

[1] If taken from one group, this course does not satisfy the requirement for a course from the other group.

Preprofessional Requirements for Both Degrees

Each student must fulfill preprofessional requirements that differ slightly for the B.S. and B.A. degrees. These consist of courses in chemistry, physics, biology, calculus, statistics and economics, totaling 39-46 (typically 43) credits for the B.S. and 31-39 (typically 34) credits for the B.A.

In addition to the preprofessional requirements, all students are responsible for completing the university's general education and the writing requirement.

Certain preprofessional requirements simultaneously satisfy 18-21 credits (depending on courses selected) of the general education mathematics, physics, biology, and social and behavioral science. Remaining general education requirements include 15-18 credits (depending on preprofessional courses taken) in composition, humanities and social and behavioral sciences.

The 12 credits of writing requirements include 3-12 credits taken for general education and preprofessional requirements, depending on selections. The six credits of math requirements are satisfied by preprofessional requirements.

For efficiency, freshmen should seek to maximize overlap of preprofessional requirements with general education and the writing requirement, as outlined below:

- Science preprofessional requirements satisfy up to 12 credits of physical and biological sciences (the basic nine-credit requirement plus the variable three credits from a category). Students should allocate the variable three credits to physical and biological sciences to reduce the humanities requirement from nine to six credits.
- Economics preprofessional requirements satisfy up to eight of the nine-credit social and behavioral sciences requirement (eight if satisfied with ECO 2013 and ECO 2023; four if satisfied with AEB 3103).
- Policy preprofessional requirement (POS 2041) for B.A. students satisfies the remaining social and behavioral sciences requirement. B.S. students can satisfy the remaining social and behavioral sciences requirement with certain core courses, under ethics (AEB 4126) and policy.
- Satisfying the preceding requirements leaves 18 credits: six for humanities, three for composition and nine for writing.
- Students should take humanities, composition and writing courses that also satisfy the three-credit international studies requirement, such as LIT 2110 or LIT 2120, and the three-credit diversity requirement with a REL 2388 or WST 2611 overlap.

Bachelor of Arts

The Bachelor of Arts degree in environmental science focuses on the social sciences that connect the natural sciences and engineering to society.

Electives in the areas of policy, law, public administration and resource economics make this the preferred specialization for students interested in advancing to law school or to the policy aspects of environmental consulting and public agency work.

Critical Tracking

Critical Tracking records each student's progress in courses that are required for progress toward each major. Please note the critical-tracking requirements below on a per-semester basis.

Equivalent critical-tracking courses as determined by the State of Florida Common Course Prerequisites (http://www.flvc.org/cpp/displayRecord.jsp?cip=030104&track=01) may be used for transfer students.

Semester 1

- Complete 2 of 9 critical-tracking courses, excluding labs: BSC 2005/BSC 2005L, CHM 2045/CHM 2045L, CHM 2046/CHM 2046L, ECO 2013, ECO 2023, MAC 1147, PHY 2020 or PHY 2004, POS 2041, STA 2023
- 2.0 GPA required for all critical-tracking courses
- 2.0 UF GPA required

Semester 2

- Complete 2 additional critical-tracking courses, excluding labs
- 2.0 GPA required for all critical-tracking courses
- 2.0 UF GPA required

Semester 3

- Complete 2 additional critical-tracking courses, excluding labs
- 2.0 GPA required for all critical-tracking courses
- 2.0 UF GPA required

Semester 4

- Complete 2 additional critical-tracking courses, excluding labs
- 2.0 GPA required for all critical-tracking courses
- 2.0 UF GPA required

Semester 5

- Complete all 9 critical-tracking courses, including labs
- 2.0 GPA required for all critical-tracking courses
- 2.0 UF GPA required

Semester 6

- Complete at least 2 core classes
- 2.0 upper division GPA required
- 2.0 UF GPA required

Semester 7

- Complete at least 2 core classes
- 2.0 upper division GPA required
- 2.0 UF GPA required

Semester 8

- Complete EVS 4021 (capstone) and the remaining courses for the degree
- 2.0 upper division GPA required
- 2.0 UF GPA required

Model Semester Plan

To remain on track, students must complete the appropriate critical-tracking courses, which appear in bold. These courses must be completed by the terms as listed above in the Critical Tracking criteria.

This semester plan represents an example progression through the major. Actual courses and course order may be different depending on the student's academic record and scheduling availability of courses. Prerequisites still apply.

Course	Title	Credits
Semester One		
Quest 1 (Gen Ed Humanities)		3
BSC 2005 & 2005L	Biological Sciences and Laboratory in Biological Sciences (**Critical Tracking**; State Core Gen Ed Biological and Physical Sciences)	4
MAC 1147	Precalculus Algebra and Trigonometry (**Critical Tracking**; State Core Gen Ed Mathematics) [1]	4
Gen Ed Composition (according to placement)		3
	Credits	**14**
Semester Two		
ECO 2013	Principles of Macroeconomics (**Critical Tracking**; State Core Gen Ed Social and Behavioral Sciences)	4
STA 2023	Introduction to Statistics 1 (**Critical Tracking**; Gen Ed Mathematics)	3
State Core Gen Ed Composition (http://catalog.ufl.edu/UGRD/academic-programs/general-education/#genedcoursestext); Writing Requirement		3
State Core Gen Ed Humanities with Diversity or International (http://catalog.ufl.edu/UGRD/academic-programs/general-education/#genedcoursestext)		3
Elective		3
	Credits	**16**
Semester Three		
Quest 2 (Gen Ed International or Diversity)		3
CHM 2045 & 2045L	General Chemistry 1 and General Chemistry 1 Laboratory (**Critical Tracking**; Gen Ed Biological Sciences and Physical Sciences) [2]	4
ECO 2023	Principles of Microeconomics (**Critical Tracking**; Gen Ed Social and Behavioral Sciences)	4
Select one:		3
PHY 2020	Introduction to Principles of Physics (**Critical Tracking**) [3]	
PHY 2004	Applied Physics 1 (**Critical Tracking**; Gen Ed Physical Sciences) [3]	
	Credits	**14**

Semester Four		
CHM 2046 & 2046L	General Chemistry 2 and General Chemistry 2 Laboratory (**Critical Tracking**; Gen Ed Biological Sciences and Physical Sciences)	4
EVS 3000 & 3000L	Environmental Science and Environmental Science Laboratory	4
POS 2041	American Federal Government (**Critical Tracking**; Gen Ed Social and Behavioral Sciences)	3
Elective		3-4
	Credits	**14-15**
Semester Five		
Earth and soil science elective [4]		3-4
Ecology elective [4]		3-4
Environmental ethics elective [4]		3
Environmental policy elective [4]		3-4
Elective		3
	Credits	**15-18**
Semester Six		
Environmental law elective [4]		3-4
Environmental policy elective [4]		3-4
Global systems elective [4]		3
Hydrologic systems elective [4]		3-4
Natural resource management elective [4]		3
	Credits	**15-18**
Semester Seven		
Environmental policy/public administration elective [4]		3-4
Environmental policy/public administration elective [4]		3
Resource economics elective [4]		3-4
Electives for the major [4]		6
	Credits	**15-17**
Semester Eight		
EVS 4021	Critical Thinking in Environmental Science (**Critical Tracking**)	3
Electives for the major [4]		9
Electives		5
	Credits	**17**
	Total Credits	**120**

1 If students take MAC 1140 and MAC 1114 in place of MAC 1147, the extra credits count toward the degree as electives.

2 If CHM 1025 was taken in preparation for CHM 2045, the extra credits count toward the degree.

3 These courses may be used as substitutes:

- BSC 2010/BSC 2010L and BSC 2011/BSC 2011L for BSC 2005 and BSC 2005L;
- PHY 2053 for PHY 2020 or PHY 2004.

4 From master list.

Approved Electives

9 courses | 27 credits

Students can substitute appropriate graduate courses for electives, with approval of the school and permission of the instructor. To substitute a 5000-level course or higher, the student must have senior standing and a minimum junior/senior-level GPA of 3.0.

Code	Title	Credits
Environmental Law		
Select one:		
AEB 4085	Agricultural Risk Management and the Law	3
AEB 4123	Agricultural and Natural Resource Law	3
BUL 4310	The Legal Environment of Business	4
Environmental Policy/Public Administration		
Select two:		
AEB 4283	International Development Policy [1]	3
PAD 3003	Introduction to Public Administration	3
POS 4931	Special Topics (Environmental Politics in the Global South)	3
PUP 4224	Florida Environmental Politics	3
Resource Economics		
AEB 3450	Introduction to Natural Resource and Environmental Economics [1]	3
ECP 3302	Environmental Economics and Resource Policy	4
Other Electives		
Select five:		
ACG 2021	Introduction to Financial Accounting	4
AEB 3133	Principles of Agribusiness Management	3
AEB 3300	Agricultural and Food Marketing	3
AEB 4085	Agricultural Risk Management and the Law	3
AEB 4123	Agricultural and Natural Resource Law	3
AEB 4242	International Trade Policy in Agriculture	3
AEB 4283	International Development Policy (Gen Ed Social and Behavioral Sciences) [1]	3
AEB 4343	International Agribusiness Marketing	3
AEC 3030C	Effective Oral Communication	3
AEC 3033C	Research and Business Writing in Agricultural and Life Sciences (Writing Requirement)	3
AEC 3073	Intercultural Communication	3
AEC 3414	Leadership Development	3
AEC 4052	Communication Campaign Strategies in Agricultural and Life Sciences	3
AEC 4500	Program Development and Evaluation	3
ALS 3133	Agricultural and Environmental Quality	3
AMH 4930	History Research Seminar: US (Florida Environmental History)	3
ANT 3141	Development of World Civilization	3
ANT 3514C	Introduction to Biological Anthropology	4
ANT 4403	Environment and Cultural Behavior	3
BOT 2011C	Plant Diversity	4
BOT 3151C	Local Flora of North Florida	3
DEP 3053	Developmental Psychology	3
ECO 3101	Intermediate Microeconomics	4
ECO 3203	Intermediate Macroeconomics	4
ECO 3532	Public Choice	4
EDF 3110	Human Growth and Development	3
EDF 4430	Measurement and Evaluation in Education	3
EES 4316	Industrial Ecology	3
ENC 3250	Professional Communication	3
ENC 3310	Advanced Exposition	3
ENC 3312	Advanced Argumentative Writing	3
EVR 3323	Introduction to Ecosystem Restoration	4
EVS 4949	Environmental Science Internship	1-3
FIN 3403	Business Finance	4
FNR 3131C	Dendrology/Forest Plants	3
FNR 4070C	Environmental Education Program Development	3
FNR 4343C	Forest Water Resources	3
FNR 4623C	Integrated Natural Resource Management	3
FNR 4660	Natural Resource Policy and Economics	3
FOR 3202	Society and Natural Resources	3

FOR 3214	Fire Ecology and Management	2
FOR 3214L	Fire Ecology and Management Laboratory	1
FOR 4664	Sustainable Ecotourism Development	3
FOS 4731	Government Regulations and the Food Industry	2
FYC 3401	Introduction to Social and Economic Perspectives on the Community	3
GEO 3315	Geography of Crop Plants	3
GEO 3352	The Human Footprint on Landscape	3
GEO 3427	Plants, Health and Spirituality	3
GEO 3502	Economic Geography	3
GIS 3043	Foundations of Geographic Information Systems	4
INR 4035	Rich and Poor Nations in the International System	3
INR 4350	International Environmental Relations	3
JOU 3101	Reporting	3
JOU 4308	Magazine and Feature Writing	3
LEI 3120	Introduction to Outdoor Recreation and Parks	3
LEI 4321	Ecotourism	3
MAN 3025	Principles of Management	4
MMC 2100	Writing for Mass Communication	3
POS 2112	American State and Local Government	3
POS 4674	Political Change and Legal Development	3
POT 3503	Environmental Ethics and Politics	3
SWS 4245	Water Resource Sustainability [1]	3
SWS 4550	Soils, Water and Public Health	3
SWS 4932	Special Topics in Soil and Water Science (Forest and Soil Ecosystem Services)	3
SYA 4930	Special Study (Social Institutions and Environment)	3
SYD 3410	Urban Sociology	3
SYD 4020	Population	3
SYD 4021	U.S. Population Issues	3
SYO 4530	Social Inequality	3
URP 4000	Preview of Urban and Regional Planning	3
URP 4273	Survey of Planning Information Systems	3
WIS 4523	Human Dimensions of Natural Resource Conservation	3
ZOO 4205C	Invertebrate Biodiversity	4
ZOO 4307C	Vertebrate Biodiversity	4
ZOO 4403C	Marine Biology (counts as one or two courses)	4
ZOO 4472C	Avian Biology	4

[1] If this course was taken to fulfill the core requirement, it cannot fulfill the elective requirement. Students must select a substitution from the electives for the major.

Academic Learning Compact

Environmental science is the science of humanity's role in natural systems, the basis of our economy. This program accesses courses university-wide and provides numerous opportunities for international study. Students will acquire reliable knowledge and interdisciplinary perspectives of complex environmental issues, gaining the full range of knowledge relevant to a professional understanding of complex environmental problems in the biological and physical sciences, ethics, economics, policy and law.

Before Graduating Students Must

- Complete at least one course in each of the foundation areas.
- Complete requirements for the baccalaureate degree, as determined by faculty.

Students in the Major Will Learn to

Student Learning Outcomes (SLOs)

Content

1. Acquire knowledge and demonstrate understanding of basic terminology, concepts, methodologies and theories in the physical and biological sciences that describe environmental systems.
2. Acquire knowledge of essential concepts in the social sciences that describe human activity in the environment.

Critical Thinking

3. Apply the scientific method to develop reasoned solutions to environmental problems.

Communication

4. Communicate knowledge, ideas and reasoning clearly, effectively and objectively in both written and oral forms.

Curriculum Map

I = Introduced; R = Reinforced; A = Assessed

Courses	SLO 1	SLO 2	SLO 3	SLO 4
EVS 3000 and EVS 3000L	I	I	I	I
EVS 4021	A	A	A	A
Earth and Soil Sciences	R			
Ecology	R	R	R	
Environmental Ethics		R	R	R
Environmental Policy		R	R	R
Global Systems	R			
Hydrologic Systems	R			
Human Dimensions		R	R	R
Natural Resource Management	R	R	R	

Assessment Types

- Oral presentation or written essay