

# B.S. IN ECOSYSTEM SCIENCE AND POLICY

## Overview

The B.S. degree in Ecosystem Science and Policy is recommended for students intending to attend graduate or professional schools in pursuit of research or academic careers (including secondary or higher education). It is also suitable for those preparing for technical careers in government and private industries concerned with the environment. Students pursuing the B.S. may choose to have the major fulfill either the STEM or People & Society cognate; they will need to complete the other cognate plus the Arts & Humanities cognate. Students with a second major in another school or college should consult their advisors regarding requirements for that major and school or college. Any course used to fulfill one ECS requirement cannot be used to fulfill another; however, courses other than the ECS core can be used to fulfill requirements for a cognate, minor, or second major.

Students whose primary college is Arts & Sciences are required to complete four courses designated as "Writing Intensive" (also known as "W") courses. Those seeking a B.S. degree in ECS must complete at least two, but as many as four, ECS courses designated as "W". These include ECS 113, ECS 301, ECS 302, ECS 402, and ECS 403. Up to two "W" courses may be selected from other departments. Students whose primary degree is in another school or college should follow its writing requirements.

## Curriculum Requirements

Code	Title	Credit Hours
<b>ECS Core Courses</b>		
ECS 111	Introduction to the Earth's Ecosystem	3
ECS 112 or ECS 114	Field Problems in Ecosystem Science and Policy Social research methods for Ecosystem Science and Policy	2
ECS 113	Introduction to Environmental Policy	3
ECS 201 or ECS 202	Seminar Series in Contemporary Environmental Issues I Seminar Series in Contemporary Environmental Issues II	1
ECS 232 or BIL 330	Ecological Principles and Environmental Applications Ecology	3
ECS 301	Tools for Environmental Decision-Making: The Quantitative Perspective	3
ECS 302	Perspectives on Environmental Decision Making	3
ECS 401 or ECS 402	Internship Thesis	3
ECS 403	Interdisciplinary Approaches	3
6 credits of ECS electives (300-level or higher)		6
<b>Science Core Courses</b>		
ECS 312 or CET 240 or CET 340	Environment Assessment Environmental Quality Control Introduction to Environmental Engineering	3
A science course at the 110 level or above with lab (BIL, GSC, MSC, PHY) <sup>1</sup>		4
<b>Mathematics Courses</b>		
Select one of the following:		8-9
MTH 151 & MTH 162	Calculus I for Engineers and Calculus II	
MTH 161 & MTH 162	Calculus I and Calculus II	
MTH 171 & MTH 172	Calculus I and Calculus II	
Select one of the following Statistics courses:		3
ECS 204	Environmental Statistics	
MSC 204	Environmental Statistics	
MTH 224	Introduction to Probability and Statistics	
PSY 292	Introduction to Biobehavioral Statistics Section B	
<b>Social Science Core Courses</b>		
GEG 310	Geographic Information Systems I (Choose one social science skills course)	

3-CR Environmentally related social science course at 101-level or higher <sup>2</sup>	3
6-CR Environmentally related social science course at 300-level or higher <sup>2</sup>	6
<b>Complete a STEM minor <sup>3</sup></b>	<b>12-18</b>
<b>General Education Requirements</b>	
Written Communication Skills:	
WRS 105	First-Year Writing I
WRS 106	First-Year Writing II
or WRS 107	First-Year Writing II: STEM
or ENG 106	Writing About Literature and Culture
Quantitative Skills:	
MTH 151	Calculus I for Engineers (fulfilled through the major)
or MTH 161	Calculus I
or MTH 171	Calculus I
Areas of Knowledge:	
Arts and Humanities Cognate	9
People & Society Cognate (fulfilled through the major)	
STEM Cognate (9 credits) (fulfilled through the minor)	
<b>Additional Required Courses</b>	
Language Courses	3
Electives/Additional minor	33
<b>Total Credit Hours</b>	<b>120</b>

<sup>1</sup> BIL, CHM, CSC, MIC, NEU, PHY, GSC, MSC, CAE, or approved

<sup>2</sup> APY, ARC, ECO, ECS, GEG, HIS, INS, LAS, MAF, POL, PSY, SOC, EPS, COM, BPH, or approved

<sup>3</sup> See list of current relative minors maintained by the program director.

## Suggested Plan of Study - with STEM Minor

Year One		Credit Hours
<b>Fall</b>		
ECS 111	Introduction to the Earth's Ecosystem	3
MTH 161	Calculus I	4
WRS 105	First-Year Writing I	3
Elective or STEM minor course		3
Language Course		3
<b>Credit Hours</b>		<b>16</b>
<b>Spring</b>		
ECS 112	Field Problems in Ecosystem Science and Policy	2
ECS 113	Introduction to Environmental Policy	3
MTH 162	Calculus II	4
WRS 106, 107, or ENG 106	First-Year Writing II or First-Year Writing II: STEM or Writing About Literature and Culture	3
Elective or STEM minor course		3
<b>Credit Hours</b>		<b>15</b>
<b>Year Two</b>		
<b>Fall</b>		
ECS 201	Seminar Series in Contemporary Environmental Issues I	1
ECS 232	Ecological Principles and Environmental Applications	3
Env. related social science 101+		3
Elective or STEM minor course		3
Elective		3
<b>Credit Hours</b>		<b>13</b>

<b>Spring</b>			
ECS 312	Environment Assessment		3
ECS 204	Environmental Statistics		3
Elective or STEM minor course			3
Elective or STEM minor course			3
Elective			3
	<b>Credit Hours</b>		<b>15</b>
<b>Year Three</b>			
<b>Fall</b>			
ECS 302	Perspectives on Environmental Decision Making		3
GEG 310	Geographic Information Systems I		3
Env. related social science course 300+			3
Elective			3
Elective or 2nd minor			3
	<b>Credit Hours</b>		<b>15</b>
<b>Spring</b>			
ECS 301	Tools for Environmental Decision-Making: The Quantitative Perspective		3
Elective or STEM minor course			3
ECS elective 300-level			3
Arts and Humanities Cognate #1			3
Env. related social science course 300+			3
	<b>Credit Hours</b>		<b>15</b>
<b>Year Four</b>			
<b>Fall</b>			
ECS 401	Internship		3
ECS Elective 300 level or higher			3
Arts and Humanities Cognate #2			3
Elective or 2nd minor			3
Elective or 2nd minor			3
	<b>Credit Hours</b>		<b>15</b>
<b>Spring</b>			
ECS 403	Interdisciplinary Approaches		3
Arts and Humanities Cognate #3			3
Science course + lab			4
Elective or 2nd minor			3
Elective or 2nd minor			3
	<b>Credit Hours</b>		<b>16</b>
	<b>Total Credit Hours</b>		<b>120</b>

## Suggested Plan of Study - with Second STEM Major

<b>Year One</b>			
<b>Fall</b>			<b>Credit Hours</b>
ECS 111	Introduction to the Earth's Ecosystem		3
WRS 105	First-Year Writing I		3
MTH 161	Calculus I		4
Second major course + lab			4
	<b>Credit Hours</b>		<b>14</b>
<b>Spring</b>			
ECS 112	Field Problems in Ecosystem Science and Policy		2
ECS 113	Introduction to Environmental Policy		3
WRS 106	First-Year Writing II		3
MTH 162	Calculus II		4

Second Major Course + Lab		4
	<b>Credit Hours</b>	<b>16</b>
<b>Year Two</b>		
<b>Fall</b>		
ECS 201	Seminar Series in Contemporary Environmental Issues I	1
ECS 232	Ecological Principles and Environmental Applications	3
Science course and lab for ECS science core		4
Env. related social science 101+		3
Language course		3
	<b>Credit Hours</b>	<b>14</b>
<b>Spring</b>		
ECS 312	Environment Assessment	3
ECS 204	Environmental Statistics	3
Second Major Course		3
Env. related social science course 300+		3
Elective		3
	<b>Credit Hours</b>	<b>15</b>
<b>Year Three</b>		
<b>Fall</b>		
ECS 302	Perspectives on Environmental Decision Making	3
GEG 310	Geographic Information Systems I	3
Env. related social science 300+		3
Second Major Course + Lab		4
Elective		3
	<b>Credit Hours</b>	<b>16</b>
<b>Spring</b>		
ECS 301	Tools for Environmental Decision-Making: The Quantitative Perspective	3
Second Major Course		3
ECS Elective 300 level or higher		3
Arts and Humanities Cognate #1		3
Elective		3
	<b>Credit Hours</b>	<b>15</b>
<b>Year Four</b>		
<b>Fall</b>		
ECS 401	Internship	3
Second Major Course		3
Second Major Course		3
Arts and Humanities Cognate #2		3
Elective		3
	<b>Credit Hours</b>	<b>15</b>
<b>Spring</b>		
ECS 403	Interdisciplinary Approaches	3
Second Major Course		3
Second Major Course		3
ECS Elective 300 level or higher		3
Arts & Humanities cognate #3		3
	<b>Credit Hours</b>	<b>15</b>
	<b>Total Credit Hours</b>	<b>120</b>

## Mission

The mission of the Ecosystem Science and Policy (ECS) program is to educate the next generation of environmental leaders. Future leaders need to find ways to meet human demands, while protecting and restoring the natural environment that sustains us. As science increasingly demonstrates the

complex interconnectedness of all the elements of natural systems, environmental decisions must take into account potential ecosystem-wide effects to be truly effective. Environmental scientists and nonscientist policy-makers, managers, and planners must communicate with each other in new and better ways as development and environmental policy decisions are made. The program offers two degrees, a Bachelor of Science and a Bachelor of Arts.

## Goals

The Bachelor of Science degree prepares students with knowledge in a broad background of environmental issues from a variety of perspectives, along with in-depth education in an additional field. Students earning a Bachelor of Science degree in ECS are also required to complete a minor in a STEM field (e.g., ATM, BIL, BPH, CHM, GSC, PHY or other approved department). Joint programs with engineering are also available.

## Student Learning Outcomes

- **Scientific Knowledge:** Students will demonstrate a comprehensive understanding of ecosystem science.
- **Policy Knowledge:** Students will demonstrate an ability to evaluate the role of science and technology in society and demonstrate understanding of factors involved in the formulation and implementation of environmental policy.
- **Communication Skills:** Students will demonstrate communication skills to convey information, orally and in writing, to both scientific and lay audiences.