

ECOLOGICAL RESTORATION MAJOR

Program Curriculum

Code	Title	Credits
Degree Core Requirements		
ALS 1234	CALS First Year Seminar	1
or SPES 1004	First Year Seminar	
BIOL 1105	Principles of Biology	3
BIOL 1106	Principles of Biology	3
CSES 3114	Soils	3
or GEOS 3614	Soils	
CSES 3124	Soils Laboratory	1
or GEOS 3624	Soils Laboratory	
ENSC 3604	Fundamentals of Environmental Science	3
GEOS 1004	Earth Science: Our Past, Present, and Future	3
or GEOS 2104	Elements of Geology	
Select one of the following:		3
GEOG 2084	Principles of Geographic Information Systems	
GEOG/GEOS 4354	Introduction to Remote Sensing	
FREC 4114	Information Technologies for Natural Resource Management	
Subtotal		20
Major Requirements		
BIOL/HORT 2304	Plant Biology	3
BIOL 2804	Ecology	3
BIOL 3204	Plant Taxonomy	3
ENSC 3644	Plant Materials for Environmental Restoration	3
ENSC 4244	Ecological Restoration	3
ENSC 4774	Reclamation of Drastically Disturbed Lands (even years)	3
PPWS 4604	Biological Invasions	3
Subtotal		21
Restricted Electives		
<i>Ecology</i>		
Select nine credit hours of the following:		9
ALS 3404	Ecological Agriculture: Theory and Practice	
BIOL 4004	Freshwater Ecology	
BIOL 4114	Global Change Ecology	
BIOL 4334	Chemical Ecology	
CSES 4334	Principles and Practice of Agroforestry	
CSES 4544/ FREC 4334	Forage Crop Ecology	
ENSC 4764	Bioremediation	
FIW 4614	Fish Ecology	
FIW 4624	Marine Ecology	
FREC 2004	Forest Ecosystems	
FREC 2114	Ecology of Appalachian Forests	
Subtotal		9
<i>Plant and Soil Sciences</i>		

Select six credit hours of the following:		6
HORT 2244	Plant Propagation	
HORT 3324	Herbaceous Landscape Plants	
CSES 4064	Soil Microbiology	
CSES 4174	Soil Evaluation and Sampling	
CSES 3144	Soil Description and Interpretation (Soil Judging Team Preparation Course)	
CSES 4214	Soil Fertility and Management	
CSES 4854	Wetland Soils and Mitigation	
Subtotal		6
<i>Human Dimensions</i>		
Select three credit hours of the following:		3
AAEC 3314	Environmental Law	
AAEC 3324	Environment and Sustainable Development Economics	
ALCE 4304	Community Education and Development	
UAP/PSCI/IS 3344	Global Environmental Issues: Interdisciplinary Perspectives	
UAP 3354	Introduction to Environmental Policy and Planning	
UAP 4344	Law of Critical Environmental Areas	
Subtotal		3
Restricted Electives		
Select 12 credit hours of the following:		12
BIOL 2504	General Zoology	
BIOL 2704	Evolutionary Biology	
CSES 3614	Soil Physical and Hydrological Properties	
ENSC/BIOL 4164	Environmental Microbiology	
ENSC 4344	Ecological Restoration Field Practicum	
ENSC 4414	Monitoring and Analysis of the Environment	
ENSC 4734	Environmental Soil Chemistry	
FIW 2114	Principles of Fish and Wildlife Conservation	
FIW 2314	Wildlife Biology	
FIW 2324	Wildlife Field Biology	
FIW 4114	Biodiversity Conservation	
FIW 4534	Ecology and Management of Wetland Systems	
GEOG/WATR 2004	Water, Environment, and Society	
GEOG 3104	Environmental Justice, Resources and Development	
GEOG 4084	Modeling with Geographic Information Systems	
GEOG 4314/ GEOS 4084	Spatial Analysis in Geographic Information Systems	
HORT 2134	Plants and Greenspaces in Urban Communities	
HORT 3325	Woody Landscape Plants	
HORT 3326	Woody Landscape Plants	
UAP 4374	Land Use and Environment: Planning and Policy	
Up to 3 credit hours can be selected from the following courses:		
SPES 3954	Study Abroad (1-3)	
SPES 4964	Field Study (1-3)	
SPES 4974	Independent Study (1-3)	
SPES 4994	Undergraduate Research (1-3)	
Subtotal		12

Free Electives

Select remaining credits of free elective.	5
Subtotal	5

Pathways to General Education*Pathways Concept 1 - Discourse*

ENGL 1105	First-Year Writing (1F)	3
ENGL 1106	First-Year Writing (1F)	3

Select three credits in Pathway 1a (https://catalog.vt.edu/course-search/?attrs_pathways=attrs_pathways_G01A)

Pathways Concept 2 - Critical Thinking in the Humanities

Select six credits in Pathway 2 (https://catalog.vt.edu/course-search/?attrs_pathways=attrs_pathways_G02)

Pathways Concept 3 - Reasoning in the Social Sciences

AAEC 1005	Economics of the Food and Fiber System	3
or ECON 2005	Principles of Economics	

Select three credits in Pathway 3 (https://catalog.vt.edu/course-search/?attrs_pathways=attrs_pathways_G03)

Pathways Concept 4 - Reasoning in the Natural Sciences

CHEM 1035	General Chemistry	4
& CHEM 1045	and General Chemistry Laboratory	

CHEM 1036	General Chemistry	4
& CHEM 1046	and General Chemistry Laboratory	

Pathways Concept 5 - Quantitative and Computational Thinking

MATH 1025	Elementary Calculus (5F)	3
or MATH 1225	Calculus of a Single Variable	

MATH 1026	Elementary Calculus (5F)	3
or MATH 1226	Calculus of a Single Variable	

STAT 3615	Biological Statistics (5A)	3
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Pathways Concept 6 - Critique and Practice in Design and the Arts

Select three credits in Pathway 6d (https://catalog.vt.edu/course-search/?attrs_pathways=attrs_pathways_G06D)

Select three credits in Pathway 6a (https://catalog.vt.edu/course-search/?attrs_pathways=attrs_pathways_G06A)

Pathways Concept 7 - Critical Analysis of Identity and Equity in the United States

Select three credits in Pathway 7 (https://catalog.vt.edu/course-search/?attrs_pathways=attrs_pathways_G07) (may be double-counted with another core concept)

Subtotal	44
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Total Credits **120**

Satisfactory Progress Towards Degree

- Upon having attempted 60 semester credits (including transfer, advanced placement, advanced standing, and credit by examination) satisfactory progress towards a B.S. degree in ENSC will include passing the following:
 - At least 24 semester credits that meet the Pathways of General Education requirements,
 - BIOL 1105 Principles of Biology, BIOL 1106 Principles of Biology, CSES 3114 Soils, CSES 3124 Soils Laboratory, ENSC 3604 Fundamentals of Environmental Science, SPES 1004 First Year Seminar or ALS 1234 CALS First Year Seminar, and
 - 8 credits of CHEM, with 6 credits of MATH or STAT

Graduation Requirements

- Total Hours Required: 120
- GPA requirements:
 - Overall GPA: 2.0 each semester
 - In major GPA: 2.0 by graduation
 - Includes classes in : BIOL, CHEM, CSES, ENSC, FREC, GEOS
- Prerequisites: Some courses listed may have pre/co-requisites; please consult the University Catalog or check with your advisor.

Acceptable Substitutions

1. SPES 1004 First Year Seminar: Any University approved First Year Experience (FYE) Course

Foreign Language Requirement

A sequence of two foreign language courses is required unless two years of the same high school foreign language or 6 transfer credits of the same foreign language are completed. These credits **do not** count toward graduation requirements.

First Year		Credits
Fall Semester		
BIOL 1105	Principles of Biology	3
CHEM 1035	General Chemistry	3
CHEM 1045	General Chemistry Laboratory	1
ENGL 1105	First-Year Writing	3
MATH 1025	Elementary Calculus	3
SPES 1004	First Year Seminar	1
or ALS 1234	or CALS First Year Seminar	
Credits		14
Spring Semester		
BIOL 1106	Principles of Biology	3
CHEM 1036	General Chemistry	3
CHEM 1046	General Chemistry Laboratory	1
ENGL 1106	First-Year Writing	3
GEOS 1004	Earth Science: Our Past, Present, and Future	3
or GEOS 2104	or Elements of Geology	
MATH 1026	Elementary Calculus	3
Credits		16
Second Year		
Fall Semester		
AAEC 1005	Economics of the Food and Fiber System	3
or ECON 2005	or Principles of Economics	
BIOL 2804	Ecology	3
CSES 3114	Soils	3
CSES 3124	Soils Laboratory	1
ENSC 3604	Fundamentals of Environmental Science	3
Pathways Concept 6 - Critique and Practice in Design and the Arts		3
Credits		16
Spring Semester		
BIOL 2304	Plant Biology	3
GEOG 2084	Principles of Geographic Information Systems	3
or GEOG 4354	or Introduction to Remote Sensing	
or FREC 4114	or Information Technologies for Natural Resource Management	
STAT 3615	Biological Statistics	3
Pathways Concept 2 - Critical Thinking in the Humanities		3
Pathways Concept 3 - Reasoning in the Social Sciences		3
Credits		15

Third Year**Fall Semester**

ENSC 3644	Plant Materials for Environmental Restoration	3
	Ecology Restricted Elective	3
	Plant and Soil Science Restricted Elective	3
	Pathways Concept 1 - Discourse	3
	Pathways Concept 6 - Critique and Practice in Design and the Arts	3
Credits		15

Spring Semester

ENSC 4244	Ecological Restoration	3
BIOL 3204	Plant Taxonomy	3
	Ecology Restrictive Elective	3
	Plant and Soils Science Restricted Elective	3
	Pathways Concept 2 - Critical Thinking in the Humanities	3
Credits		15

Fourth Year**Fall Semester**

PPWS 4604	Biological Invasions	3
	Ecology Restricted Elective	3
	Human Dimension Restricted Elective	3
	Restricted Electives	3
	Pathways Concept 7 - Critical Analysis of Identity and Equity in the United States	3
Credits		15

Spring Semester

ENSC 4774	Reclamation of Drastically Disturbed Lands	3
	Restricted Electives	3
	Restricted Electives	3
	Restricted Electives	3
	Free Electives	2
Credits		14
Total Credits		120