

ENVIRONMENTAL SCIENCES B.S.

All students must meet the Degree and University Requirements.

All students must meet the Catamount Core Curriculum Requirements.

All students must meet the Rubenstein Core Curriculum Requirements

Students in the ENSC major must choose one of the following concentrations or a Program Director approved self-design concentration (14-17 credits):

Agriculture and the Environment (p. 1)

Conservation Biology and Biodiversity (p. 2)

Ecological Design (p. 2)

Environmental Analysis and Assessment (p. 3)

Environmental Biology (p. 3)

Environmental Geology (p. 4)

Environmental Health (p. 4)

Global Environment and Climate Change (p. 5)

Water Resources (p. 5)

Self Designed Concentration (p. 6)

MAJOR REQUIREMENTS

A total of 120 credits is required for the degree.

Requirement Description		Credits
BCOR 1400	Exploring Biology 1	4
or BIOL 1400	Principles of Biology 1	
or BIOL 1000	AP Biology 1	
BCOR 1450	Exploring Biology 2	4
or BIOL 1450	Principles of Biology 2	
or BIOL 1005	AP Biology 2	
CHEM 1400	General Chemistry 1	4
CHEM 1450	General Chemistry 2	4
CHEM 1580	Intro Organic Chemistry w/lab ¹	4
or CHEM 2580	Organic Chemistry 1	
GEOL 1400	Environmental Geology	4
or ALE 2610	Fundamentals of Soil Science	
MATH 1212	Fundamentals of Calculus I	3

or MATH 1234	Calculus I	
MATH 1224	Fundamentals of Calculus II	3
or MATH 1248	Calculus II	
NR 2100	Environmental Communication	3
NR 2400	Applied Environ Statistics	3-4
or STAT 1410	Basic Statistical Methods 1	
or NR 2401	Intro Environmental Statistics	
ENSC 1010	Intro Environmental Sci	3
ENSC 1090	Orientation to Env Sciences ²	1
ENSC 2300	Global Environmental Assessmnt	3
ENSC 3600	Pollutant Mvmt/Air, Land&Water	4
ENSC 4010	Recovery&Restor Altered Ecosys	4
ENSC 4020	Applied Envir Assess Analysis	4

¹ Students interested in concentrations such as environmental analysis and assessment should consider taking more advanced courses, such as CHEM 2580/CHEM 2585.

² Internal and external transfer students to ENSC are exempt from ENSC 1090.

CONCENTRATION REQUIREMENTS

Environmental Science majors may apply up to 3 credits of internship, research, or independent study experience toward their concentration requirements if approved by the Program Director. Experiences must include learning objectives and activities directly related to the student's major concentration and include substantive deliverables that demonstrate a depth of academic knowledge and disciplinary practice.¹

Agriculture and the Environment Concentration

Requirement Description		Credits
Choose a minimum of 15 credits from the following courses:		15
ALE 1210	Intro to Agroecology	
ALE 2060	Entomology & Pest Mgmt	
ALE 2120	Weed Ecology & Management	
ALE 2170	Plant Pathology	
ALE 2240	Sust Veg Crops Production	
ALE 2430	Forage and Pasture Mgmt	
ALE 2560	Permaculture	
ALE 2620	Soil Fertility & Conservation	
ALE 3120	Advanced Agroecology	

ALE 3250	Eco Frontiers in Agroecology	
ALE 3320	Biological Control	
ALE 3610	Soil Morph and Land Use	
ALE 3640	Chemistry of Soil & Water	
ALE 3680	Soil Ecology	
ALE 3690	Soil/Water Pollution/Bioremed	
CDAE 2080	Comparative Food Systems	
CDAE 3070	The Real Cost of Food	
CDAE 3080	Agricultural Policy and Ethics	
FS 2020	Comparative Food Systems	
FS 2030	Human Health in the Food Syst	
MMG 3200	Environmental Microbiology	
NFS 1073	Farm to Table: Food Sys	
NFS 2114	Human Health in the Food Syst	
PBIO 2090	Plant Systematics	

¹ Up to 3 credits of ENSC 2991/3991, 2993/3993 or 2995/3995 can be applied towards concentration credits if a relevant experiential learning plan has been approved by the Program Director prior to the start of the experience.

Conservation Biology and Biodiversity Concentration

Requirement Description		Credits
WFB 3240	Conservation Biology	4
Choose ONLY one of the following :		4
PBIO 2090	Plant Systematics	
or BIOL 4245	Mammalogy	
or FOR 1210	Dendrology	
or WFB 1740	Wildlife Conservation	
or WFB 2300	Ornithology	
or WFB 2410	Field Herpetology	
or WFB 4320	Ichthyology	
Choose a minimum of 7 additional credits from the following courses:		7
ALE 3680	Soil Ecology	
ASCI 2600	Zoos, Exotics & Endang Species	
ASCI 2700	Wildlife Hlth & Consvration	
BCOR 2100	Ecology and Evolution	

BCOR 2300	Genetics	
BIOL 1205	Climate Change Genetics	
BIOL 3100	Plant-Animal Interactions	
BIOL 3105	Community Ecology	
BIOL 3130	Behavioral Ecology	
BIOL 3400	Topics in General Biology	
BIOL 4260	Population Genetics	
BIOL 4245	Mammalogy	
FOR 2220	Forest Ecosystem Analysis	
FOR 2570	Wildland Fire	
FOR 4720	Sustain Mgmt Forest Ecosys	
NR 2430	Intro to Geog Info Systems	
PBIO 2080	Morph & Evo of Vascular Plants	
PBIO 2330	How Plants Can Save the World	
PBIO 3220	Ecological Invasions	
PBIO 3750	Global Change Ecology	
SEP 2880	Sustainability Science	
SEP 4200	Landscape Ecology	
SEP 4280	Ecosystem Ecology	
SEP 4800	Stream Ecology	
WFB 2740	Prin of Wildlife Management	
WFB 3610	Fisheries Biology & Techniques	
WFB 4610	Fisheries Management	
WFB 4750	Wildlife Behavior	
WFB 4830	Terrestrial Wildlife Ecology	

¹ Up to 3 credits of ENSC 2991/3991, 2993/3993 or 2995/3995 can be applied towards concentration credits if a relevant experiential learning plan has been approved by the Program Director prior to the start of the experience.

Ecological Design Concentration

Requirement Description		Credits
SEP 3880	Ecological Design & Living Tec	0 or 3
Choose a minimum of 12 additional credits from the following courses:		12
ALE 2270	Greenhouse Operations & Mgmt	
ALE 2370	Landscape Design Fundamentals	

ALE 2371	Landscape Design Studio	
ALE 2620	Soil Fertility & Conservation	
ALE 2540	Composting Ecology & Mgmt	
ALE 2560	Permaculture	
ALE 3120	Advanced Agroecology	
ALE 3380	Ecological Landscape Design	
ALE 3680	Soil Ecology	
ALE 3690	Soil/Water Pollution/Bioremed	
CDAE 1060	Energy Alternatives	
CDAE 2020	Sustainable Community Dev	
CDAE 2370	Landscape Design Fundamentals	
CDAE 2720	Sust. Development Travel Study	
CDAE 2993	Independent Study	
CDAE 3180	Community Org & Development	
CDAE 3370	Economics of Sustainability	
CDAE 3760	Community Design Studio	
CEE 2120	Environmental Systems	
CEE 3510	Water Quality Engineering	
CEE 3815	Geoenvironmental Engineering	
MMG 3200	Environmental Microbiology	
NR 2430	Intro to Geog Info Systems	
PRT 1500	Tourism Planning	
PRT 3300	Ecotourism	
PRT 4350	Outdoor Recreation Planning	
SEP 2880	Sustainability Science	
SEP 4350	Legal Aspects of Envi Planning	
SEP 4880	Advanced Ecological Design	

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Environmental Analysis and Assessment Concentration

Requirement Description	Credits
Choose a minimum of 15 credits from the following courses:	15
ALE 3640	Chemistry of Soil & Water

BIOC 3001	Fundamentals of Biochemistry	
CEE 2120	Environmental Systems	
CEE 3510	Water Quality Engineering	
CEE 3530	Environmental Quanti. Analysis	
CHEM 2310	Quantitative Analysis	
CHEM 2400	Inorganic Chemistry	
CHEM 2600	Physical Chem for Life Science	
CHEM 3320	Instrumental Analysis	
CHEM 3400	Advanced Inorganic Chemistry	
CHEM 3600	Advanced Physical Chemistry	
ENVS 2980	Topics In: Field Studies	
FOR 2110	Nat Res Ecol and Assessment 1	
FOR 2120	Nat Res Ecol and Assessment 2	
GEOG 2250	Global Environmental Change	
GEOLOGY 2105	Earth Materials	
GEOLOGY 2405	Environmental Geochemistry	
GEOLOGY 4405	Geochemistry of Natural Waters	
MMG 1030	Methods in Microbial Ecology	
MMG 3050	Biochemistry I	
MMG 3200	Environmental Microbiology	
NR 2430	Intro to Geog Info Systems	
NR 2460	Remote Sensing	
NR 3010	Research Methods	
ALE 3610	Soil Morph and Land Use	
ALE 3640	Chemistry of Soil & Water	

¹ Up to 3 credits of ENSC 2991/3991, 2993/3993 or 2995/3995 can be applied towards concentration credits if a relevant experiential learning plan has been approved by the Program Director prior to the start of the experience.

Environmental Biology Concentration

Requirement Description	Credits	
BCOR 2100	Ecology and Evolution	4
Choose a minimum of 12 additional credits from the following courses:		12
ALE 3680	Soil Ecology	
BCOR 2300	Genetics	

BIOL 1205	Climate Change Genetics	
BIOL 2300	Vertebrate Zoology	
BIOL 3100	Plant-Animal Interactions	
BIOL 3105	Community Ecology	
BIOL 3130	Behavioral Ecology	
BIOL 3165	Evolution	
BIOL 4245	Mammalogy	
BIOL 4260	Population Genetics	
FOR 3350	Forest Ecosystem Health	
MMG 1030	Methods in Microbial Ecology	
PBIO 2040	Plant Physiology	
PBIO 2090	Plant Systematics	
PBIO 2770	Biology of Fungi	
PBIO 3220	Ecological Invasions	
PBIO 3750	Global Change Ecology	
SEP 4200	Landscape Ecology	
SEP 4280	Ecosystem Ecology	
SEP 4500	Limnology	
SEP 4880	Advanced Ecological Design	
WFB 2300	Ornithology	
WFB 2310	Field Ornithology	
WFB 3240	Conservation Biology	
WFB 4320	Ichthyology	

¹ Up to 3 credits of ENSC 2991/3991, 2993/3993 or 2995/3995 can be applied towards concentration credits if a relevant experiential learning plan has been approved by the Program Director prior to the start of the experience.

Environmental Geology Concentration

Requirement Description		Credits
GEOL 2105	Earth Materials	
or GEOL 3105 Earth Materials w/lab		
Choose a minimum of 12 additional credits from the following courses:		12
CEE 3815	Geoenvironmental Engineering	
GEOL 1100	Earth Through Time	
GEOL 2400	Topics in Env't & Surface Geo	

GEOL 2405	Environmental Geochemistry	
or GEOL 3405 Environmental Geochem w/lab		
GEOL 2410	Geohealth	
GEOL 2525	Geocomputing	
GEOL 3410	Geomorphology	
GEOL 3515	Field Geology	
GEOL 4110	Rock Chronicles	
GEOL 4405	Geochemistry of Natural Waters	
GEOL 4510	Geomaterial Analysis	
GEOG 3250	Topics In Global Change	
NR 2430	Intro to Geog Info Systems	

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Environmental Health Concentration

Requirement Description		Credits
SEP 2070	Human Health & the Environment	0 or 3
Choose a minimum of 12 additional credits from the following courses:		12
ANTH 1190	Global Health Devel & Diversit	
ANTH 2191	Foundations of Global Health	
ANTH 3192	Anthro Research Global Health	
BCOR 2300	Genetics	
BIOC 3001	Fundamentals of Biochemistry	
BIOC 3075	Adv Biochem of Human Disease	
BIOL 3505	Neurobiology	
CEE 2120	Environmental Systems	
CHEM 2585	Organic Chemistry 2	
FS 2030	Human Health in the Food Syst	
HLTH 2400	Issues in Women's Health	
HSCI 1100	Introduction to Public Health	
HSCI 1300	Epidemics: Dynam of Inf Diseas	
HSCI 2100	Fndns of Global Health	
HSCI 2200	Rsrch Methods in Public Health	
HSCI 2500	Health Communication	

HSCI 3100	Epi, Pub Hlth & Emerg Disease	
MMG 2010	Microbiol & Infectious Disease	
NFS 2114	Human Health in the Food Syst	
NR 2430	Intro to Geog Info Systems	
NR 3370	Human Ecology & Health-Arctic	
NURS 3000	Health and Sustainability	
PHRM 3010	Pharmacology and Therapeutics	
PHRM 5400	Molecules & Medicine	
PHRM 3720	Toxicology	
SEP 3990	Special Topics (Women, Health and Environment)	
SOC 2300	Population Health Research	
STAT 3000	Med Biostat&Epidemiology	

¹ Up to 3 credits of ENSC 2991/3991, 2993/3993 or 2995/3995 can be applied towards concentration credits if a relevant experiential learning plan has been approved by the Program Director prior to the start of the experience.

Global Environment and Climate Change Concentration

Requirement Description		Credits
Choose a minimum of 15 credits from the following courses:		15
ALE 3610	Soil Morph and Land Use	
BIOL 1205	Climate Change Genetics	
BIOL 4410	Physiology of Global Change	
CDAE 1060	Energy Alternatives	
CEE 2120	Environmental Systems	
ECON 1280	Economics of Climate Change	
ENSC 1490	Climate Change I	
or ENSC 2490 Climate Change II		
ENSC 2480	Global Environmental Change	
ENVS 2250	Topics in Environmental Ethics	
FOR 2570	Wildland Fire	
FOR 3350	Forest Ecosystem Health	
GEOG 1200	Weather, Climate & Landscapes	
GEOG 2230	Climatology: Concepts & Tools	
GEOG 2715	The Circumpolar Arctic	

GEOG 3230	Topics in Climate & Water (Climatology and Natural Hazards)	
GEOG 3230	Topics in Climate & Water (Paleoclimatology)	
GEOG 3250	Topics In Global Change	
GEOG 3760	Topics in Human Env Interact (The Anthropocene)	
GEOL 3410	Geomorphology	
NR 2430	Intro to Geog Info Systems	
PBIO 3750	Global Change Ecology	
SEP 2020	Water as a Natural Resource	
SEP 2880	Sustainability Science	
SEP 3904	Energy and Climate Law	
SEP 4200	Landscape Ecology	

¹ Up to 3 credits of ENSC 2991/3991, 2993/3993 or 2995/3995 can be applied towards concentration credits if a relevant experiential learning plan has been approved by the Program Director prior to the start of the experience.

Water Resources Concentration

Requirement Description		Credits
Choose a minimum of 15 credits from the following courses:		15
ALE 3640	Chemistry of Soil & Water	
ALE 3690	Soil/Water Pollution/Bioremed	
CEE 2120	Environmental Systems	
CEE 3510	Water Quality Engineering	
BIOL 2105	Introduction to Marine Science	
GEOG 3230	Topics in Climate & Water (Snow Hydrology)	
GEOL 2405	Environmental Geochemistry	
GEOL 4405	Geochemistry of Natural Waters	
NR 2430	Intro to Geog Info Systems	
SEP 2020	Water as a Natural Resource	
SEP 3880	Ecological Design & Living Tec	
SEP 4800	Stream Ecology	
SEP 4500	Limnology	
SEP 4880	Advanced Ecological Design	
PBIO 3750	Global Change Ecology	
WFB 2410	Field Herpetology	

WFB 3610	Fisheries Biology & Techniques	
WFB 4320	Ichthyology	
WFB 4610	Fisheries Management	

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Self-Designed concentration

Students may develop learning objectives and a concentration curriculum in consultation with the ENSC Program Director to focus on their specific area of interest. Students must complete a minimum of 15 credits of pre-approved coursework.