The Natural Resources Curriculum combines course work from disciplines inside and outside The Rubenstein School to produce an individualized major focused on an ecological theme or the human-environment relationship. Students concentrate in Resource Ecology, Resource Planning, or Integrated Natural Resources. They take foundational courses in natural or social sciences and then tap into upper-level and field-based courses to focus in areas such as aquatic ecology; terrestrial ecology; environmental policy, economics and law; community-based resource planning; environmental education; sustainability and resource management; and energy and environmental systems. Most students incorporate internship, research, and/or study abroad experiences into their academic program. Graduates are competitive for positions in the environmental field in a range of settings. They also are prepared to pursue graduate studies in environment and natural resources including advanced study in the natural sciences and in law, urban, regional and community planning, and public administration.

MAJORS

NATURAL RESOURCES MAJOR

Natural Resources B.S.

GRADUATE

Natural Resources M.S.

Natural Resources Ph.D.

See the online Graduate Catalogue for more information.

Courses

NR 001. Natural Hist & Human Ecology 1. 0 or 4 Credits.
Integrates the science of ecology and the science of humans and society to understand the relationship between the natural landscape and its effects on society and social organization, and society’s effects on the natural landscape.

NR 002. Natural Hist & Human Ecology 2. 0 or 4 Credits.
Integrates the science of ecological sciences and the science of humans and society to understand the relationship between the natural landscape’s effects on society and social organization, and society’s effects on the natural landscape.

NR 006. D1:Race & Culture in NR. 0 or 2 Credits.
Introduces the First-Year student to issues of race and culture and their relevance to society, natural resources, and the environment.

NR 009. SU:VT: Natural & Cultural Hst. 0 or 4 Credits.
Introduction to the Vermont landscape that combines elements of natural history, field ecology, and environmental history. Students visit locations around the Champlain Valley as they build observational skills, study natural systems, and examine past and present human relationships with nature.

NR 015. Ecology of Place. 1 Credit.
Opportunities for first-time residents of GreenHouse Residential Learning Community to deepen their sense of place through participation in a diversity of environmental explorations.

NR 016. Ecological Citizenship. 1 Credit.
Provides members of the GreenHouse Residential Learning Community with opportunities to pursue ecological interests and community service projects with mentorship from GreenHouse staff members. Prerequisite: NR 015.

NR 021. Speaking and Listening. 2 Credits.
Course aids students in learning to speak, listen and critique public speaking. Different delivery styles focus on relevant environmental and natural resource topics.

NR 025. Measurements & Mapping. 0 or 4 Credits.
Introduction to surveying, mapping, aerial photo measurements, and interpretation for natural resource planning and management. Prerequisite: NR 001.

NR 090. Internship. 1-3 Credits.
On-site supervised work experience combined with a structured academic learning plan directed by a faculty member or a faculty-staff team in which a faculty member is the instructor of record, for which academic credit is awarded. Offered at department discretion.

NR 095. Introductory Special Topics. 0 or 4 Credits.
Introductory topics in environmental and natural resource issues beyond the scope of exiting courses.

NR 099. Aiken Scholars Seminar. 1 Credit.
Seminar discussions on current environment issues. Guest speakers and field trips. Prerequisite: Open only to First-Year Aiken Scholars.

NR 102. SU:Water as a Natural Resource. 3 Credits.
Uses of water resources and impacts on aquatic systems and human society. Prerequisites: Minimum Sophomore standing.

NR 103. Ecology, Ecosystems & Environ. 3 Credits.
Major ecological concepts and their application. Analysis of form, structure, and function of organisms, populations, communities, ecosystems, and landscapes. Prerequisite: NR 001.

NR 104. Social Proc & the Environment. 3 Credits.
Social science theories and their application to environmental issues. Analysis of issues using theories of government, economics, and social movements. Emphasis on integrating frameworks to analyze environmental issues. Prerequisite: NR 002.

NR 107. SU:Human Health & the Environmt. 3 Credits.
Offers an introduction to environmental health. Topics include: methods (toxicology, epidemiology), environmental health hazards (physical, biological, chemical) and supports (nature contact), risk analysis, communication and management, health and climate change, food production and access, energy production, and water. Prerequisite: Sophomore standing. Cross-listed with: ENVS 107, HLTH 107.
NR 125. Ecological Coop Living. 2 Credits.
Engaging students in the Slade Special Interest Program in the development of their residence as a self-sufficient, ecological cooperative on campus through the design, implementation, and maintenance of an ecologically-minded infrastructure of technology and day-to-day living arrangements. Prerequisite: Current resident in Slade Hall.

NR 137. Landscape Design Fundamentals. 4 Credits.
Studio course to learn techniques of landscape design and analysis, develop graphic communication skills for representing the landscape, and apply sustainable design principles to a site. Prerequisites: Junior standing; at least one course in drawing, design, or mapping, or Instructor permission. Cross-listed with: CDAE 137, ENVS 137, PSS 137.

NR 140. Applied Environ Statistics. 0 or 4 Credits.
Introduction to the design, application, interpretation and critical assessment of biostatistical analyses for natural resource applications. Concepts are applied through service learning partnerships. Prerequisite: Sophomore standing.

NR 141. Intro to Ecological Economics. 3 Credits.
Introduction to the study of economics as dependent on social and environmental systems and to transdisciplinary problem-solving using ecological economics. Prerequisite: Minimum Sophomore standing. Cross-listed with: ENVS 141.

NR 143. Intro to Geog Info Systems. 0 or 3 Credits.
Understanding and application of computer-based, geographically-referenced information systems. Prerequisite: Junior standing.

NR 146. Remote Sensing of Natural Res. 3 Credits.
Cross-listed with: FOR 146, GEOG 185.

NR 153. Intro Environmental Policy. 3 Credits.
Introduction to policy aspects of environment and natural resources including policy processes, public governance, and citizen participation with applications to environmental issues. Prerequisite: NR 104 or POLS 021. Cross-listed with: ENVS 142.

NR 170. Intro Dynamic Simulation Mdlg. 1 Credit.
Elementary principles of dynamic simulation modeling and use of the STELLA II dynamic simulation software. Example simulations of natural environmental systems. Prerequisite: Sophomore standing.

NR 176. Water Quality Analysis. 0 or 3 Credits.
Selected aspects of elementary water chemistry and bioassay as related to surface and ground waters. Five laboratory experiences. Two and a half hours lecture per week and twenty hours lab per semester.

NR 189. Student-Designed Course Work. 1-3 Credits.
Student-taught course work beyond the scope of formal courses in natural resources. Developed according to RSENR guidelines with sponsorship by interested faculty. Variable credit.

NR 190. Internship. 1-18 Credits.
On-site supervised work experience combined with a structured academic learning plan directed by a faculty member or a faculty-staff team in which a faculty member is the instructor of record, for which academic credit is awarded. Offered at department discretion.

NR 192. Independent Study. 1-18 Credits.
A course which is tailored to fit the interests of a specific student, which occurs outside the traditional classroom/laboratory setting under the supervision of a faculty member, for which credit is awarded. Offered at department discretion.

NR 195. Intermediate Special Topics. 1-18 Credits.
Special topics in natural resources beyond the scope of existing formal courses.

NR 196. Undergraduate Research. 1-18 Credits.
Undergraduate student work on individual or small team research projects under the supervision of a faculty member, for which credit is awarded. Offered at department discretion.

NR 197. Teaching Assistantship. 1-3 Credits.
Undergraduate student service as a teaching assistant, usually in an introductory level course in the discipline, for which credit is awarded. Offered at department discretion.

NR 199. Honors Seminar. 1 Credit.
A discussion and readings seminar that features guest speakers, and is part of the SNR Spring Seminar Series. Focus of the seminars change annually. Can be repeated. Prerequisite: Sophomore standing; open only to SNR Honors Students.

Integration of natural and social science into ecosystem management and policy. Consideration of ecosystem integrity, ecosystem degradation, human needs and values, and the application of management principles within a holistic context. Prerequisites: NR 001, NR 002, NR 103, NR 104.

NR 206. Env Prob Sol & Impact Assessmt. 0 or 4 Credits.
Group dynamics, impact assessment, risk assessment, and decision making. Emphasis on the process of solving complex environmental problems, interdisciplinary team work, and the National Environmental Policy Act. Prerequisites: NR 001, NR 002, NR 103, NR 104, NR 205.

NR 207. D1: Power, Privilege & Envrnmt. 1 Credit.
This course provides seniors with the opportunity to understand aspects of power, privilege, and injustice and its implications for the natural resource and environmental fields. Prerequisites: Senior standing in Rubenstein School of Environment and Natural Resources.

NR 220. Landscape Ecology. 3 Credits.
The course examines the critical role of landscape pattern in determining ecological process and dynamics, as well as human-ecological interactions. Includes field labs. Prerequisites: NR 103 or BCOR 102; Senior/Graduate standing.
NR 222. Pollution Ecology. 3 Credits.
Impacts of pollutants on the structure and function of ecosystems. Examination of how air, land, and water influence ecological fate and effects of pollutants. Prerequisites: BIOL 001 or BCOR 011, and CHEM 023 or CHEM 031, and NR 103 or BCOR 102.

NR 224. Conservation Biology. 3 Credits.
Conservation of biological diversity at genetic, species, ecosystem, and landscape levels. Emphasis on genetic diversity, population viability, endangered species, critical habitats, international implications. Prerequisites: BIOL 001 and BIOL 002 or BCOR 011 and BCOR 012, and NR 103 or BCOR 103.

NR 228. Ecosystems Ecology. 3 Credits.
Examination of the structure and function of terrestrial ecosystems focusing on carbon and nutrient cycles. Laboratory sessions involve spatial modeling and data analysis. Prerequisites: NR 103, BCOR 102, PSS 161, or Graduate student standing. Cross-listed with: FOR 228.

NR 235. Legal Aspects Envir Planning. 3 Credits.
Comparison of environmental planning law at local, state, and national levels. Case studies in environmental and natural resource planning and land use controls. Prerequisite: Senior Standing.

NR 238. Ecological Landscape Design. 4 Credits.
Studio course synthesizing work from fields of landscape ecology and landscape design, exploring ecological design alternatives at multiple scales, and developing multifunctional landscape solutions. Prerequisites: Junior standing; PSS 137 or one course in ecology plus one course in design or drawing. Cross-listed with: CDAE 238, ENVS 238, PSS 238.

NR 240. Park and Wilderness Mgmt. 3 Credits.
History, philosophy, and management of wilderness, national parks, and related areas. Prerequisites: Junior standing in Parks, Recreation and Tourism. Cross-listed with PRT 240.

NR 242. Adv Geospatial Techniques. 1-3 Credits.
Advanced course encompassing a wide range of topics in GIS, remote sensing, GPS, modeling, and visualization designed to provide technical expertise in geospatial techniques. Prerequisite: NR 143, GEOG 184, NR 343, NR 146, NR 346, or GEOG 185.

NR 243. GIS Practicum. 3 Credits.
An applied course in geospatial technology with a focus on ESRI’s ArcGIS software suite. Prerequisite: NR 143 or NR 343.

NR 245. Integrating GIS & Statistics. 3 Credits.
Advanced approaches in integrating Geographic Information Systems (GIS) and statistical methods to analyze quantitatively spatial patterns and relationships. Prerequisites: Senior/Graduate standing; Either NR 143, GEOG 184, or NR 343 and either STAT 111, STAT 141, NR 140, or STAT 211.

NR 250. Limnology. 0 or 4 Credits.
Ecology of lakes and reservoirs, including their origin, physics, chemistry and biology, and the effects of anthropogenic perturbations. Field and laboratory experience. Prerequisites: BIOL 001 and BIOL 002 or BCOR 011 and BCOR 012, and CHEM 023 and CHEM 026 or CHEM 031 and CHEM 032, and NR 103 or BCOR 102.

NR 254. Adv Natural Resource Policy. 3 Credits.
Advanced seminar in environmental and natural resource policy. Prerequisites: NR 153 or ENVS 142 or POLS 130 or Graduate standing.

NR 255. Field Mthds in Water Resources. 3 Credits.
Techniques used in field assessment of water quality in rivers and lakes. Case studies on the LaPlatte River and Lake Champlain. Sampling strategies, field measurements, and data evaluation. Extensive field work. Prerequisite: NR 102.

NR 256. Ecology of a Large Lake. 4 Credits.
A field exploration of the littoral zone and deep lake environments and human impacts on large lakes using Lake Champlain as the class laboratory. Prerequisite: NR 103 or BCOR 102.

NR 260. Wetlands Ecology & Mgmt. 3 Credits.
Structure, dynamics and values of natural and artificial wetlands; wetlands management and issues. Prerequisites: BIOL 001 and BIOL 002 or BCOR 011 and BCOR 012, and NR 103 or BCOR 102.

NR 261. Wetlands Ecology Lab. 1 Credit.

NR 262. Int'l Problems in NR Mgmt. 3 Credits.
Discussion of problems associated with the management of natural resources which have international implications. Topics may include deforestation, desertification, fisheries, wildlife, refugees, fuelwood, pollution. Prerequisite: Senior standing.

NR 264. SL: C Ross Env Publ Serv Pract. 4-5 Credits.
Creating proposals for modification and implementation of natural resource and environmental policy in Vermont with emphasis on critical thinking, problem solving and leadership. Prerequisites: NR 104 or POLS 021.

NR 265. Environment & Human Behavior. 3 Credits.
Applies social psychological frameworks--attitudes, exchange theory, symbolic interaction, group processes, social cognition, discourse theory--to help understand environmentally related behaviors, conflict, and management. Prerequisite: Junior standing.

NR 268. Soil Ecology. 0 or 4 Credits.
Underlying concepts and theory of modern soil ecology will be reviewed including spatial and temporal distributions, sampling methods, biogeochemical cycles, and ecological functions of soil. Prerequisites: BCOR 102 or NR 103, Prerequisites: BCOR 102 or NR 103, and PSS 161. Cross-listed with: PSS 268.
NR 270. Toxic & Hazardous Subst in Srf Water. 3 Credits.
The fate of toxic and hazardous pollutants, including trace elements and organics, in surface waters; effects on human health and aquatic biota. Prerequisites: BIOL 001, and CHEM 023 and CHEM 042, or CHEM 102; Senior standing.

NR 275. NR Planning: Theory & Methods. 3 Credits.
Investigates theoretical development of natural resource planning. Studies planning methods appropriate to protection and use of scenic, recreational, forest, agriculture, and historic resources and ecologically sensitive areas. Prerequisite: Senior standing.

NR 276. Water Quality Anlys & Interp. 0 or 3 Credits.
Selected aspects of water chemistry and bioassay as related to surface and ground waters. Laboratory analysis of water quality parameters and data interpretation. Prerequisite: Senior standing.

NR 277. Land Use Policy & Economics. 3 Credits.
Economic and social forces that drive land use patterns and the policy mechanisms designed to intervene in those processes. Prerequisites: EC 012 or CDAE 061 or NR 141 or ENVS 141; Senior or Graduate standing or Instructor permission.

NR 279. Watershed Management Hydrology. 0 or 3 Credits.
Fundamental elements of hydrology and contaminant transport in watersheds. Application of dynamic simulation techniques. Discussion of new technologies for watershed management. Prerequisites: NR 170; Senior standing.

NR 280. Stream Ecology. 0 or 4 Credits.
Ecology of streams including hydrodynamics, morphology, sediment transport, chemistry, biology and human impacts. Field and laboratory experience. Prerequisites: BIOL 001 and BIOL 002 or BCOR 011 and BCOR 012, and CHEM 023 and CHEM 026 or CHEM 031 and CHEM 032, and NR 103 or BCOR 102.

NR 288. Ecol Design & Living Technol. 3 Credits.
The course explores the potential for ecological design to shape a sustainable future. It analyzes living technologies for food production, waste management and environmental restoration. Prerequisite: Junior standing.

NR 289. Advanced Ecological Design. 3 Credits.
A problem-based, cross-disciplinary design course in which existing conditions are integrated with the redesign of place and system in alignment with ecological design principles. Prerequisite: NR 288.

NR 290. Internship. 1-18 Credits.
On-site supervised work experience combined with a structured academic learning plan directed by a faculty member or a faculty-staff team in which a faculty member is the instructor of record, for which academic credit is awarded. Offered at department discretion.

NR 292. Independent Study. 1-18 Credits.
A course which is tailored to fit the interests of a specific student, which occurs outside the traditional classroom/laboratory setting under the supervision of a faculty member, for which credit is awarded. Offered at department discretion.

NR 295. Advanced Special Topics. 1-18 Credits.
Advanced special topics in natural resource planning beyond the scope of existing formal courses.

NR 296. Undergraduate Research. 1-18 Credits.
Undergraduate student work on individual or small team research projects under the supervision of a faculty member for which credit is awarded. Offered at department discretion.

NR 297. Teaching Assistantship. 1-3 Credits.
Undergraduate student service as a teaching assistant, usually in an introductory level course in the discipline for which credit is awarded. Offered at department discretion.

NR 298. Honors ’Project’ Planning. 2 Credits.
Process, procedures, and strategies leading to the development of an individual or group Honors Project Proposal, to be submitted for review and approval. Prerequisite: Honors Project Proposal, to be submitted for review and approval. Prerequisite: Honors Project Proposal.

NR 299. Honors. 1-6 Credits.
Honors project dealing with aquatic resources, terrestrial ecology, or integrated natural resources.