

# Natural Resources and Environment

## College of Natural Science and Mathematics

Department of Natural Resources and Environment (<https://www.uaf.edu/nre/>)  
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## Department Overview

The Department of Natural Resources and Environment offers several degrees focusing on the sustainable management of natural resources and agricultural systems. The B.S. prepares undergraduate students for careers in a wide range of private enterprises, government agencies and nonprofit organizations, as well as providing a solid foundation for students who plan to pursue graduate degree programs.

Two master's degrees are offered. The master's degree in natural resources and environment is designed to prepare students for a management career in natural resources planning and administration, communication and public information, and/or impact assessment. The M.S. degree in natural resources and environment is designed for those intending to pursue a career conducting research related to management problems and/or to proceed on to a doctoral program.

The joint Ph.D. program in natural resources and sustainability prepares future leaders as academic researchers, agency professionals, and analysts of nongovernmental organizations and communities for careers at the frontiers of the science of sustainability and natural resources management.

## B.S., Natural Resources and Environment

The sustainability of society and its environment requires an interdisciplinary approach to making and implementing natural resource and environmental decisions. The natural resources and environment degree integrates knowledge in natural science, policy, economics and human values to advance the sustainable management of natural resources and agricultural systems. Students learn through a variety of approaches, including classroom instruction, hands-on laboratory experiences, and opportunities for internships and independent research under the guidance of a faculty mentor. Successful graduates will be qualified for employment in a broad range of private enterprises, government agencies and nonprofit organizations in the various natural resources fields, and will be well-equipped for graduate studies. The natural resources and environment minor strengthens students' degree programs by providing a broad introduction to how natural and social sciences, the humanities, and policy should be integrated in order to make well-founded decisions.

Minimum Requirements for Natural Resources and Environment Bachelor's Degree: 120 credits

Learn more about the bachelor's degree in natural resources and environment (<https://uaf.edu/academics/programs/bachelors/natural-resources-environment.php>), including an overview of the program, career opportunities and more.

## M.N.R.E., M.S., Natural Resources and Environment

The two master's degrees offered by the Department of Natural Resources and Environment are designed for students desiring careers in resources

management and students planning doctoral work, as well as those wishing to be better-informed citizens. The courses and curriculum for the two degrees were developed in cooperation with groups and agencies that work professionally with resource management in Alaska. These agencies, including the Alaska Department of Natural Resources, Alaska Department of Fish and Game, Agricultural Research Service, U.S. Forest Service, Bureau of Land Management, Natural Resources Conservation Service, and U.S. Fish and Wildlife Service contribute significantly to the programs by providing guest lecturers and internship and research opportunities for students.

Because of the diversity and broad scope of the field, each degree is customized according to the student's interests and the advisory committee's recommendations. Student research projects and theses have typically been in the fields of forest management, land use planning, soil management, natural resource policy, range management, parks and recreation management, horticulture, agronomy, animal science, climate change and GIS.

A Bachelor of Science or Bachelor of Arts degree in a relevant discipline is required for acceptance into either program. Candidates should have a general familiarity with the major resource fields. The student's committee may require the student to take courses to remedy any deficiencies; these credits will not count toward the credits required for the degree.

Applicants must submit three letters of recommendation, official GRE scores, undergraduate transcripts and a statement of the applicant's goals. The latter should include information about why you are applying for the degree, why you chose UAF and DNRE, and how such a degree would fit into your career goals. Applications cannot be considered until all these items have been received by the Office of Admissions.

The M.S. degree in natural resources and environment is designed for those intending to pursue a career conducting research in management problems and/or to proceed on to a doctoral program. Thesis research in natural resources and environment is directed toward resource problems and based on hypothesis testing.

The master's degree in natural resources and environment is designed to prepare students for a management career in natural resources planning and administration; communication and public information; and/or operational innovation, improvement and impact assessment. While not requiring scientific research, the work is expected to involve critical reflection, empirical inquiry and intellectual honesty. A written product and an oral presentation demonstrating sound scholarship will be required. Final acceptance of the project will be by the student's committee and the chair of DNRE.

Minimum Requirements for Natural Resources and Environment Degrees:  
M.S.: 30 credits; M.N.R.E.: 35 credits

## M.S., Ph.D., Earth System Science

Earth System Science at UAF is a multidisciplinary degree program that provides the option for a disciplinary concentration in one of eight topics:

- Sustainability
- Ecosystems
- Hydrology
- Atmospheric and Climate Sciences
- Cryosphere
- Solid Earth Geophysics
- Geoscience
- Geospatial Science

The ESS program involves faculty participation from six departments and programs:

- Natural Resources and Environment
- Center for Cross-Cultural Studies
- Biology and Wildlife
- Civil, Geological, and Environmental Engineering
- Atmospheric Sciences
- Geosciences

and five research institutes:

- Institute of Agriculture/Natural Resources and Extension
- Institute of Arctic Biology
- Institute of Northern Engineering
- International Arctic Research Center
- Geophysical Institute.

Minimum Requirements for Earth System Science Degrees: M.S.: 30 credits; Ph.D.: 26-41 credits.

## Ph.D., Natural Resources and Sustainability

The joint Ph.D. program in natural resources and sustainability prepares future leaders as academic researchers, agency professionals and analysts of nongovernmental organizations and communities for careers at the frontiers of the science of sustainability and natural resources management.

Exploring and understanding natural resource management systems require a well-defined skill set and a clear understanding of how specific problems are linked to broader cultural, ecological and geopolitical contexts. Thus, the study of natural resources and sustainability encompasses a spectrum of topics. The Ph.D. builds on the existing strengths of the Department of Natural Resources and Environment and College of Business and Security Management faculty members to educate students in specific areas while training them to be conversant in the broader range of relevant topic areas.

The program objectives and its curriculum center around three thematic areas of study:

1. resource economics,
2. resource policy and sustainability science, and
3. forest and agricultural sciences.

Each student draws on a common set of core courses, and, with his/her graduate committee, develops a program of coursework and research that produces a unique intellectual contribution to the applied field of natural resources and sustainability. Students elect to focus on one of the three thematic areas or they choose to integrate foci to develop their areas of knowledge and dissertation research.

Additional application requirement: Students are required to have a faculty sponsor upon entering the program. A letter of support from a DNRE or CBSM faculty member in addition to three letters of recommendation must be submitted with the graduate application.

Minimum Requirements for Natural Resources and Sustainability Doctorate Degree: 24 credits

## Graduate Certificate, Geospatial Science

This graduate certificate prepares the student to harness geospatial technologies for cutting-edge applications in natural resources, geohazard management, environmental monitoring and many more. The program

teaches advanced skills in Geographic Information Systems (GIS) and remote sensing, including digital mapping, radar imaging and predictive data analytics. These skills are highly sought after in the job market. They can boost careers in start-ups, consulting firms, and government agencies across a diverse range of fields, including mining, forestry, agriculture, conservation and engineering.

This graduate certificate in geospatial science is equivalent to a year of coursework done by a graduate student in this area. Its target audience consists of students and professionals seeking advanced skills and mastery of GIS and remote sensing tools and concepts. It is most suitable for students with a background in the sciences and engineering.

Minimum Requirements for Geospatial Science Graduate Certificate: 12 credits

## Graduate Certificate, Resilience and Adaptation

The graduate certificate in resilience and adaptation studies is ideal for current graduate students in many disciplines. The graduate certificate encourages a more in-depth study of resilience, adaptation and sustainability, and provides students with a credential that recognizes their knowledge of resilience theory and its application to sustainable systems. The certificate prepares students for a career in academia, industry, government and non-governmental organizations by exposing them to the interdisciplinarity of complex systems. It is a defined series of courses that expose the students to the concepts of resilience and adaptation. Courses will advance knowledge and promote social-ecological research in sustainability and resilience. Students working on degrees in the STEM sciences and social sciences will broaden their disciplinary perspective through exposure to economics, ecology, sociology and anthropology to gain practical knowledge, training and integrative skills development. This certificate embodies a holistic perspective that recognizes the importance of both the social and biological dimensions of environmental sustainability and resilience. This certificate is offered by the Department of Natural Resources and Environment and will meet the needs of students and professionals.

Minimum Requirements for Resilience and Adaptation Graduate Certificate: 12 credits

## Programs

### Degrees

- B.S., Natural Resources and Environment (<https://catalog.uaf.edu/bachelors/natural-resources-environment-bs/>)
- M.N.R.E., Natural Resources and Environment (<https://catalog.uaf.edu/masters/natural-resources-environment-mnre/>)
- M.S., Earth System Science (<https://catalog.uaf.edu/masters/earth-system-science/>)
- M.S., Natural Resources and Environment (<https://catalog.uaf.edu/masters/natural-resources-environment-ms/>)
- Ph.D., Earth System Science (<https://catalog.uaf.edu/phd/earth-system-science/>)
- Ph.D., Natural Resources and Sustainability (<https://catalog.uaf.edu/phd/natural-resources-sustainability/>)

### Graduate Certificates

- Graduate Certificate, Geospatial Science (<https://catalog.uaf.edu/graduate-certificates/geospatial-science/>)
- Graduate Certificate, Resilience and Adaptation (<https://catalog.uaf.edu/graduate-certificates/resilience-adaptation-studies/>)

**Minors**

- Minor, Natural Resources and Environment (<https://catalog.uaf.edu/minors/natural-resources-environment/>)
- Minor, Sustainable Agriculture (<https://catalog.uaf.edu/minors/sustainable-agriculture/>)