

NATURAL RESOURCES MANAGEMENT

School of Natural Resources and Agricultural Sciences
907-474-7083
www.uaf.edu/snras/

BS Degree

Minimum Requirements for Degree: 130 credits

Natural resources management involves making and implementing decisions to develop, maintain or protect ecosystems to meet human needs and values. The core natural resources management curriculum provides students with a broad education in the various natural resources and their related applied fields. Programs can be tailored to enhance a student's depth or breadth in a given field of interest. The program is designed for students desiring careers in resources management or in other fields requiring knowledge of resources management and students planning advanced study, as well as those wishing to be better informed citizens.

The BS degree offers three concentrations: forestry; high latitude agriculture; and humans and the environment. The forestry concentration offers students the opportunity to focus on the multi-resource management of forests and associated ecosystems for the sustained production of goods and services and to prepare for forestry-related employment. The natural resources management/forestry program is the only accredited four-year forestry program in Alaska.

The goals of UAF's forestry program are: to produce graduates who are highly competitive in obtaining professional employment, who have the knowledge to perform well on the job and who are valued for work in Alaska and the circumpolar North; to maintain close student interaction with faculty and provide opportunities for students to obtain practical professional experience as part of their education; and to prepare students for lifelong learning and responsible participation in decision-making about the use of natural resources.

The university provides students with a foundation in the biological, social and physical sciences and a blend of classroom, laboratory and field work to develop skills for a career in forestry. The program is accredited by the Society of American Foresters (SAF).

The high latitude agriculture concentration offers opportunities for scientific study and education in areas such as field and greenhouse plant production, domestication and propagation of native plants, revegetation, domestic and native animal production, and agricultural and ecological aspects of soil science.

The humans and the environment concentration focuses on human interactions with the environment and the balancing of uses, needs and values regarding natural resources. Humans and the environment students will gain a solid foundation in the physical sciences relevant to resources management, but will be distinguished by a focus on social science course work. Students have the opportunity to integrate international study into the degree option. Humans and the environment graduates will have skills needed to identify differing social values, understand policy and the legal foundations of resource management issues, and have knowledge of methods to develop management plans and implement decisions. Graduates will be well-positioned for a variety of careers in public resource management agencies, tribal organizations, private firms and non-profits.

Graduates of the program will have acquired a foundation in the biological, social and physical sciences and a blend of classroom, laboratory and fieldwork experience needed to develop skills for a career. The forestry program leads to a professional degree in forestry. The program is accredited by the Society of American Foresters.

State and federal agencies such as the Alaska Department of Natural Resources, Agricultural Research Service, U.S. Forest Service, Bureau of Land Management, Natural Resource Conservation Service and U.S. Fish and Wildlife Service contribute significantly to the instructional program by providing guest lecturers and internship and fieldwork opportunities for students.

Major — BS Degree

Concentrations: Forestry; High Latitude Agriculture; Humans and the Environment

1. Complete the general university requirements. (See page 131. As part of the core curriculum requirements, complete a MATH—Calculus course.)

2. Complete the BS degree requirements. (See page 136. As part of the BS degree requirements, complete STAT F200X*.)

3. Complete the following (major) requirements:*
- | | |
|--|---|
| BIOL F115X—Fundamentals of Biology I** | 4 |
| BIOL F116X—Fundamentals of Biology II** | 4 |
| BIOL F271—Principles of Ecology | 4 |
| CHEM F105X—General Chemistry*** | 4 |
| CHEM F106X—General Chemistry*** | 4 |
| ECON F235—Introduction to Natural Resource Economics | 3 |
| NRM F101—Natural Resources Conservation and Policy | 3 |
| NRM F106—Orientation to Natural Resource Management | 1 |
| NRM F304W,O—Environmental Decision Making | 3 |
| NRM F380W—Soils and the Environment | 3 |
| NRM F405W—Senior Thesis in Natural Resources Management I | 2 |
| NRM F406W—Senior Thesis in Natural Resources Management II | 2 |

4. Complete one of the following concentrations:*

Forestry

- a. Complete the following:
- | | |
|--|-------|
| BIOL F239—Introduction to Plant Biology (4) | |
| or NRM F211—Introduction to Applied Plant Science (3) | 3 – 4 |
| ECON F335O—Intermediate Natural Resource Economics | 3 |
| GEOS F101X—The Dynamic Earth | 4 |
| NRM F204—Public Lands Law and Policy | 3 |
| NRM F251—Silvics and Dendrology | 4 |
| NRM F290—Resource Management Issues at High Latitudes | 2 |
| NRM F338—Introduction to Geographic Information Systems | 3 |
| NRM F340—Natural Resources Measurement and Inventory | 3 |
| NRM F365—Principles of Outdoor Recreation Management | 3 |
| NRM F370—Introduction to Watershed Management | 3 |
| NRM F430—Resource Management Planning | 3 |
| NRM F450—Forest Management | 3 |
| NRM F440—Silviculture | 3 |
| NRM F452—Forest Health and Protection | 3 |
| NRM F453—Harvesting and Utilization of Forest Products | 3 |
| WLF F322W—Principles and Techniques of Wildlife Management (3) | |
| or FISH F487W,O—Fisheries Management (3) | 3 |
- b. Complete three of the following to total at least 8 credits:***
- i. Complete at least one of the following non-measurements courses:
- | | |
|--|-------|
| BIOL F331—Systematic Botany | 4 |
| FIRE—Any course on wildland fire control/management | 3 |
| GEOS F408—Photogeology | 2 |
| NRM F277—Introduction to Conservation Biology | 3 |
| NRM F300—Internship in Natural Resources Management† | 1 – 6 |
| NRM F303X—Environmental Ethics and Actions‡ | 3 |
| NRM F312—Introduction to Range Management | 3 |
| WLF F322W—Principles and Techniques of Wildlife Management (3) | |
| or FISH F487W,O—Fisheries Management (3) | 3 |

- ii. Complete at least one of the following measurements courses:
- | | |
|--|---|
| CE F112—Elementary Surveying | 3 |
| GEOS F422—Geoscience Applications of Remote Sensing..... | 3 |
| NRM F435—GIS Analysis..... | 4 |
| STAT F401—Regression and Analysis of Variance..... | 4 |
| STAT F402—Scientific Sampling | 3 |

* Students must earn a C- grade or better in each course.

** Satisfies core natural science requirement.

*** Satisfies BS degree natural science requirement.

**** Courses other than those listed must be approved by student's advisor.

† Must be forestry-related.

‡ If used to fulfill the baccalaureate core requirement for ethics/values and choices in the perspectives on the human condition, NRM F303X may not also count toward a natural resources management major. However, in this case, only two courses that total at least 5 credits are required from this list, exclusive of NRM F303X.

High Latitude Agriculture

- a. Complete the following:
- | | |
|---|---|
| BIOL F331—Systematic Botany (4) | |
| or BIOL F310—Animal Physiology (4) | |
| or BIOL F317—Comparative Anatomy of Vertebrates (4) | 4 |
| NRM F211—Introduction to Applied Plant Science | 3 |
| NRM F290—Resource Management Issues at High Latitudes | 2 |
| NRM F312—Range Management | 3 |
| NRM F320—Animal Science..... | 3 |
| NRM F480—Soil Management for Quality Conservation (3) | |
| or NRM F485—Soil Biology* (3) | 3 |
| or NRM F466—Environmental Soil Chemistry (3) | 3 |
- b. Complete at least 8 credits in biology, botany, physics, chemistry, geosciences and/or mathematics, in addition to the above basic courses. Courses must be approved for science majors.
- c. Complete at least 9 credits in natural resources management electives: any NRM course at the F200-level or above that has not been used to meet other requirements.
- d. Complete at least 12 credits beyond those taken to fulfill categories above in a support field which is a group of courses selected for its clear pertinence to a cohesive program. Support fields may include but are not limited to: animal science, chemistry, communications, education, engineering, forestry, geography, marketing, natural resources management, nutrition, plant science, rural development or soils. The courses must be approved by the student's academic advisor prior to attaining senior standing.

* The same course cannot be used to satisfy requirements in both sections a and c.

Humans and the Environment

- a. Complete the following:
- | | |
|---|---|
| ECON F335—Intermediate Natural Resource Economics | 3 |
| NRM F204—Public Lands Law and Policy | 3 |
| NRM F365—Principles of Outdoor Recreation Management | 3 |
| NRM F430—Resource Management Planning..... | 3 |
| NRM F465—Survey Research in Natural Resources Management..... | 3 |

- b. Complete at least 12 credits from the following:
- | | |
|--|---|
| FISH F487W,O—Fisheries Management | 3 |
| NRM F312—Range Management | 3 |
| NRM F340—Natural Resources Measurement and Inventory | 3 |
| NRM F370—Introduction to Watershed Management | 3 |
| NRM F410—Numerical Methods for Natural Resources Management..... | 3 |
| NRM F450—Forest Management | 3 |
| NRM F463—Wilderness Management | 3 |
| NRM F480—Soil Management for Quality Conservation | 3 |
| WLF F322W—Principles and Techniques of Wildlife Management..... | 3 |
- c. Complete at least 2 credits from the following:
- | | |
|---|-------|
| NRM F290—Resource Management Issues at High Latitudes (2) | |
| or NRM F300—Internship in Natural Resources Management and Geography (2)..... | 2 – 6 |
- d. Complete 9 credits in a skills-building single field of study: Skills building provides depth of study in fields employed in humans and the environment-related careers. Courses to be determined by students in consultation with their advisor and approval of the department head. Examples of skills-building fields are: agriculture, art, aviation, business, computer application, curation, fire science, fisheries management, forestry, GIS/remote sensing, hazardous materials, language, law enforcement, statistics and wildlife management.9
- e. Complete 15 credits in breadth electives: Electives in humans and the environment provide exposure to a breadth of topic areas relevant to understanding human interaction with the natural environment. A list of approved classes for each topic area is available from the department. 9 credits must be at the F300-level or above. Students are required to complete at least 3 credits from three separate topic areas in meeting the 15 credit requirement:
- | | |
|----------------------------|----|
| Alaska and Native Alaskans | |
| Energy and Minerals | |
| Environmental Issues | |
| Law and Politics | |
| Parks and Wilderness | 15 |
5. Minimum credits required130
- Note: Courses required for the major may also be used to satisfy the general university and BS degree requirements as appropriate.

Minor

1. Complete the following:
- | | |
|---|----|
| NRM F101—Natural Resources Conservation and Policy..... | 3 |
| NRM electives* | 15 |
2. Minimum credits required18
- * At least 6 credits must be upper-division. The minor program must be approved by an NRM advisor.

Baccalaureate Core Requirements

Communication 9 Credits

- ENGL F111X—Introduction to Academic Writing.....(3)
ENGL F190H may be substituted.

Complete one of the following:

- ENGL F211X—Academic Writing about Literature.....(3)
- ENGL F213X—Academic Writing about the Social and Natural Sciences.....(3)

Complete one of the following:

- COMM F131X—Fundamentals of Oral Communication: Group Context.....(3)
- COMM F141X—Fundamentals of Oral Communication: Public Context.....(3)

9

Perspectives on the Human Condition 18 Credits

Complete all of the following four courses:

- ANTH F100X/SOC F100X—Individual, Society and Culture.....(3)
- ECON F100X or PS F100X—Political Economy.....(3)
- HIST F100X—Modern World History.....(3)
- ENGL/FL F200X—World Literature.....(3)

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Complete one of the following three courses:

- ART/MUS/THR F200X—Aesthetic Appreciation: Interrelationship of Art, Drama and Music.....(3)
- HUM F201X—Unity in the Arts.....(3)
- ANS F202X—Aesthetic Appreciation of Alaskan Native Performance.....(3)

3

Complete one of the following six courses:

- BA F323X—Business Ethics.....(3)
- COMM F300X—Communicating Ethics.....(3)
- JUST F300X—Ethics and Justice.....(3)
- NRM F303X—Environmental Ethics and Actions.....(3)
- PS F300X—Ethics and Society.....(3)
- PHIL F322X—Ethics.....(3)

3

Or complete 12 credits from the above courses plus one of the following:

- Two semester-length courses in a single Alaska Native language or other non-English language
- Three semester-length courses (9 credits) in American Sign Language taken at the university level.

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Mathematics 3 Credits

Complete one of the following:

- MATH F103X—Concepts and Contemporary Applications of Mathematics.....(3)
 - MATH F107X—Functions for Calculus*.....(4)
 - MATH F161X—Algebra for Business and Economics**.....(3)
 - STAT F200X—Elementary Probability and Statistics.....(3)
- * No credit may be earned for more than one of MATH F107X or F161X.

Or complete one of the following*:

- MATH F200X—Calculus I**.....(4)
- MATH F201X—Calculus II.....(4)
- MATH F202X—Calculus III.....(4)
- MATH F262X—Calculus for Business and Economics.....(4)
- MATH F272X—Calculus for Life Sciences.....(4)

* Or any math course having one of these as a prerequisite

** No credit may be earned for more than one of Math F200X, F262X or F272.

3 – 4

Natural Sciences 8 Credits

Complete any two (4-credit) courses.

- ATM F101X—Weather and Climate of Alaska.....(4)
- BIOL F100X—Human Biology.....(4)
- BIOL F101X—Biology of Sex.....(4)
- BIOL F103X—Biology and Society.....(4)
- BIOL F104X—Natural History.....(4)
- BIOL F115X—Fundamentals of Biology I.....(4)
- BIOL F116X—Fundamentals of Biology II.....(4)
- BIOL F120X—Introduction to Human Nutrition.....(4)
- BIOL F213X—Human Anatomy and Physiology I.....(4)
- BIOL F214X—Human Anatomy and Physiology II.....(4)
- CHEM F100X—Chemistry in Complex Systems.....(4)
- CHEM F103X—Basic General Chemistry.....(4)
- CHEM F104X—Beginnings in Biochemistry.....(4)
- CHEM F105X—General Chemistry.....(4)
- CHEM F106X—General Chemistry.....(4)
- GEOG F111X—Earth and Environment: Elements of Physical Geography.....(4)
- GEOS F100X—Introduction to Earth Science.....(4)
- GEOS F101X—The Dynamic Earth.....(4)
- GEOS F106X—Life and the Age of Dinosaurs.....(4)
- GEOS F112X—History of Earth and Life.....(4)
- GEOS F120X—Glaciers, Earthquakes and Volcanoes.....(4)
- GEOS F125X—Humans, Earth and Environment.....(4)
- MSL F111X—The Oceans.....(4)
- PHYS F102X—Energy and Society.....(4)
- PHYS F103X—College Physics.....(4)
- PHYS F104X—College Physics.....(4)
- PHYS F115X—Physical Science I.....(4)
- PHYS F175X—Astronomy.....(4)
- PHYS F211X—General Physics.....(4)
- PHYS F212X—General Physics.....(4)
- PHYS F213X—Elementary Modern Physics.....(4)

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Library and Information Research 0 – 1 Credit

- Successful completion of library skills competency test or LS F100X or LS F101X prior to junior standing

0 – 1

Upper-Division Writing and Oral Communication

Complete the following at the upper-division level:

- Two writing intensive courses designated (W) and one oral communication intensive course designated (O), or two oral communication intensive courses designated (O/2) (see degree and/or major requirements)

Total credits required 38 – 39

All degrees (e.g. B.A., B.S., etc.) require additional courses.

Refer to specific degree and program requirements.

Students must earn a C- grade or better in each course used toward the baccalaureate core.