

College of

Natural Resources

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Notice: The College of Natural Resources has been reorganized, effective Fall 2002. Please be aware of changes to department names, course prefixes, and prerequisites, as well as new or deleted courses. The new departments, along with their course prefixes, are listed as: (1) *Aquatic, Watershed, and Earth Resources (AWER)*, (2) *Environment and Society (EnvS)*, and (3) *Forest, Range, and Wildlife Sciences (FRWS)*.

The College of Natural Resources has the following academic degree programs:

College of Natural Resources

Master of Natural Resources (MNR)

Aquatic, Watershed, and Earth Resources Department

Ecology (MS and PhD)

Fisheries and Wildlife (BS)

Fisheries Biology (MS and PhD)

Watershed Science (BS, MS, and PhD)

Environment and Society Department

Bioregional Planning (MS)

Environmental Studies (BS)

Geography (BS, BA, MS, and MA)

Recreation Resource Management (BS, MS, and PhD)

Forest, Range, and Wildlife Sciences Department

Ecology (MS and PhD)

Fisheries and Wildlife (BS)

Forestry (BS, MS, and PhD)

Rangeland Resources (BS)

Range Science (MS and PhD)

Wildlife Biology (MS and PhD)

A list of degree requirements, emphases, and specializations can be found in the catalog section for each department. For a description of the Master of Natural Resources (MNR) professional degree, see page 374.

Interdisciplinary Programs. Many of the degree programs listed above are interdisciplinary to some extent. However, both the Environmental Studies and Watershed Science programs offer students the opportunity to develop broad interdisciplinary programs to meet their interests. Watershed Science builds on a strong science base; Environmental Studies has a greater emphasis on management and policy.

Minors in Natural Resources. The college offers minors in the following areas:

Environmental Studies

Fisheries and Wildlife

Geography/Geography Teaching

Rangeland Resources

Recreation Resources

Watershed Science

Requirements for the minors are found in the appropriate departmental sections of this catalog. Students should also consult a faculty advisor for the minor.

Objectives

The College of Natural Resources provides programs of study and professional training in the use and management of natural resources and the environment. These programs deal with renewable land and water resources and the management of these resources and their ecosystems. Forests, rangelands, wildlife, fisheries, watersheds, and recreation resources comprise the natural resources and environmental areas in which the college has developed professional competence. The college's expertise in geography provides a link between the management of these resources and their value to our society and other cultures.

The College of Natural Resources programs and facilities provide exceptional opportunities for field experience. Forests and rangelands comprise more than 90 percent of the total Utah land area. The Wasatch-Cache National Forest and other areas of natural lands close to the USU campus provide unlimited study projects and opportunities for demonstration. Yellowstone and other national parks are within one day's driving distance.

Career Opportunities. The curricula of the college prepare men and women for positions with federal or state agencies, private-sector work in natural resources management and administration, and positions in education.

Summer Employment/Work Experience. Students are strongly encouraged to seek summer employment with faculty research projects or natural resource agencies to gain practical work experience and help refine career goals. Students should check with the College of Natural Resources dean's office in early January regarding summer employment opportunities.

Undergraduate Programs

Academic Policies

Admission. Freshmen accepted in good standing by the University are eligible for admission to the College of Natural Resources. Transfer students need a cumulative 2.5 GPA for admission to College of Natural Resources majors. Departments may impose additional requirements; refer to departmental sections for information.

Students will make more satisfactory progress in natural resources majors if they have had two years of high school algebra; have taken coursework in chemistry, physics, and biology; and have obtained basic computer skills. Four years of English are

also desirable. Prospective students should realize that natural resources fields are highly technical professions, requiring not just field ability, but also high aptitude for scholarship. Success is also correlated with an ability to work well with people.

Natural Resources—Undecided. Students who have not yet decided on a specific natural resources major may be admitted to the college as “undecided”. Many of the courses taken during the freshman year are common to all natural resources majors; however, students are encouraged to select a major as soon as possible. Students in the undecided category should meet with the college academic advisor for assistance in planning their educational program and selecting a major.

Changes in Graduation Requirements. Students who complete a baccalaureate degree within seven years of enrollment at USU can qualify for graduation by meeting (1) the General Education/University Studies requirements in effect when they initially enrolled at USU (or any revision of the University Studies requirements that has been in effect within seven years of their graduation) **and** (2) the major requirements in effect when they officially declared their major (or any revision of the major requirements that has been in effect within seven years of their graduation).

Students who have not completed the baccalaureate requirements within seven years of their initial enrollment at USU must have their General Education/University Studies and major requirements evaluated and approved by their department head and dean.

Academic Responsibility. The departments publish current major requirement sheets each year. It is the student’s responsibility to know the current requirements and to consult with a faculty advisor in planning and completing his or her degree program.

Graduation Requirements. Students must satisfy all University, College of Natural Resources, and departmental major requirements for graduation. Except for the geography teaching major, college requirements include six core courses in natural resources science and management: Geog 1130 or Geol 1150, NR/Biol 2220, NR 3000, 3600, 4000; EnvS 2340. Students must also complete a series of basic lower-division courses, providing the disciplinary foundation for the natural resource and environmental professions, before advancing to professional coursework; foundation course requirements vary among the departments of the college. Equivalents of the foundation courses can be taken at many two- and four-year colleges. Some schools also offer versions of the lower-division core courses Geog 1130 and NR/Biol 2220. Students intending to transfer to a College of Natural Resources major should consult with a faculty advisor before registering for foundation courses at another school. Some foundation and core courses can be used to satisfy University Studies requirements. College requirements also include a grade point average of 2.5 or higher for all courses taught by the College of Natural Resources. Refer to the appropriate sections of this catalog for further details on graduation requirements.

Professional Organizations

Students are strongly encouraged to participate in professional organizations affiliated with their major. The College of Natural Resources has student chapters of the following professional societies:

American Fisheries Society
Gamma Theta Upsilon (Honorary Geography Society)
Society of American Foresters
Society for Range Management
The Wildlife Society

Financial Aid

Scholarships. A number of scholarships are available to students in the college. The S. J. and Jessie E. Quinney scholars program offers ten four-year, \$2,000 per year scholarships to entering and transfer undergraduate students in the College of Natural Resources. Interested high school seniors and transfer students are encouraged to write to the dean’s office regarding these scholarships.

There are also many \$250-\$2,500 per year scholarships for continuing students. For details, see the *Financial Aid and Scholarship Information* section of this catalog (pages 37-38) or contact the dean’s office.

Loan Funds. Several sources of funds are available on a loan basis to worthy upper-division students in the College of Natural Resources. Loans are made for short periods. Application should be made through the dean’s office.

Research

The College of Natural Resources maintains an extensive program of research through its academic departments and the affiliated Jack H. Berryman Institute, Center for Disturbance Ecology, USDA/APHIS Predator Behavior and Ecology Field Station, USDA Aquatic Ecosystem Monitoring Center, Utah Cooperative Fish and Wildlife Research Unit, and USU Ecology Center. Part-time employment opportunities are often available for undergraduates in college research programs.

Graduate Programs

The college offers graduate study programs leading to the MA, MNR, MS, and PhD degrees. See the appropriate departmental sections for information on their graduate programs.

Financial Assistance

Assistantships. Teaching or research assistantships are awarded through the departments. For further information, students should check with their department and major professor.

Fellowships. Fellowships and tuition waivers are awarded on a competitive basis. Incoming graduate students should apply through their major professor.

Loans. Short-term loans may be available to graduate students through the dean’s office.

Natural Resources Courses **(NR)**

NR 1010 (BSS). Humans and the Changing Global Environment. Introduction to historical nature and extent of human environmental transformation at global and regional levels. Examination of how socio-economic, political, and scientific factors influence past and current perceptions, use and conservation of natural environments in Western and other cultures, and future options available. (3 cr) (F,Sp)

NR 1020. Natural Resources Professional Orientation. Introduction and orientation to natural resource/environmental disciplines and related professional careers for natural resources majors. Education, curricula, faculty, professional societies, and employment opportunities. Taken in conjunction with NR 1010 during students’ initial fall semester. (1 cr) (F)

NR 2220. General Ecology. Study of the interrelationships among organisms, humans, and their environments, addressing where and how organisms live. Adaptation, population growth, species interactions, biodiversity, and ecosystem function are explored for a wide variety of organisms and ecosystems. Prerequisites: Biol 1210 and 1220. Also taught as Biol 2220. (3 cr) (F,Sp)

NR 3000. Management of Natural Resources and the Environment. Addresses how people from diverse disciplines must integrate knowledge of biophysical, ecological, and socioeconomic processes to manage natural resources. Considers different approaches for managing the environment and emphasizes how diverse perspectives require interdisciplinary empathy, communication, and collaboration. Prerequisites: Geog 1130 or Geol 1150; Biol/NR 2220; and EnvS 2340. (4 cr) (F,Sp)

NR 3600 (QI). Quantitative Assessment for Natural Resources. Overview of methods used to collect, organize, and interpret natural resource data. Includes sampling principles for estimation of population parameters, attributes of geographical information systems, and hypothesis testing. Prerequisites: Stat 2000 or 3000; and Math 1050. Students must also receive a passing score on the Computer and Information Literacy (CIL) Exam *or* complete *both* FRWS 3500 and BIS 1400. (3 cr) (F,Sp)

NR 4000. Natural Resources Policy and Economics. Introduction to natural resource policy and economics. Policy components include models, processes, participants, laws, and tools for decision-making and policy implementation. Economics components include theory, interest calculations, financial analysis, nonmarket valuation, and regional impact analysis. (4 cr) (F,Sp)

NR 4440. Natural Resource and Environmental Policy Seminar. Year-long invited speaker seminar series on natural resource and environmental policy issues. Students register for only one semester, but attend the seminars until a required number has been met. Students also complete an assignment. (1 cr) (F,Sp) ®

NR 5000. Ecosystem Management. Project-based, capstone course for natural resources majors. Students work in interdisciplinary team to develop ecosystem management assessment for an actual landscape. Involves landscape scale planning and the integration of biological, physical, and human dimensions. Prerequisites: NR 4000 and senior standing. (3 cr) (Sp)

NR 6200.¹ How to Manage the NEPA Process and Write Effective NEPA Documents. Introduction to National Environmental Policy Act (NEPA) and the Council on Environmental Quality regulations. Explores various levels of NEPA documentation and the skills necessary to identify the actions needed for a thorough environmental analysis. (2 cr)

NR 6210.¹ Clear Writing for NEPA Specialists. Teaches how to identify the writing and editing requirements unique to NEPA documents, including making graphs, writing chapters, and reviewing documents for accuracy. (2 cr)

NR 6220.¹ Reviewing NEPA Documents. Focuses on how to review the full range of NEPA documents, including Environmental Impact Statements (EISs), Environmental Assessments (EAs), Findings of No Significant Impacts (FONISIs), and Records of Decisions (RODs). (2 cr)

NR 6230.¹ Risk Communication for NEPA Specialists: Strategies and Implementation. Explains meaning and application of risk communication. Explores full range of response communication, including development of a communication plan and strategy, standing before an audience, and responding to comments in writing. (2 cr)

NR 6260.¹ Cultural and Natural Resource Management. Teaches how to manage cultural and natural resources on public lands. Addresses pertinent laws and associ-

ated executive orders and regulations pertaining to the preservations of these resources and budget issues. (1 cr)

NR 6270.¹ Environmental Compliance Overview. Explores why environmental compliance is not only desirable and necessary, but is also a personal responsibility. Identifies key laws and regulations, with associated penalties affecting environmental compliance. (1 cr)

NR 6280.¹ Interdisciplinary Team Building. Teaches general principles of interdisciplinary team building. Explores how information flows and how this can impact the success of a team. Students work as a team to apply the principles learned to scenarios of day-to-day actions. (1 cr)

NR 6290.¹ Public Speaking for the NEPA Specialist. Explores how to design and deliver effective presentations to small and large groups, as well as to the media. Includes exercise techniques for planning and preparing presentations. Students required to prepare and deliver several types of presentations. (1 cr)

NR 6300.¹ Understanding and Preparing Statements of Work and Specifications. Presents a systematic approach to the writing and reviewing of environmental Statements of Works (SOWs). Providing hands-on experience, course includes case studies and examples applying to actual environmental projects. (1 cr)

NR 6310.¹ NEPA Writing for Technical Specialists. Designed to teach students how to use a "document management process" to become more efficient writers of NEPA documents. (1 cr)

NR 6370.¹ NEPA Capstone Experience. Consists of a project, internship, or comprehensive examination to be negotiated by the student, based upon opportunities available at the time and preferences of the student. Helps USU to certify that students receiving the certificate have basic mastery of the material presented in the program coursework. (1 cr)

NR 6420. Stegner Center Annual Symposium. Offered through the University of Utah College of Law. Topics vary each year, but always focus on natural resource policy-related issues. (1 cr) (Sp) ®

NR 6430. Natural Resource and Environmental Policy Cornerstone Seminar. Interdisciplinary, team-taught cornerstone course for the Natural Resource and Environmental Policy Graduate Certificate Program. Introduces different disciplinary perspectives for analyzing natural resource and environmental policies and decision-making processes. Helps students understand the role of science in policy-making and how to integrate information from contentious perspectives. (3 cr) (Sp)

NR 6440. Natural Resource and Environmental Policy Seminar. Year-long invited speaker seminar series on natural resource and environmental policy issues. Students are required to attend a minimum number of the seminars. Students also complete an assignment. This course is open to all USU students, but is required for NREPP students. (1 cr) (F,Sp) ®

NR 6450. Natural Resource and Environmental Policy Presentation. In their last year of graduate school, certificate candidates make a presentation on policy dimensions of thesis or dissertation, as part of this student seminar series. Students receive one semester credit for this presentation. (1 cr) (F,Sp)

¹This course, offered in a shortcourse format, is taught through Continuing Education outside of the regular semester calendar. For further information or to enroll, contact Continuing Education.