

Natural Resources (NAT_R)

NAT_R 1040: Conservation Studies

A one-week field experience in natural resource management issues—soil and water conservation, air pollution, fish and wildlife habitat requirements, importance of forest ecosystems. Limited to high school students who have completed their junior year and taken the PSAT or equivalent. Graded on S/U basis only.

Credit Hour: 1

NAT_R 1060: Ecology and Conservation of Natural Resources

Introduction to the principles of resource and conservation describing the foundation of the variety of natural resources and conservation practices used to protect and maintain these resources.

Credit Hours: 3

NAT_R 1070: Ecology and Renewable Resource Management

Introduction to ecological principles and their relationship to resource use and management.

Credit Hours: 3

Prerequisites: restricted to Natural Resources majors

NAT_R 2002: Topics in Natural Resources - Biological

Organized study of selected topics. Subjects and credit may vary from semester to semester.

Credit Hour: 1-99

NAT_R 2080: Outdoor Recreation Consortium

Outdoor Recreation Consortium is a collaborative course taught by MU, North Carolina State University, Penn State University, East Carolina University, Texas A&M University and Western Illinois University. The course uses Great Smoky Mountains National Park as a case study for understanding the relationship between ecosystem management, natural resource management, tourism, and outdoor recreation. This course is based around a one week trip to the Smokies. Graded on A-F basis only.

Credit Hours: 2

Prerequisites: NAT_R 1070 or PRST 2111 or ENV_SC 1100 and permission of instructor

NAT_R 2160: Issues in Natural Resources and the Environment

This course provides an introduction to ecological and environmental challenges in natural resource management in our rapidly changing world. Topical discussions will provide students with informed perspectives of several contemporary issues that affect the sustainability of our natural resources.

Credit Hours: 3

Recommended: This course is recommended as an introductory course for non-science majors

NAT_R 2325: Introduction to Geographic Information Systems

Cover basic theories and techniques of GIS; including vector and raster data representation, vector data digitizing, attribute data input, map projection, layout database manipulation, terrain analysis and spatial interpolation.

Credit Hours: 3

Prerequisites: NAT_R 1070 or instructor's consent

NAT_R 3290: Hydrologic Measurement Techniques

Students will be introduced to field methods and tools used by water resource and environmental science professionals. Students will sample and measure hydrologic and environmental variables, learn about data storage systems, and access and analyze data. Course may be repeated for credit. Graded on A-F basis only.

Credit Hour: 1

Prerequisites: MATH 1100 or permission of instructor

NAT_R 3290W: Hydrologic Measurement Techniques - Writing Intensive

Students will be introduced to field methods and tools used by water resource and environmental science professionals. Students will sample and measure hydrologic and environmental variables, learn about data storage systems, and access and analyze data. Course may be repeated for credit. Graded on A-F basis only.

Credit Hour: 1

Prerequisites: MATH 1100 or permission of instructor

NAT_R 3300: Urban Agroecology and Agroforestry

Lecture/discussion course emphasizing food production in urban environments, including products from trees and shrubs. Lectures will cover topics such as designing multi-functional edible landscapes, selecting trees and shrubs for nut and fruit production, optimizing benefits of plant production spaces, and overcoming challenges of growing food in urban environments. Group discussions will critically review topics including material from required readings. Students will engage in analysis and design of an existing site to integrate multiple functions, emphasizing the permanent infrastructure and perennial vegetation. Graded on A-F basis only.

Credit Hours: 3

Recommended: FOREST 2151 or BIO_SC 1200 or PLNT_SCI 2110

NAT_R 3400: Water Quality and Natural Resource Management

(same as ENV_SC 3400). Introduction to broad aspects of water quality science, management, and policy. Topics include aquatic ecology, eutrophication, lake and coastal management, water supply and treatment, watershed management with respect to agriculture and urban development, and toxicology. Graded on A-F basis only.

Credit Hours: 3

Recommended: CHEM 1320 and ENV_SC 1100 or NAT_R 1070

NAT_R 3400H: Water Quality and Natural Resource Management - Honors

(same as ENV_SC 3400). Introduction to broad aspects of water quality science, management, and policy. Topics include aquatic ecology, eutrophication, lake and coastal management, water supply and treatment, watershed management with respect to agriculture and urban development, and toxicology. Graded on A-F basis only.

Credit Hours: 3

Prerequisites: Honors eligibility required

Recommended: CHEM 1320 and ENV_SC 1100 or NAT_R 1070

NAT_R 4001: Topics in Natural Resources

Organized study of selected topics. Subjects may vary from semester to semester.

Credit Hour: 1-99

NAT_R 4024: Foundations of Environmental Education

(same as ENV_SC 4024; cross-leveled with NAT_R 7024). This course provides a theoretical foundation to environmental education (EE).

The purpose of this course is to develop the knowledge and skills for developing quality, age-appropriate EE for students in both formal and non-formal education setting. The emphasis is on EE curriculum materials, resources, and programs that can be used with students in settings at classrooms, nature centers, museums, and parks. This course involves training in the Missouri Department of Conservation Discover Nature School educational materials, and in observing and teaching EE lessons in a local nature center. Graded on A-F basis only.

Credit Hours: 3

Prerequisites: BIO_SC 1010 or ENV_SC 1100 or NAT_R 1060 or NAT_R 1070 or NAT_R 2160 or Instructor's consent

NAT_R 4100: Lake Ecology

(same as ENV_SC 4100; cross-leveled with NAT_R 7100). Ecology of inland waters with emphasis on productivity. Graded on A-F basis only.

Credit Hours: 3

Recommended: senior standing or BIO_SC 3650

NAT_R 4110: Natural Resource Biometrics

(cross-leveled with NAT_R 7110). Sampling methods and analysis as applied to a variety of natural resources, including fisheries, range, recreation, forests, water and wildlife.

Credit Hours: 4

NAT_R 4300: Methods in Aquatic Ecology

(same as ENV_SC 4300; cross-leveled with ENV_SC 7300, NAT_R 7300). Methods used for quantitative assessment of water quality and quantity in inland waters. Graded on A-F basis only.

Credit Hours: 4

Recommended: Senior standing or BIO_SC 3650 and ENV_SC 4100 or NAT_R 4100 or NAT_R 4200 or FOREST 4390 or NAT_R 3400

NAT_R 4353: Natural Resource Policy/Administration

This course examines law, policy, and administration related to public lands and natural resources in the United States. The focus of this course is U.S. federal decision-making; we will also discuss Missouri state-level processes and selected topics in international environmental governance. Substantive policy areas addressed by this course include: public lands, wildlife and fisheries, water resources, forests, and energy and mineral resources. This course uses case studies to illustrate historical and contemporary natural resource management challenges. It also addresses topics on governance such as public participation, the role of lobbyists, campaign finance, and the use of technology to improve policy-making. This course will use a variety of teaching methods, including lecture and classroom discussion, guest speakers, map quizzes, and a natural resources book club.

Credit Hours: 3

Prerequisites: senior standing or instructor's consent

NAT_R 4365: GIS Applications

Introduces logical thinking and techniques in applying GIS to practical problems. Covers general GIS functionalities, Arc View Spatial Analyst including georeference, terrain analysis, hydrological analysis, grid, and remote sensing image processing.

Credit Hours: 3

Prerequisites: GEOG 3040 or NAT_R 2325

NAT_R 4385: Landscape Ecology and GIS Analysis I

(same as GEOG 4810). Examination of the landscape-scale approach to biodiversity, ecosystem dynamics, and habitat management. Particular emphasis on the use of Geographic Information Systems to analyze the spatial dimension of ecological patterns and processes.

Credit Hours: 3

Prerequisites: GEOG 3040 or NAT_R 2325

NAT_R 7001: Topics in Natural Resources

Organized study of selected topics. Subjects may vary from semester to semester.

Credit Hour: 1-99

NAT_R 7024: Foundations of Environmental Education

(cross-leveled with NAT_R 4024, ENV_SC 4024). This course provides a theoretical foundation to environmental education (EE). The purpose of this course is to develop the knowledge and skills for developing quality, age-appropriate EE for students in both formal and non-formal education setting. The emphasis is on EE curriculum materials, resources, and programs that can be used with students in settings at classrooms, nature centers, museums, and parks. This course involves training in the Missouri Department of Conservation Discover Nature School educational materials, and in observing and teaching EE lessons in a local nature center. Graded on A-F basis only.

Credit Hours: 3

NAT_R 7100: Lake Ecology

(same as ENV_SC 7100; cross-leveled with ENV_SC 4100 and NAT_R 4100). Ecology of inland waters with emphasis on productivity. Graded on A-F basis only.

Credit Hours: 3

Recommended: BIO_SC 3650

NAT_R 7110: Natural Resource Biometrics

(cross-leveled with NAT_R 4110). Sampling methods and analysis as applied to a variety of natural resources, including fisheries, range, recreation, forests, water and wildlife. Graded on A-F basis only.

Credit Hours: 4

NAT_R 7300: Methods in Aquatic Ecology

(same as ENV_SC 7300; cross-leveled with NAT_R 4300, ENV_SC 4300). Methods used for quantitative assessment of water quality and quantity in inland waters. Graded on A-F basis only.

Credit Hours: 4

Recommended: senior standing or BIO_SC 3650. ENV_SC/NAT_R 4100 OR 3400 OR FOR 4390

NAT_R 7353: Natural Resource Policy/Administration

(cross-leveled with NAT_R 4353). This course examines law, policy, and administration related to public lands and natural resources in the United States. The focus of this course is U.S. federal decision-making; we will also discuss Missouri state-level processes and selected topics in international environmental governance. Substantive policy areas addressed by this course include: public lands, wildlife and fisheries, water resources, forests, and energy and mineral resources. This course uses case studies to illustrate historical and contemporary natural resource management challenges. It also addresses topics on governance such as public participation, the role of lobbyists, campaign finance, and the use of technology to improve policy-making. This course will use a variety of teaching methods, including lecture and classroom discussion, guest speakers, map quizzes, and a natural resources book club.

Credit Hours: 3

Prerequisites: instructor's consent

NAT_R 8001: Topics in Natural Resources

Organized study of selected topics. Subjects may vary from semester to semester.

Credit Hour: 1-99

NAT_R 8024: Program Development and Evaluation in Informal Settings

This advanced level course focuses on designing, conducting, and analyzing quantitative educational research data and evaluation studies that measure the impact and effectiveness of environmental education and/or STEM education programs. Applied statistics in educational research will be taught. Evaluation is a set of approaches and techniques used to make judgments about the effectiveness or quality of a program or treatment; to inform decisions about its design, development, and implementation. This course provides theoretical background and techniques of program development and evaluation. This course will practice using qualitative and quantitative data for data analysis and manuscript writing. This is designed for those who will be working in leadership or supervisory capacities to gain skills in conducting needs assessments, designing programs, and conducting formative and summative evaluations of these programs for citizen science, inquiry-based learning, place-based program, students-centered, science outreach program, and nature explore study programs. By the end of the semester, students will have a ready-to-submit manuscript completed. Graded on A-F basis only.

Credit Hours: 3

Prerequisites: ENV_SC 4024 or NAT_R 4024 or NAT_R 7024

NAT_R 8050: Masters Non-Thesis Research in Natural Resources

Research credits associated with a non-thesis M.S. project. May be repeated for credit. Graded on S/U basis only.

Credit Hour: 1-10

Prerequisites: restricted to Masters students in the School of Natural Resources

NAT_R 8090: Master Thesis Research in Natural Resources

Research credits leading to M.Sc. thesis. May be repeated for credit. Graded on S/U basis only.

Credit Hour: 1-10

Prerequisites: Restricted to Masters students in the School of Natural Resources

NAT_R 8200: Ecological Restoration

This course will examine ecological restorations through the lens of a practitioners while taking into account the needs of all stakeholders, including the species, policies, human dimension, economics. Graded on A-F basis only.

Credit Hours: 3

NAT_R 8290: Hydrologic Measurement and Synthesis

Students are introduced to methods fundamental to measuring hydrologic processes, and assessing physical data, including field measurement, and data logging and acquisition information systems. Students will gain experience analyzing and synthesizing hydrologic data using tools commonly used by water resource professionals. May be repeated for credit. Graded on A-F basis only.

Credit Hours: 2

Prerequisites: MATH 1100, STAT 2530, PHYSCS 1210. If deficient in prerequisite courses, or unsure of qualification, contact instructor for consent

NAT_R 8300: Urban Biodiversity, Conservation, and Planning

The importance of urban biodiversity is debated by many in the conservation community. Some researchers and managers focus on threats to biodiversity associated with urbanization and land use change. In contrast to this approach people who live in, study, or care about cities: ecologists, wildlife managers, conservation biologists, planners, and local residents have debated what biodiversity means in urban settings. Recent literature on biodiversity in cities notes the range of ecological, social, and cultural meanings of urban biodiversity and stresses the importance of defining the setting and scales at which biodiversity is being assessed. This approach to urban biodiversity has documented the importance of conservation of rare species and habitats but also the importance of managing the range of habitats in and around where people live, work, and play. This course builds on the work of the NSF-funded Urban Biodiversity Research Coordination Network (UrBioNet), with course modules taught by UrBioNet steering committee members.

Credit Hours: 3

Recommended: Coursework in ecology, conservation / management or planning will be helpful in this course

NAT_R 8325: Introduction to Geographic Information Systems

Cover theories and techniques of GIS; including vector and raster data representation, vector data digitizing, attribute data input, map projection, layout database manipulation, terrain analysis and spatial interpolation.

Credit Hours: 3

Prerequisites: Instructor's consent

NAT_R 8365: GIS Applications

Introduces logical thinking and techniques in applying GIS to practical problems. Cover general GIS functionalities, Arc View Spatial Analyst including georeference, terrain analysis, hydrological analysis, grid, and remote sensing image processing. Graded on A-F basis only.

Credit Hours: 3

Prerequisites: GEOG 3040 or NAT_R 2325, or instructor's consent

NAT_R 8395: Landscape Ecology and GIS Analysis II

(same as GEOG 8815). Provide students with principles and applications of landscape ecology and firm understandings of spatial analysis techniques using GIS. Discuss metrics for spatial pattern and models for landscape-scale dynamics.

Credit Hours: 3

Prerequisites: NAT_R 4365; FOREST 4320 or equivalent; basic statistics; instructor's consent

Recommended: GEOG 4810 or GEOG 7810

NAT_R 8450: Advanced Limnology

This graduate course will cover the physical, chemical, and biological processes of lakes and streams emphasizing biological production, water quality, and emerging issues. This seminar-style graduate course will familiarize students with the limnological literature. Students will learn how to critically read, interpret, and evaluate journal publications. They will learn the publication process from beginning to end with the opportunity to provide perspectives and assessments of emerging manuscripts in the limnological field. Graded on A-F basis only.

Credit Hours: 3

Recommended: NAT_R 4100 or NAT_R 7100

NAT_R 8500: Qualitative Research

Introduces students to qualitative field research from design, data collection, analysis, reporting, and peer-reviewed publication. Readings emphasize qualitative methods in a variety of social and behavioral sciences to address environmental problems.

Credit Hours: 3

Recommended: PRST 8430

NAT_R 8860: International Comparative Rural Policy

(same as PUB_AF 8860. AAE 8860). Compares the rural policy objectives and implementation strategies of various countries, and assesses these policies in terms of economic, social, environmental outcomes and their implications for international relations. Includes 2-weeks of study Abroad. May be repeated for credit. Graded on A-F basis only.

Credit Hours: 3

Prerequisites: Instructor's consent

NAT_R 9001: Topics in Natural Resources

Organized study of selected topics. Subjects and topics may vary from semester to semester. Graded on S/U basis only.

Credit Hour: 1-10

Prerequisites: instructor's consent. Restricted to School of Natural Resources Graduate Students

NAT_R 9087: Graduate Seminar in Natural Resources

Graduate seminar in Natural Resources. May be repeated for credit. Graded on S/U basis only. Prerequisites: restricted to PhD students in the School of Natural Resources

Credit Hour: 1-10

NAT_R 9090: Dissertation Research in Natural Resources

Research leading to a dissertation and Ph.D. in the School of Natural Resources. Graded on S/U basis only.

Credit Hour: 1-10

Prerequisites: Restricted to PhD students in the School of Natural Resources

NAT_R 9490: Ecohydrology: Contemporary Topics

A series of discussions centered on primary literature within disciplines relevant to the participants. All Natural Resources disciplines are encouraged to participate (e.g., ecology, wildlife, fisheries, recreation/tourism, hydrology, atmospheric sciences, soils, etc.) with emphasis on interdisciplinary research (i.e. integrated natural, social and/or physical scientific research). May be repeated for credit. Graded on A-F basis only.

Credit Hour: 1
