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**NRE Natural Resources and Environmental Science**

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**NRE 201 NATURAL RESOURCES AND ENVIRONMENTAL SCIENCE. (3)**

An introductory course in management of natural resources as supported by environmental science at an ecosystem level. Students will write a range of papers about natural resource issues. An overnight field trip is required. Prereq: CIS/WRD 111 or equivalent (ENG 101, ENG 102, and COM class) and sophomore standing.

**NRE 320 NATURAL RESOURCE AND ENVIRONMENTAL ANALYSIS. (3)**

A field-oriented course taught off campus as a three-week summer camp in August. Emphasis is placed on methodologies for field data collection necessary to evaluate a variety of natural resources on forest, agricultural, and surface mined lands. Students will become familiar with sampling instrumentation, collection, preservation, analysis and data interpretation. Lecture, 10 hours; laboratory, 30 hours per week (Monday-Friday) for three weeks. Prereq: BIO 150/152 and CHE 105.

**NRE 355 INTRODUCTORY GEOSPATIAL APPLICATIONS FOR LAND ANALYSIS. (3)**

An introduction to the concepts and methods of compilation, management, analysis, and display of spatially-referenced and tabular data utilizing vector and raster data models. Lecture will be complemented with computer based laboratory exercises. Lecture, two hours; laboratory, four hours per week. Prereq: Third year and above LA major, junior/senior NRES major, or permission of instructor. (Same as LA 355.)

**NRE 381 NATURAL RESOURCE AND ENVIRONMENTAL POLICY ANALYSIS. (3)**

This course examines the historical development of natural resource and environmental policies, provides an overview of the policy process and key federal agencies which manage natural resources or implement environmental regulations, and introduces basic policy analysis techniques so students can prepare and present a case-specific analysis of existing resource or environmental policy.

**NRE 390 SPECIAL TOPICS IN NATURAL RESOURCES AND ENVIRONMENTAL SCIENCE. (1-3)**

This course focuses on unique and timely topics in natural resources and environmental science. May be repeated under a different subtitle for a maximum of six credits. Prereq: NRE 301 or consent of instructor.

**NRE 395 INDEPENDENT STUDY IN NATURAL RESOURCES AND ENVIRONMENTAL SCIENCE. (3)**

Study and independent work on selected problems related to natural resources and environmental science conducted under the supervision of a faculty member and with clear relevance to the student's Environmental Systems Emphasis Area. The goal of NRE 395 is for students interested in research to have an authentic research experience, working directly with a faculty member or graduate student in data collection and analysis, as well as conducting a portion of the research independently. Prereq: Consent of appropriate faculty and a plan of learning objectives approved by the NRCM Internship Coordinator. This course is a Graduation Composition and Communication Requirement (GCCR) course in certain programs, and hence is not likely to be eligible for automatic transfer credit to UK.

**NRE 399 EXPERIENTIAL EDUCATION IN NATURAL RESOURCES AND ENVIRONMENTAL SCIENCE. (3)**

A learning experience in natural resources and environmental sciences conducted under the supervision of a faculty member and with clear relevance to the student's Environmental Systems Emphasis Area. The goal of this requirement is to provide the student with pre-professional experiential learning experience in their chosen emphasis area within natural resources and environmental science. Prereq: Consent of appropriate faculty and approval by NRCM Internship Coordinator. This course is a Graduation Composition and Communication Requirement (GCCR) course in certain programs, and hence is not likely to be eligible for automatic transfer credit to UK.

**NRE 420G TAXONOMY OF VASCULAR PLANTS. (4)**

A survey of the evolutionary relationships among the major of vascular plant groups, concentrating heavily on important families flowering plants. Issues in contemporary systematics, including cladistic methods, will be covered. Students will gain practical experience learning the language of descriptive botany and using botanical keys in technical manuals for species identification. Field trips highlight the local spring flora. Lecture, three hours; laboratory, three hours; plus two Saturday field trips. Prereq: Junior standing; BIO 148 and BIO 152 or one course in introductory botany or consent of instructor. (Same as BIO 420G.)

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**NRE 450G BIOGEOCHEMISTRY. (3)**

A lecture and lab course emphasizing the role of microbial processes on elemental and pollutant cycling in terrestrial soils and aquatic sediments. Soils and sediments from different ecosystems are evaluated for microbial community composition and biogeochemical cycling of organic and inorganic nutrients and pollutants using advanced molecular and laboratory techniques. Several all day field trips and laboratory exercises required. Limited to eight students at the senior or higher level standing. Prereq: CHE 105, 107, 111, 113. (Same as PLS 450G.)

**NRE 455G WETLAND DELINEATION. (3)**

Basic concepts of natural wetland ecosystems, their importance, functions, and major features used for their identification and classification. Application of basic hydrology, hydrophytic vegetation and hydric soil indicators for identification of jurisdictional wetlands utilizing documentation and analysis of field collected data. Three laboratory exercises and four short field trips required. Prereq: PLS 366 or consent of instructor. (Same as PLS 455G.)

**NRE 470G SOIL NUTRIENT MANAGEMENT. (3)**

Soil reaction/cycling of elements essential for plant growth; rates, timing and placement of nutrient sources in modern crop/soil management systems; plant and soil sampling and analysis to diagnose plant nutrient stress. Prereq: CHE 105, PLS 366 and PLS 386 or consent of instructor. (Same as PLS 470G.)

**NRE 471 SENIOR PROBLEM IN NATURAL RESOURCES AND ENVIRONMENTAL SCIENCE. (4)**

This course is designed to provide students with the opportunity to apply the skills and information acquired in previous courses to a real world problem in natural resources and environmental science. The class will focus on a single current issue in Kentucky and will research that issue in depth, using a variety of techniques, including library research, interviews, and data collection and analysis. In addition to research and problem-solving skills, written and oral skills will be emphasized. Lecture, three hours; laboratory, two hours per week. Prereq: NRE 201, NRE 320, FOR 340, PLS 366, NRE 381, FOR 460/EES 385 (or concurrent enrollment), NRE 355 (or concurrent enrollment), and senior standing.

**NRE 545 RESOURCE AND ENVIRONMENTAL ECONOMICS. (3)**

This is an advanced level course focused on economic analysis. It will help students frame natural resource and environmental problems so that they can be analyzed and solved. Major topic areas include water resources, fisheries, energy (and other non-renewable resources), agriculture, and pollution. Policy instruments such as pricing, emission fees, and tradable permits will be covered in detail. Prereq: AEC 303 or AEC 445G or consent of instructor. (Same as AEC 545.)

**NRE 556 CONTEMPORARY GEOSPATIAL APPLICATIONS FOR LAND ANALYSIS. (3)**

Advance concepts in data base analysis, model development, and ancillary functions in geographic information systems. Lecture, two hours; laboratory, four hours per week. Prereq: LA 355/NRE 355 and permission of instructor. (Same as LA 556.)