

Natural Resources and Environmental Sciences

Who can take the NRES secondary major?

This secondary major is open to all degree-seeking undergraduate or graduate students in all colleges. Courses required for the NRES secondary major can be taken concurrently with your major.

Does the NRES secondary major add more hours?

Most programs of study will allow completion of this secondary major within the normal time required by the primary major. All NRES students must complete BAE/DAS/GENAG 582 NRES Capstone during their senior year. Whether or not additional hours are required depends on individual programs and use of electives.

Is this secondary major like a minor?

Minors are typically based within an existing discipline. Because resource and environmental issues are so broad and complex, they exceed the scope of any one discipline and are best addressed through an interdisciplinary (multiple colleges and departments) secondary major.

What will I learn in this secondary major?

The NRES program provides an interdisciplinary overlay for your primary major. Its focus is to broaden students' perspectives, in part through course offerings and in part through interactions with students from other disciplines. The educational goal of the NRES secondary major is to prepare undergraduate students to apply broadly-based scientific knowledge to the use, management, sustainability, and quality of soil, air, water, mineral, biological, and energy resources.

What are the academic requirements in the NRES secondary major?

All NRES students must meet the entry, capstone, and block electives course requirements shown in this guide. In addition, at least one life science course must be completed as part of either the primary major or this secondary major.

How do I participate in the NRES secondary major?

Either make an appointment to meet with the Director, Dr. Shawn Hutchinson in 3018 Seaton Hall (Phone: 785-532-6727 or e-mail: shutch@ksu.edu) or apply online from the NRES website (<http://www.ksu.edu/nres/>). An academic advisor will be available to assist in meeting NRES requirements.

How does the NRES secondary major function?

The program is administered by a Director and through an interdisciplinary Governing Board elected from the faculty teaching NRES courses. Currently, the NRES Director is Shawn Hutchinson (Geography). Others serving on the Board are: Colby Moorberg (Agronomy), Nathan Nelson (Agronomy), Abigail Langston (Geography), Stacy Hutchinson (Biological and Agricultural Engineering), Trisha Moore (Biological and Agricultural Engineering), Matthew Sanderson (Sociology), Lauren Ritterbush (Anthropology), and Joel Spencer (Geology).

Kansas State University

Natural Resources and Environmental Sciences

NRES

Secondary Major

Academic Guide

Enroll in NRES at our WEBSITE

**The most current curriculum information and an
NRES enrollment form are available at
<http://www.ksu.edu/nres>**

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What is the NRES secondary major?

The NRES secondary major is an academic program consisting of an array of courses taken by students interested in adding academic breadth in natural resource and environmental concepts to the depth provided in their primary major.

Why take the NRES secondary major?

Increasing government, public, and corporate concerns about environmental affairs are producing career opportunities for individuals capable of dealing with the broad scope of natural resource and environmental problems. The NRES secondary major provides extra qualifications for employment by enhancing the knowledge base of the primary major. Participation and completion of the NRES secondary major will be noted on your KSU transcript and graduates will receive a secondary major diploma.

NRES Academic Requirements

BASIC REQUIREMENTS: Students must successfully complete Parts A, B, and C of the basic entry courses to fulfill the NRES secondary major requirements.

○ = K-State 8 Courses

A. Four basic science courses (or their more advanced equivalent).

- MATH 100 College Algebra (3)
- CHM 110 General Chemistry (3) and ○ CHM 111 General Chemistry Lab (1)
or ○ CHM 210 Chemistry I (4)
- PHYS 101 The Physical World (3) and ○ PHYS 103 The Physical World and Lab (1)
or ○ PHYS 113 General Physics I (4) or ○ PHYS 115 Descriptive Physics (5)
- ECON 110 Prin. Macroeconomics (3) or ○ ECON 120 Prin. Microeconomics (3) or
○ AGECE 120 Agricultural Economics & Agribusiness (3)

B. Two of the following basic resource courses. These courses must be from different departments and total a minimum of 6 credits. **Courses used to meet this requirement may not be used again as block electives.**

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|-------------|---------------------------|------------|-----------------------------|
| ○ AGRON 305 | Soils (4) | ○ GEOL 100 | Earth in Action (3) |
| ○ AGRON 335 | Environmental Quality (3) | ○ GEOL 105 | Oceanography (3) |
| ○ BIOL 198 | Principles of Biology (4) | ○ GEOL 115 | Environ Geology (3) |
| ○ GEOG 221 | Intro Physical Geog (4) | ○ GEOL 125 | Natural Disasters (3) |
| ○ GEOG 340 | Geog Nat Resources (3) | ○ PMC 275 | Intro Nat Resource Mgmt (3) |

C. One life science course. This course may also be used to meet another requirement..

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|-------------|---------------------------|------------|------------------------|
| ○ AGRON 220 | Crop Science (3) | ○ BIOL 198 | Princ of Biology (4) |
| ○ ANTH 280 | Intro to Biol Anthro (3) | ○ BIOL 303 | Ecol of Envir Prob (3) |
| ○ BIOCH 265 | Intro Organic Biochem (5) | ○ GEOL 650 | Geomicrobiology (3) |
| ○ BIOCH 521 | General Biochemistry (3) | ○ HORT 201 | Princ Hort Science (4) |

CAPSTONE COURSE REQUIREMENT. All students must successfully complete the NRES capstone course. This course should be scheduled during the student's senior year.

- BAE/DAS/GENAG 582 Natural Resources/Environmental Sciences Project (3)

Natural Resources and Environmental Sciences

BLOCK ELECTIVE REQUIREMENTS: From this list, students must successfully complete a minimum of 5 courses (15 hours minimum) from at least 4 departments. One course must come from each area (natural, applied, & social sciences/humanities), two courses must be numbered 500 or greater, and three courses must have a prerequisite (courses without a prerequisite are underlined). Check with the NRES Director or access the NRES site (<http://www.ksu.edu/nres>) for the most recent curriculum requirements.

Natural Science Courses

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|--------------------|------------------------------------|-----------------|--|
| ○ AGRON 305 | Soils (4) | ○ GEOG 535 | Fund. of Climatology (4) |
| ○ AGRON 515 | Soil Genesis & Classification (3) | ○ GEOG 740 | Fluvial Geomorphology (3) |
| BIOL 433 | Intro Fish Wildlife Conser Bio (3) | ○ GEOL 305 | Earth Resources (3) |
| ○ BIOL 529 | Fundamentals of Ecology (3) | ○ GEOL 315 | Geology of National Parks (3) |
| BIOL 612 | Freshwater Ecology (4) | <u>GEOL 399</u> | <u>Honors Seminar in Geology (Var)</u> |
| BIOL 642 | Prin. of Conservation Biology (3) | ○ GEOL 502 | Mineralogy (3) |
| BIOL 687 | Microbial Ecology (3) | ○ GEOL 506 | Environmental Studies (3) |
| ○ CHM 315 | Environmental Science (3) | ○ GEOL 520 | Geomorphology (3) |
| ○ CHM 316 | Environmental Science Lab (1) | ○ GEOL 540 | Geol. Rec of Climate Change (3) |
| ○ <u>ENTOM 301</u> | <u>Insects and People (3)</u> | GEOL 611 | Hydrogeology (3) |
| ○ <u>ENTOM 312</u> | <u>General Entomology (3)</u> | ○ GEOL 650 | Geomicrobiology (3) |
| ENTOM 692 | Insect Ecology (3) | GEOL 702 | Economic Geology (3) |
| ○ GEOG 235 | Atmospheric Science (4) | GEOL 711 | Water Resource Geochemistry (3) |

Applied Science & Technology Courses

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|--------------------|--------------------------------------|----------------|--------------------------------------|
| ○ AGRON 330 | Weed Science (3) | ○ CE 552 | Hydraulic Engineering (3) |
| ○ AGRON 335 | Environmental Quality (3) | ○ CE 563 | Environ Engineering Fund (3) |
| ○ AGRON 375 | Soil Fertility (3) | ○ CE 565 | Water & Wastewater Engg (3) |
| ○ <u>AGRON 501</u> | <u>Range Management (3)</u> | ○ CE 625 | Principle of Geoenviron Engg (3) |
| ○ AGRON 635 | Soil Conservation & Mgmt (3) | ○ CE 654 | Design Groundwater Flow Sys (3) |
| ○ AGRON 645 | Soil Microbiology (3) | ○ CE 766 | Wastewater Engg/Biol Proc (3) |
| ○ AGRON 646 | Soil Microbiology (1) | ○ CE 768 | Geoenviron Engg Design (3) |
| ○ AGRON 655 | Site Specific Agriculture (3) | CHE 650 | Hazardous Waste Engg Sem (1) |
| AGRON 746 | Environmental Soil Physics (3) | CHE 670 | Sem/Sustainability (1) |
| ○ ATM 558 | Hydrol & Soil Erosion Mgmt (3) | CHE 715 | Biochemical Engineering (3) |
| ATM 653 | Water Mgt & Irrigation (2) | ○ GEOG 508 | Geographic Info Systems I (4) |
| ATM 661 | Watershed Assess & Mgmt (3) | GEOG 605 | Remote Sensing of Environ (3) |
| BAE 560 | Hydrology for Biological Sys (3) | GEOL 730 | Petroleum Geology (3) |
| <u>BAE 620</u> | <u>Problems in Ag Engg (Var)</u> | GEOL 745 | Exploration Geophysics (3) |
| BAE 643 | Life Cycle Assessment (3) | ○ GEOL 760 | Geochem Biogeochem Modeling (3) |
| BAE 651 | Air Pollution Engineering (3) | ○ LAR 420 | Socio-Ecological Sys Studio (4) |
| BAE 660 | Hydraulic Transport Bio Sys (3) | <u>LAR 734</u> | <u>Rivers: Process and Forms (3)</u> |
| BAE 664 | Green Strmwtr Infra Des & Assess (3) | <u>PMC 575</u> | <u>Water Mgmt Nat Res Mgr (3)</u> |
| BAE 768 | Geoenvironment Engg Design (3) | ○ PMC 635 | Methods of Environ Interp (3) |
| ○ BIOL 303 | Ecology of Environ. Problems (3) | ○ PMC 740 | Adv Environ Interpretation (3) |
| BIOL 684 | Wildlife Mgt & Techniques (4) | | |
| BIOL 696 | Fisheries Mgt & Techniques (4) | | |
| ○ CE 550 | Water Resource Engineering (3) | | |

Social Science/Humanities Courses

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|--------------------|--|-------------------|--|
| <u>AGCOM 712</u> | <u>Environ. Communications (3)</u> | ○ GEOG 722 | Geographies of Int'l Conservation (3) |
| ○ AGECE 525 | Nat Res & Environ Econ (3) | GEOG 725 | Geography of Water Resources (3) |
| ○ AGECE 610 | Current Ag & Nat Res Policy (3) | GEOG 761 | Human Impact on Environ. (3) |
| ○ ANTH 260 | Intro to Archeology (3) | GEOG 765 | Geography of Natural Hazards (3) |
| ○ <u>ANTH 310</u> | <u>Environmental Anthropology (3)</u> | ○ GEOG 770 | Perception of Environment (3) |
| ○ <u>AT/ID 350</u> | <u>Our Sustainable World (3)</u> | ○ GWSS 480 | <u>Gender, Environ. & Justice (3)</u> |
| ○ ECON 527 | Environmental Economics (3) | ○ HIST 511 | <u>Environmental History (3)</u> |
| ○ ENGL 270 | <u>American Natures (3)</u> | ○ <u>HIST 557</u> | <u>History of American Ag (3)</u> |
| ○ ENGL 399 | <u>Honors Sem: Lit and the Environ (3)</u> | ○ <u>LAR 322</u> | <u>Ethics and Environ Dilemmas (3)</u> |
| ○ ENGL 680 | <u>Environ in American Literature (3)</u> | LAR 646 | Comm Engagement Studio (5) |
| ○ <u>GENAG 670</u> | <u>Intro Ag Res/Environ Mgmt (2)</u> | MC 712 | <u>Environ Communications (3)</u> |
| ○ GEOG 340 | Natural Resources (3) | ○ PHILO 595 | Environmental Ethics (3) |
| ○ GEOG 360 | Sustainable Concepts & Issues (3) | ○ PLAN 315 | Introduction to City Planning (3) |
| ○ GEOG 460 | Human Dim Global Change (3) | ○ POLSC 250 | <u>Environmental Political Thought (3)</u> |
| ○ GEOG 600 | Mountain Geography (3) | ○ SOCIO 536 | Society and Nat Resources (3) |
| GEOG 718 | Geography of Public Lands (3) | | |
| GEOG 720 | Geography of Land Use (3) | | |