

School of Natural Resources
Specialization in Applied Ecology
Ph.D. Program of Study

Note: A student does not have to declare a specialization. If a student wishes a recognized specialization to appear on his/her transcript, the following requirements must be met for the Applied Ecology Specialization.

I. Scope, Content and Format of the Program

A. Educational goals and objectives:

- (1) Provide students a learning environment to promote a broad understanding of ecological principles and how they can be applied to the conservation and management of our natural resources
- (2) To recognize students who have attained an advanced knowledge of ecological science and management.
- (3) To support interactions and cooperation among the community of scientists and students working on applied ecological problems.

B. Scope of the program:

While there are no specific guidelines or national accreditation programs, students will be encouraged to seek a broad background in several areas focusing on interactions among ecosystem components. The specialization is designed for students interested in applying ecological principles to the management of terrestrial and aquatic ecosystems. Currently the School of Natural Resources has MS specializations in Agroforestry, Aquatic Ecology and Wildlife Ecology. By combining energies at the Ph.D. level the Applied Ecology Group will be better able to provide an integrated approach to the conservation and management of our natural resources. The specialization should appeal to students interested in agroforestry/agroecology, aquatic and stream ecology, conservation biology, forest ecology, grassland ecology, wildlife ecology and ecosystem science.

C. Requirements for students in Applied Ecology Specialization:

Ninety hours of graduate work (M.S. and Ph.D., including a dissertation and 27 hours of residency) are required for the degree. Of these 90 hours, no more than 36 may be carried in from the M.S. Program. Individualized programs are developed by the student and their supervisory committee in accordance with the requirements of the Ph.D. in Natural Resource Sciences degree as detailed in the Graduate Studies Bulletin. Students are encouraged to take a broad array of classes that will provide the background to address ecosystem issues from various perspectives. Of the remaining hours, at least three courses must come from the list below. New faculty are being added to the School of Natural Resources as a result of the UNL Water Initiative and the formation of the Nebraska Cooperative Fish and Wildlife Research Unit. Each of these faculty will be teaching graduate

level course(s) in their area of expertise which will be included in the list below.

NRES 802 - Aquatic Insects
NRES 806 - Plant Ecophysiology
NRES 807 - Plant-Water Relations
NRES 808 - Microclimate: The Biological Environment
NRES 810 - Landscape Ecology
NRES 812 - Introduction to Geographic Information Systems
NRES 817 - Agroforestry Systems in Sustainable Agriculture
NRES 824 - Forest Ecology
NRES 835 - Agroecology
NRES 848 - Advanced Topics in Wildlife Damage
NRES 849 - Woody Plant Growth and Development
NRES 850 - Biology of Wildlife Populations
NRES 854 - Ecological Interactions
NRES 856 - Mathematical Models in Biology
NRES 859 - Limnology
NRES 862 - Conservation Biology
NRES 863 - Fisheries Science
NRES 864 - Fisheries Biology
NRES 866 - Advanced Limnology
NRES 869 - Bio-Atmospheric Instrumentation
NRES 868 - Wetlands
NRES 876 - Mammalogy
NRES 896 - Independent Study
NRES 897 - Career Experiences in Natural Resource Sciences
NRES 889 - Ichthyology
NRES 907 - Agricultural Climatology
NRES 908 - Solar Radiation Interactions at the Earth's Surface
NRES 922 - Seminar in Geographic Information Systems
NRES 943 - Advanced Avian Physiology
NRES 954 - Turbulent Transfer in the Atmospheric Surface
NRES 966 - Soil Fertility
NRES 996 - Research Other Than Thesis
BIOS 854 - Population and Community Ecology
BIOS 857 - Ecosystem Ecology
BIOS 870 - Prairie Ecology
BIOS 953 - Advanced Population Ecology
BIOS 959 - Advanced Community Ecology
ENTO 806 - Insect Ecology
RNGE 840 - Great Plains Ecosystems
RNGE 842 - Wildland Plants
RNGE 844 - Vegetation Analysis
RNGE 845 - Livestock Management on Range and Pasture

A dissertation research topic in Applied Ecology.

The chair (or one co-chair) of the student's supervisory committee must be a faculty member from the Applied Ecology Group and a member of the UNL graduate faculty.

Successful completion of all requirements will be indicated on the student's final transcript as "Natural Resource Sciences with a specialization in Applied Ecology".

II. General Governance Procedures

A. The student should meet all SNR's minimum admission requirements. Students not meeting all of these requirements may be admitted provisionally. Provisional status must be removed by the end of the first year of study. The advisor, with assistance from the supervisory committee, must approve the actions required to attain full standing and will oversee the progress toward full standing.

B. All course work and the dissertation topic must be approved by the supervisory committee.

C. Students are required to develop a prospectus during their first year.

D. Admission to candidacy requires successful completion of both written and oral comprehensive examinations.

E. Students are required to present the results of their research at a general seminar.

III. Availability of Resources:

No additional funds are required to implement this specialization. Sufficient reference resources exist within UNL library holdings or are accessible to students. Excellent facilities, instrumentation and equipment are available within SNR. Faculty within the Applied Ecology specialization have strong cooperative efforts with other departments and colleges. Faculty within SNR or associated with SNR through adjunct or courtesy appointments teach many of the courses associated with the specialization. A wealth of additional courses are available throughout UNL which add both breadth and depth to the specialization. The addition of faculty from the newly formed Nebraska Cooperative Fish and Wildlife Research Unit and the UNL Water Initiative will add additional graduate level courses in their specialty areas contributing to the Ph.D. program in SNR.

IV. Impact on Existing Academic Community

This specialization will be a continuation of the previous programs within the former Department of Forestry, Fisheries, and Wildlife and will consolidate the Ph.D. programs related to applied ecology that have been scattered within other units. Specializations at the M.S. level are already approved in the individual components that make up the applied Ecology group (i.e., agroforestry, aquatic ecology, and wildlife ecology). By combining efforts at the Ph.D. level, the applied ecology group believes it will offer a

stronger and more integrated program and better prepare students for dealing with complex ecosystem management issues.