



ECOSYSTEM MANAGEMENT

Ecosystem management is an integrative and science-based approach to resource management as a way to address the opportunities and challenges of the 21st century. Major environmental problems require approaches that work with natural and social systems rather than against them. Research includes:

Ecosystem health

Decision-support systems

Forest resource management

Human dimensions

Natural resources economics and policy

Ranch management

Range animals and plant nutrition

Rangeland ecosystem management

Silviculture

Watershed management



Graduate students can pursue one of the eight graduate degrees offered in ESSM, including MS and PhD degrees designed for research or academic careers. In addition, non-thesis Masters degrees for professional careers related to natural resources conservation and management. ESSM graduate students can choose their research in Ecosystem Management, Ecosystem Science, Genetics and Systematics, or Spatial Science.



Information

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IT'S TIME FOR



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College of
Agriculture
and Life Sciences

ECOSYSTEM SCIENCE AND MANAGEMENT

ECOSYSTEM SCIENCE

An improved scientific understanding of managed and wild ecosystems should enhance the ability of mankind to understand and respond to current and future environmental challenges. Our faculty and students are investigating fundamental scientific questions related to the structure and function of ecosystems, and developing new knowledge that will help us sustain ecosystem services and protect biodiversity. Students can select their research topics in the following areas:

Biogeochemistry

Biosystematics

Eco-hydrology

Ecological restoration

Global change ecology

Landscape ecology



SPATIAL SCIENCE

Spatial sciences allow students to observe, explore, and analyze the Earth and its ecosystems. Ecosystem Science and Management requires understanding spatial processes that define ecosystem dynamics. The spatial sciences in ESSM provide students with a set of contemporary and cutting-edge technologies for inventory, characterization and mapping, and assessment of natural and man-made environments.

Research areas can include any of the above topics with application of:

Geographic information systems (GIS)

Global positioning system (GPS)

Remote sensing

Spatial statistics

GENETICS AND SYSTEMATICS

Genetics, genomics, and molecular biology allow students to understand species and ecosystems at a variety of levels. Advances in technology have allowed us to understand the evolution and adaptation of species, to determine which genes and alleles may be valuable for breeding trees adapted to conditions of the future and to genetically modify plants to produce new or different products or to be more resistant to biotic and abiotic stresses.

Students interested in genetics can consider research topics in the following areas:

Cytogenetics

Genomics

Molecular biology

Molecular genetics

Plant population genetics

Plant transformation

Tree improvement

