SOIL, WATER, AND ECOSYSTEM SCIENCES

Program Information

The Soil, Water, and Ecosystem Sciences Department offers Master of Science (thesis or professional non-thesis option) and Doctor of Philosophy degrees in soil, water, and ecosystem sciences with the following specializations: ecology, environmental science, hydrologic science, and soil science. The department also offers Master of Science (thesis or professional option) track in environmental science via distance education for place bound students (http://soils.ifas.ufl.edu/academics/degree-environscience.shtml (http://soils.ifas.ufl.edu/academics/degree-environscience.shtml/)). Requirements for the M.S. and Ph.D. degrees are given in the Graduate Degrees (http://gradcatalog.ufl.edu/graduate/degrees/) section of this catalog.

Students can also develop specializations in several interdisciplinary areas including biogeochemistry, ecology, geographic information systems, hydrologic science, tropical agriculture, turfgrass management, and wetland science. The Department emphasizes (but is not limited to) the following research areas:

- Nutrient, Pesticide, and Waste Management
- Soil, Water, and Aquifer Remediation
- Carbon Dynamics and Ecosystem Services
- Landscape Analysis and Modeling
- Wetlands and Aquatic Ecosystems

Interests of the student and faculty, the facilities, and funding available will determine the student's research area. A specific program of study is prepared by an appointed supervisory committee for each student. Students will present a thesis or dissertation in their major field (M.S. thesis option and Ph.D.). In addition, Ph.D. candidates must pass a qualifying examination covering several areas of soil and water science and related fields.

Prerequisites: Students who expect to do graduate work in the Soil, Water, and Ecosystem Sciences Department should hold a bachelor's degree from an accredited college or university with a major in soil, water, and ecosystem sciences or the equivalent background in another field of science. Graduate students should have backgrounds in biology, chemistry, physics, and mathematics and knowledge of basic soil and water science.

For more information, please see our website: http://soils.ifas.ufl.edu.

Degrees Offered

Degrees Offered with a Major in Soil, Water, and Ecosystem Sciences

- Doctor of Philosophy
  - without a concentration
  - concentration in Climate Science
  - concentration in Geographic Information Systems
  - concentration in Global Systems Agroecology
  - concentration in Hydrologic Sciences
  - concentration in Tropical Conservation and Development
  - concentration in Wetland Sciences
- Master of Science
  - without a concentration
  - concentration in Agroecology
  - concentration in Climate Science
  - concentration in Geographic Information Systems
  - concentration in Hydrologic Sciences
  - concentration in Research Methods
  - concentration in Tropical Conservation and Development
  - concentration in Wetland Sciences

Requirements for these degrees are given in the Graduate Degrees (http://gradcatalog.ufl.edu/graduate/degrees/) section of this catalog.

Courses

Soil, Water, and Ecosystem Sciences Departmental Courses

Code	Title	Credits
AGG 5607	Communicating in Academia	3
AGG 6503	Nanotechnology in Food, Agriculture, and Environment	3
ALS 5027	Reusable Learning Objects	1
ALS 5155	Global Agroecosystems	3
CWR 6537	Contaminant Subsurface Hydrology	3
SWS 5050L	Soils for Environmental Professionals Laboratory	1
SWS 5050	Soils for Environmental Professionals	3
SWS 5115	Environmental Nutrient Management	3
SWS 5132	Tropical Soil Management	3
SWS 5182	Earth System Analysis	3
SWS 5208	Sustainable Agricultural and Urban Land Management	3
SWS 5224	Environmental Biogeochemistry	3
SWS 5234	Environmental Soil, Water, and Land Use	3
SWS 5246	Water Resource Sustainability	3
SWS 5247	Hydric Soils	2
SWS 5248	Wetlands and Water Quality	3
SWS 5305C	Soil Microbial Ecology	3
SWS 5308	Ecology of Waterborne Pathogens	3
SWS 5406	Soil and Water Chemistry	3
SWS 5424C	Soil Chemical Analysis	3
SWS 5551	Soils, Water, and Public Health	3
SWS 5605C	Environmental Soil Physics	3
SWS 5716C	Environmental Pedology	4
SWS 5721C	GIS in Land Resource Management	3
SWS 5805	Environmental Soil and Water Monitoring Techniques	3
SWS 6117	Fertilizer Technology and Use	3
SWS 6134	Soil Quality	3
SWS 6136	Soil and Nutrient Diagnostics for Agricultural Production	3
SWS 6209	Urban Soil and Water Systems	3
SWS 6262	Soil Contamination and Remediation	3
SWS 6323	Advanced Microbial Ecology	3
SWS 6366	Biodegradation and Bioremediation	3
SWS 6448	Biogeochemistry of Wetlands and Aquatic Systems	3
SWS 6454	Advanced Soil and Water Chemistry	3
SWS 6456	Advanced Biogeochemistry	3
SWS 6722	Soil-Landscape Modeling	3

SWS 6813C	Modeling Land Biogeochemistry	3
SWS 6905	Special Problems	1-4
SWS 6910	Supervised Research	1-5
SWS 6920	Journal Colloquium in Environmental Science	1
SWS 6931	Seminar	1
SWS 6932	Topics in Soils	1-4
SWS 6940	Supervised Teaching	1-5
SWS 6950	Professional Development in Soil, Water, and Ecosystem Sciences	2
SWS 6971	Research for Master's Thesis	1-15
SWS 6992	Aquatic Toxicology: Science and Applications	3
SWS 7979	Advanced Research	1-12
SWS 7980	Research for Doctoral Dissertation	1-15

College of Agricultural and Life Sciences Courses

Code	Title	Credits
ALS 5156	Agricultural Ecology Principles and Applications	3
ALS 5905	Individual Study	1-4
ALS 5932	Special Topics	1-4
ALS 6046	Grant Writing	2
ALS 6166	Exotic Species and Biosecurity Issues	3
ALS 6921	Colloquium on Plant Pests of Regulatory Significance	1
ALS 6925	Integrated Plant Medicine	4
ALS 6931	Plant Medicine Program Seminar	1
ALS 6935	Topics in Biological Invasions	3
ALS 6942	Principles of Plant Pest Risk Assessment and Management	3
ALS 6943	Internship in Plant Pest Risk Assessment and Management	1-10
ANS 6936	Graduate Seminar in Animal Molecular and Cell Biology	1-2
BCH 5045	Graduate Survey of Biochemistry	4
STA 6093	Introduction to Applied Statistics for Agricultural and Life Sciences	3
STA 6329	Matrix Algebra and Statistical Computing	3

Student Learning Outcomes

soil and water science (PHD)

SLO 1 Theories and Concepts
Describe and explain theories and concepts in soil and water sciences

SLO 2 Skills
Apply, analyze, and synthesize content knowledge by identifying component parts, relationships and ideas

SLO 3 Professional Behavior
Display ethical behaviors, cultural sensitivity, teamwork, professional conduct and communication

Soil and water science (MS)

SLO 1 Theories and Concepts in Soil and Water Sciences
Describe and explain theories and concepts in soil and water sciences

SLO 2 Skills
Apply, analyze, and synthesize content knowledge by identifying component parts, relationships and ideas

SLO 3 Professional Behavior
Display ethical behaviors, cultural sensitivity, professional conduct and effective communication