SOIL SCI 1 — COOPERATIVE EDUCATION/CO-OP IN SOIL SCIENCE
1 credit.

Full-time off-campus work experience which combines classroom theory with practical knowledge of operations to provide students with a background upon which to base a professional career. Students receive credit only for the term in which they are actively enrolled and working. The same work experience may not count towards credit in Soil Science 399.

Requisites: Soil Sci, and consent of supervising instructor and academic advisor.

Repeatable for Credit: Yes, unlimited number of completions

Last Taught: Fall 2015

SOIL SCI/ENVIR ST 101 — FORUM ON THE ENVIRONMENT
1-2 credits.

Lectures and discussions about environmental issues. Historical and contemporary environmental impacts of humans on the biosphere. Global futures: population, technology, societal values, resources and prospects for sustainable management.

Requisites: Open to Fr

Course Designation: Breadth - Either Social Science or Natural Science
Level - Elementary
L&S Credit - Counts as Liberal Arts and Science credit in L&S

Repeatable for Credit: Yes, unlimited number of completions

Last Taught: Spring 2017

SOIL SCI/ATM OCN 132 — EARTH'S WATER: NATURAL SCIENCE AND HUMAN USE
3 credits.

Water is central to the functioning of planet Earth. As humans increase their impact on Earth's systems and cohabitants, our understanding of the multiple roles of water becomes critical to finding sustainable strategies for human and exosystem health. This course explores the science of Earth's hydrosphere, with constant attention to human uses and impacts. Open to Fr

Requisites: HS math science.

Course Designation: Breadth - Physical Sci. Counts toward the Natural Sci req
Level - Elementary
L&S Credit - Counts as Liberal Arts and Science credit in L&S

Repeatable for Credit: No

Last Taught: Spring 2017

SOIL SCI/ENVIR ST/GEOG 230 — SOIL: ECOSYSTEM AND RESOURCE
3 credits.

Soils are fundamental to ecosystem science. A systems approach is used to investigate how soils look and function. Topics investigated include soil structure, biology, water, fertility, and taxonomy as well as the human impact on the soil environment.

Requisites: Not open to students with credits in Soil Sci 301

Course Designation: Breadth - Physical Sci. Counts toward the Natural Sci req
Level - Intermediate
L&S Credit - Counts as Liberal Arts and Science credit in L&S

Repeatable for Credit: No

Last Taught: Spring 2017

SOIL SCI 289 — HONORS INDEPENDENT STUDY
1-2 credits.

Requisites: Enrolled in the CALS Honors Prgm Sophomore or Junior standing.

Course Designation: Honors - Honors Only Courses (H)

Repeatable for Credit: Yes, unlimited number of completions

SOIL SCI 299 — INDEPENDENT STUDY
1-3 credits.

Requisites: Open to Freshmen, Sophomore or Junior standing written consent of instructor

Repeatable for Credit: Yes, unlimited number of completions

Last Taught: Fall 2017

SOIL SCI 301 — GENERAL SOIL SCIENCE
4 credits.

Physical chemical and biological properties of soils as they affect soil-plant-water relations, soil classification and suitability for agricultural and other uses.

Requisites: MATH 112 CHEM 103 or equiv

Course Designation: Breadth - Physical Sci. Counts toward the Natural Sci req
Level - Intermediate
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Grad 50% - Counts toward 50% graduate coursework requirement

Repeatable for Credit: No

Last Taught: Fall 2017

SOIL SCI 305 — FIELD STUDY OF SOIL
1 credit.

Intensive in situ description and evaluation of soil morphology. Field trips required.

Requisites: Soil Sci 230, 301 or equiv

Course Designation: Breadth - Natural Science
Level - Intermediate
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Grad 50% - Counts toward 50% graduate coursework requirement

Repeatable for Credit: No

Last Taught: Fall 2014
SOIL SCI 321 — SOILS AND ENVIRONMENTAL CHEMISTRY
3 credits.
Sources, reactions, transport, effects, and fates of chemical species in soils and associated water and air environments. Emphasis on the chemical behavior of elements and compounds and the phenomena affecting natural and anthropogenic materials in soils.
Requisites: CHEM 103-104 or 109-110 or equivalent
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2017

SOIL SCI 322 — PHYSICAL PRINCIPLES OF SOIL AND WATER MANAGEMENT
3 credits.
Soil physical properties and interactions as related to soil and water resource management and conservation. Water runoff (leading to soil erosion and surface water contamination); tillage and nutrient management; soil thermal and moisture regimes; solute movement; soil compaction, air and aeration.
Requisites: PHYSICS 103; Soil Sci 301 or consent of instructor
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2017

SOIL SCI/PL PATH 323 — SOIL BIOLOGY
3 credits.
Nature, activities and role of organisms inhabiting soil. Effects of soil biota on ecosystem function, response to cultural practices, and impacts on environmental quality, including bioremediation of contaminated soils.
Requisites: CHEM 104 and BOTANY/BIOLOGY 130 or equiv
Course Designation: Breadth - Biological Sci. Counts toward the Natural Sci req
Level - Intermediate
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2017

SOIL SCI/ENVIR ST 324 — SOILS AND ENVIRONMENTAL QUALITY
3 credits.
Interaction of soils with environmental contaminants and the role of soils in pollution control.
Requisites: CHEM 103 104 or equiv; Jr st
Course Designation: Breadth - Physical Sci. Counts toward the Natural Sci req
Level - Intermediate
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Summer 2017

SOIL SCI 325 — SOILS AND LANDSCAPES
3 credits.
Learn how to read the landscape and understand the relationships between soils, land use and landform. Discuss soil-forming factors, soil processes, soil classification, the 12 soil orders, soil survey and mapping. We will make several field trips and attendance is essential and required.
Requisites: ENVIR ST/GEOG/Soil Sci/ENVIR ST/GEOG 230 or SOIL SCI 301
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2017

SOIL SCI/AGRONOMY/HORT 326 — PLANT NUTRITION MANAGEMENT
3 credits.
Functions, requirements and uptake of essential plant nutrients; chemical and microbial processes affecting nutrient availability; diagnosis of plant and soil nutrient status; fertilizers and efficient fertilizer use in different tillage systems.
Requisites: Soil Sci 230 or 301 and one of the following: Bot 100 or 130; HORT 120 or 122; Agron 100
Course Designation: Breadth - Physical Sci. Counts toward the Natural Sci req
Level - Intermediate
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2017

SOIL SCI/HORT 332 — TURFGRASS NUTRIENT AND WATER MANAGEMENT
3 credits.
Nutrient requirements of turfgrasses; nature of turfgrass response to fertilization; soil and tissue testing methodology and interpretation; irrigation scheduling; irrigation water quality; use of irrigation and fertilizer to minimize environmental impact; writing effective nutrient management plans.
Requisites: Soil Sci/Hort/Agron 326
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2016

SOIL SCI/AGRONOMY/ENTOM/HORT/PL PATH 354 — DIAGNOSING AND MONITORING PEST AND NUTRIENT STATUS OF FIELD CROPS
1 credit.
This course is designed to provide students with information necessary to diagnosis and monitor corn, soybean, alfalfa and wheat for pests (insects, weeds, diseases) and nutrient deficiency symptoms including perspectives from Agronomy, Entomology, Horticulture, Plant Pathology and Soil Science. Proper soil and pest sampling information will be provided as will proper crop staging techniques which are essential for pest and nutrient management.
Requisites: None
Repeatable for Credit: No
Last Taught: Spring 2017
SOIL SCI/AGRONOMY/BOTANY 370 — GRASSLAND ECOLOGY
3 credits.

Understand factors driving global, continental, regional, and local distribution of grasslands. Discuss how management affects provision of grassland ecosystem goods and services. Compare and contrast plant community and ecosystem dynamics in native prairie and intensively managed pastures.

Requisites: Intro crse in Agronomy, Botany, or Soil Sci; or Bot/Zoo/Biol 151-152; or Biocore 301 or 333

Course Designation: Level - Intermediate
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2017

SOIL SCI/BSE/CIV ENGR 372 — ON-SITE WASTE WATER TREATMENT AND DISPERSAL
2 credits.

On-site treatment and dispersal of waste water from homes, commercial sources and small communities. Sources, pretreatment units, nutrient removal units, constructed wetlands, surface and soil dispersal systems, recycle and reuse systems, regulations, alternative collection systems.

Requisites: CHEM 103
Repeatable for Credit: No
Last Taught: Fall 2017

SOIL SCI 375 — SPECIAL TOPICS
1-6 credits.

Requisites: Cons inst
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2017

SOIL SCI 399 — COORDINATIVE INTERNSHIP/COOPERATIVE EDUCATION
1-8 credits.

Requisites: So, Jr or Sr st and cons of supervising inst, advisor, and internship program coordinator
Course Designation: Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S Workplace - Workplace Experience Course
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2017

SOIL SCI 400 — STUDY ABROAD IN SOIL SCIENCE
1-6 credits.

Provides an area equivalency for courses taken on Madison Study Abroad Programs that do not equate to existing UW courses. W-Madison Study Abroad Program
Requisites: Current registration in a U.
Repeatable for Credit: Yes, unlimited number of completions

SOIL SCI/MICROBIO 425 — ENVIRONMENTAL MICROBIOLOGY
3 credits.

Microbial interactions in soils, water, extreme environments and biofilms. Modern methods for studying microbial ecology. role of microbes in nutrient cycles and biogeochemistry. Use of microbes for mitigating manmade environmental problems of industrial, agricultural, and domestic origin.

Requisites: Bact 303, CHEM 341 or 343
Course Designation: Level - Intermediate
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Repeatable for Credit: No
Last Taught: Spring 2017

SOIL SCI 431 — SOILS OF THE WORLD
1 credit.

A overview of the soils of the world and the grand environmental challenges that face humanity. Soils of the USA and Wisconsin included.

Requisites: None
Course Designation: Breadth - Physical Sci. Counts toward the Natural Sci req
Level - Intermediate
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Repeatable for Credit: No
Last Taught: Spring 2017

SOIL SCI/F&W ECOL 451 — ENVIRONMENTAL BIOGEOCHEMISTRY
3 credits.

Emphasis is given to a consideration of the processes influencing the distribution and cycling of chemical elements in native and anthropogenic ecosystem-level cycles of elements, and biogeochemical cycling in major soil-biome systems.

Requisites: CHEM 103-104 or equivalent
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2013

SOIL SCI/AN SCI/DY SCI/ENVIR ST 468 — MANAGING THE ENVIRONMENTAL IMPACTS OF LIVESTOCK OPERATIONS
2 credits.

Introduces nonpoint pollution policies and regulations and environmental losses impacting air and water quality. Discuss management practices that influence the cycling and balance of nitrogen and phosphorus across a farm and its components (livestock, crop and soil).

Requisites: Junior standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2013
### SOIL SCI/AN SCI/DY SCI/FOOD SCI 472 — ANIMAL AGRICULTURE AND GLOBAL SUSTAINABLE DEVELOPMENT

1 credit.

This course examines issues related to global agriculture and healthy sustainable development. Using a regional approach and focusing on crops and livestock case studies, students will learn the interdependence between US agriculture and agriculture in emerging economies. Some topics covered include population and food, immigration, the environment; crop and livestock agriculture; global trade; sustainability; food security, the role of women in agriculture, and the role of dairy products in a healthy diet.

**Requisites:** None

**Repeatable for Credit:** No

**Last Taught:** Spring 2017

### SOIL SCI/AN SCI/DY SCI/FOOD SCI 473 — INTERNATIONAL FIELD STUDY IN ANIMAL AGRICULTURE AND SUSTAINABLE DEVELOPMENT

2 credits.

This course is the field study component to DY SCI/AN SCI/FOOD SCI/ SOIL SCI 472, which examines issues related to global agriculture and healthy sustainable development. Using a regional approach and focusing on crops and livestock case studies, students will learn the interdependence between US agriculture and agriculture in emerging economies. Some topics covered include population and food, immigration, the environment; crop and livestock agriculture; global trade; sustainability; and the role of women in agriculture and the role of dairy products in a healthy diet.

**Requisites:** DY SCI/AN SCI/FOOD SCI/SOIL SCI 472

**Repeatable for Credit:** No

### SOIL SCI 499 — SOIL MANAGEMENT

3 credits.

A capstone applying independent and team problem solving, critical thinking and oral and written communication skills to issues in soil science.

**Requisites:** Sr or 2nd sem Jr majoring in soil sci or cons inst

**Course Designation:** Level - Advanced

L&S Credit - Counts as Liberal Arts and Science credit in L&S

**Repeatable for Credit:** No

**Last Taught:** Fall 2017

### SOIL SCI/GEOG 524 — URBAN SOIL AND ENVIRONMENT

3 credits.

Many environmental issues related to urbanization are derived from the manipulation of soil. By coupling contemporary literature in urban soils with soil science, students will be able to evaluate environmental issues within the urban environment and provide new ways of remediating their impact.

**Requisites:** Soil Sci 301 or 230

**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Fall 2017

### SOIL SCI/F&W ECOL/HORT 524 — URBAN SOIL AND ENVIRONMENT

3 credits.

Many environmental issues related to urbanization are derived from the manipulation of soil. By coupling contemporary literature in urban soils with soil science, students will be able to evaluate environmental issues within the urban environment and provide new ways of remediating their impact.

**Requisites:** Soil Sci 301 or 230

**Course Designation:** Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Fall 2017

### SOIL SCI/GEOG 525 — SOIL GEOMORPHOLOGY

3 credits.

Soil development as related to landscape throughout the Quaternary; focusing on the relationship of soils to climate and vegetation, landscape evolution, and time; principles of soil stratigraphy; case histories of soil geomorphic studies; field trips.

**Requisites:** Soil Sci 325 or Geog/Soil Sci 431; an intermed level crse in geomorphology; or cons inst

**Course Designation:** Breadth - Physical Sci. Counts toward the Natural Sci req

**Level - Advanced**

L&S Credit - Counts as Liberal Arts and Science credit in L&S Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Spring 2013

### SOIL SCI/GEOG 526 — HUMAN TRANSFORMATIONS OF EARTH SURFACE PROCESSES

3 credits.

This course takes an earth systems approach to explore the role of human societies in shaping earth surface processes from local to global scales. We address how alterations to our landscapes and waterways affect biological, physical and chemical interactions among our biosphere, geosphere, hydrosphere and atmosphere. We discuss methods used to distinguish the "human impact" from background variability.

**Requisites:** Junior standing or GEOG/ENVIR ST/GEOG 120

**Course Designation:** Breadth - Physical Sci. Counts toward the Natural Sci req

**Level - Advanced**

L&S Credit - Counts as Liberal Arts and Science credit in L&S Grad 50% - Counts toward 50% graduate coursework requirement

**Repeatable for Credit:** No

**Last Taught:** Spring 2016
SOIL SCI/AGR onomy/ATM OCN 532 — ENVIRONMENTAL BIOPHYSICS
3 credits.

Plant-environment interactions with particular reference to energy exchanges and water relations. Models are used to provide a quantitative synthesis of information from plant physiology, soil physics, and micrometeorology with some consideration of plant-pest interactions.

Requisites: Intro calc, PHYSICS 103, BOTANY/BIOLOGY 130 comp programing; or cons inst

Course Designation: Breadth - Physical Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

Repeatable for Credit: No

Last Taught: Fall 2016

SOIL SCI/ENVIR ST 575 — ASSESSMENT OF ENVIRONMENTAL IMPACT
3 credits.

Overview of methods for collecting and analyzing information about environmental impacts on agricultural and natural resources, including monitoring the physical environment and relating impacts to people and society. Authorization may be required

Requisites: Jr st.

Course Designation: Breadth - Physical Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

Repeatable for Credit: No

Last Taught: Spring 2016

SOIL SCI 601 — SPECIAL TOPICS IN SOIL SCIENCE
1-3 credits.

Topics in various areas of soil science.

Requisites: Jr st

Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement

Repeatable for Credit: Yes, unlimited number of completions

Last Taught: Summer 2015

SOIL SCI/ENTOM/F&W ECOL/M&ENVTX/PL PATH 606 — COLLOQUIUM IN ENVIRONMENTAL TOXICOLOGY
1 credit.

Current topics in molecular and environmental toxicology and problems related to biologically active substances in the environment. Topics vary each semester. Lectures are by resident and visiting professors and other researchers.

Requisites: Biology/ZOOLOGY/BIOLOGY 101, Biology/BOTANY/BIOLOGY 130, or equivalent

Course Designation: Breadth - Biological Sci. Counts toward the Natural Sci req

Level - Intermediate

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

Repeatable for Credit: Yes, unlimited number of completions

Last Taught: Spring 2016

SOIL SCI 621 — SOIL CHEMISTRY
3 credits.

Solubility relationships, complex ions, ion exchange and oxidation-reduction reactions in soils.

Requisites: Chem 221; Soil Sci 326; or consent of instructor

Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement

Repeatable for Credit: No

Last Taught: Spring 2017

SOIL SCI 622 — SOIL PHYSICS
3 credits.


Requisites: Calculus a course in physics, Soil Sci 301 or consent of instructor

Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement

Repeatable for Credit: No

Last Taught: Fall 2015

SOIL SCI/CIV ENGR 623 — MICROBIOLOGY OF WATERBORNE PATHOGENS AND INDICATOR ORGANISMS
3 credits.

Source, environmental fate and transport of major groups of waterborne pathogens, including epidemiology and testing of associated indicator organism. Management and treatment technologies for prevention of pathogen transmission.

Requisites: Soil Sci 523 or Civ Engr 322 or consent of instructor

Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement

Repeatable for Credit: No

Last Taught: Spring 2017

SOIL SCI/BOTANY/HORT 626 — MINERAL NUTRITION OF PLANTS
3 credits.

Essential and beneficial elements, solutions and soil as nutrient sources, rhizosphere chemistry, nutritional physiology, ion uptake and translocation, functions of elements, nutrient interactions, genetics of plant nutrition.

Requisites: Botany 350 or cons inst

Course Designation: Level - Advanced

L&S Credit - Counts as Liberal Arts and Science credit in L&S

Grad 50% - Counts toward 50% graduate coursework requirement

Repeatable for Credit: No

Last Taught: Fall 2017
SOIL SCI/CIV ENGR/M&ENVTOX 631 — TOXICANTS IN THE ENVIRONMENT: SOURCES, DISTRIBUTION, FATE, & EFFECTS
3 credits.
Nature, sources, distribution, and fate of contaminants in air, water, soil, and food and potential for harmful exposure. 
Requisites: CHEM 343 345 or equiv; CHEM 561 or equiv; PHYSICS 103 104 or equiv; MATH 211; or cons inst
Course Designation: Breadth - Biological Sci. Counts toward the Natural Sci req
Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Repeatable for Credit: No
Last Taught: Spring 2017

SOIL SCI 681 — SENIOR HONORS THESIS
2-4 credits.
Requisites: Honors program candidacy
Course Designation: Honors - Honors Only Courses (H)
Repeatable for Credit: No
Last Taught: Fall 2009

SOIL SCI 682 — SENIOR HONORS THESIS
2-4 credits.
Continuation of 681.
Requisites: Honors program candidacy Soil Sci 681
Course Designation: Honors - Honors Only Courses (H)
Repeatable for Credit: No
Last Taught: Spring 2007

SOIL SCI/ENVIR ST/LAND ARC 695 — APPLICATIONS OF GEOGRAPHIC INFORMATION SYSTEMS IN NATURAL RESOURCES
3 credits.
Course has four components: 1) Detailed review of GIS concepts; 2) Case studies; 3) GIS implementation methods; 4) Laboratory to provide "hands-on" GIS experience.
Requisites: Land Arc/Envir St/Civ Engr 655 or GEOG/CIV ENGR/ ENVIR ST 377 or cons inst
Course Designation: Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Spring 2007

SOIL SCI 699 — SPECIAL PROBLEMS
1-3 credits.
Requisites: Sr st and cons inst
Course Designation: Level - Advanced
L&S Credit - Counts as Liberal Arts and Science credit in L&S
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Spring 2017

SOIL SCI 728 — GRADUATE SEMINAR
1 credit.
Topical oral presentations by guest speakers and graduate students on contemporary concerns and issues involving land and soils.
Requisites: Graduate or professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2017

SOIL SCI 799 — PRACTICUM IN SOIL SCIENCE TEACHING
1-3 credits.
Instructional orientation to teaching at the higher education level in the agricultural and life sciences, direct teaching experience under faculty supervision, experience in testing and evaluation of students, and the analysis of teaching performance.
Requisites: Consent of instructor
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: No
Last Taught: Fall 2017

SOIL SCI 875 — SPECIAL TOPICS
1-4 credits.
Of current interest to graduates.
Requisites: Graduate or professional standing
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2017

SOIL SCI 990 — RESEARCH
1-12 credits.
Requisites: Consent of instructor
Course Designation: Grad 50% - Counts toward 50% graduate coursework requirement
Repeatable for Credit: Yes, unlimited number of completions
Last Taught: Fall 2017