

Soil Science (SOIL)

SOIL 210. Introduction to Soil Science. 3 Credits.

Physical, chemical and biological properties of soils, as related to use, conservation and plant growth. 2 lectures, 1 laboratory. F,S.

SOIL 217. Introduction to Meteorology & Climatology. 3 Credits.

Basic meteorology-climatology concepts and their application; includes energy balance, greenhouse effect, temperature, pressure systems, lows, highs, fronts, winds, clouds, storms, humidity, precipitation, and measurements. Lectures, discussions, demonstrations. S.

SOIL 264. Natural Resource Management Systems. 3 Credits.

General principles of natural resource management, including soil and water conservation, soil and wind erosion, use of tillage and vegetation for conservation, drainage, irrigation, and soil and water quality. 3 lectures. Prereq: MATH 103, MATH 104 or MATH 107. Cross-listed with ASM 264 and NRM 264.

SOIL 322. Soil Fertility and Fertilizers. 3 Credits.

Principles of plant nutrition and soil nutrient availability; soil testing and fertilizer recommendations and management. Macronutrient emphasis. 2 lectures, 1 two-hour laboratory. Prereq: SOIL 210, CHEM 121, CHEM 121L. S.

SOIL 351. Soil Ecology. 3 Credits.

Principles of soil-plant-animal interactions and their influences on environmental and agricultural issues of global significance (e.g. sustainable agriculture, global climate change, diversity conservation. Prereq: SOIL 210.

SOIL 410. Soils and Land Use. 3 Credits.

Principles of chemistry, physics and biology will be used to determine the effects of soil management, agrichemical usage, livestock production, and vegetation on the environment using scales ranging from microsite to watershed. Prereq: SOIL 210, CHEM 121, CHEM 121L. {Also offered for graduate credit - see SOIL 610.}.

SOIL 433. Soil Physics. 3 Credits.

Soil as a three-phase system. Application to soil of physical principles and measurements of soil properties, including density, texture, structure, water content, heat capacity, and transport coefficients. Relationship of properties to agricultural and industrial contamination. 2 lectures, 1 laboratory. Prereq: SOIL 210, PHYS 211, MATH 146. F {Also offered for graduate credit - see SOIL 633.}.

SOIL 444. Soil Genesis and Survey. 3 Credits.

Introduction to soil genesis, morphology, geography and soil survey, 2 lectures, 1 four-hour laboratory (first 10 weeks only) focuses on soil description and properties in situ. Prereq: SOIL 210. F {Also offered for graduate credit - see SOIL 644.}.

SOIL 447. Microclimatology. 3 Credits.

Characteristics and causes of the climate near the ground and its interaction with living organisms. Energy and mass transfer concepts. Lectures, discussions, demonstrations, field trips. Prereq: PHYS 211. F (odd years) {Also offered for graduate credit - see SOIL 647.}.

SOIL 454. Wetland Resources Management. 3 Credits.

Principles of wetland systems, wetland management, wetland functions, wetland delineation, wetland assessment, and wetland improvement. Prereq: SOIL 210. Cross-listed with NRM 454 and RNG 454. F (even years) {Also offered for graduate credit - see SOIL 654.}.

SOIL 462. Natural Resource and Rangeland Planning. 3 Credits.

Capstone experience for School of Natural Resources Sciences majors: students use advanced planning tools and different management strategies to demonstrate integrated knowledge in managing public and private natural resources. Prereq: at least senior standing and must be a Natural Resources Management, Range Science or Soil Science major. Cross-listed with NRM and RNG. {Also offered for graduate credit - see SOIL 662.}.

SOIL 465. Soil And Plant Analysis. 3 Credits.

Laboratory analysis of soil, plant, and environmental materials for constituent elements. 2 lectures, 1 laboratory. Prereq: SOIL 210, CHEM 121, CHEM 122. S (odd years) {Also offered for graduate credit - see SOIL 665.}.

SOIL 610. Soils and Land Use. 3 Credits.

Principles of chemistry, physics and biology will be used to determine the effects of soil management, agrichemical usage, livestock production, and vegetation on the environment using scales ranging from microsite to watershed. {Also offered for undergraduate credit - see SOIL 410.}.

SOIL 633. Soil Physics. 3 Credits.

Soil as a three-phase system. Application to soil of physical principles and measurements of soil properties, including density, texture, structure, water content, heat capacity, and transport coefficients. Relationship of properties to agricultural and industrial contamination. 2 lectures, 1 laboratory. F {Also offered for undergraduate credit - see SOIL 433.}.

SOIL 644. Soil Genesis and Survey. 3 Credits.

Introduction to soil genesis, morphology, geography and soil survey, 2 lectures, 1 four-hour laboratory (first 10 weeks only) focuses on soil description and properties in situ. F {Also offered for undergraduate credit - see SOIL 444.}.

SOIL 647. Microclimatology. 3 Credits.

Characteristics and causes of the climate near the ground and its interaction with living organisms. Energy and mass transfer concepts. Lectures, discussions, demonstrations, field trips. F (odd years) {Also offered for undergraduate credit - see SOIL 447.}.

SOIL 654. Wetland Resources Management. 3 Credits.

Principles of wetland systems, wetland management, wetland functions, wetland delineation, wetland assessment, and wetland improvement. Cross-listed with NRM 654 and RNG 654. F (even years) {Also offered for undergraduate credit - see SOIL 454.}.

SOIL 662. Natural Resource and Rangeland Planning. 3 Credits.

Capstone experience for School of Natural Resources Sciences majors: students use advanced planning tools and different management strategies to demonstrate integrated knowledge in managing public and private natural resources. Cross-listed with NRM and RNG. {Also offered for undergraduate credit - see SOIL 462.}.

SOIL 665. Soil And Plant Analysis. 3 Credits.

Laboratory analysis of soil, plant, and environmental materials for constituent elements. 2 lectures, 1 laboratory. S (odd years.) {Also offered for undergraduate credit - see SOIL 465.}.

SOIL 721. Environmental Field Instrumentation and Sampling. 2 Credits.

To provide an overview of the tools (manual and electronic) concepts, and theories used to sample for physical, chemical, and biological parameters. F (odd years) (Two one-hour lectures and one four-hour laboratory per week.).

SOIL 733. Advanced Soil Nutrient Cycling. 3 Credits.

Overview of origins, nature, fate, and measurements of organic matter in soils, with specific focus on microbially-mediated, physical, and chemical processing of carbon, nitrogen, phosphorus, and other plant nutrients. Three lectures per week. Offered spring semester, even years.

SOIL 755. Soil Chemistry. 3 Credits.

Chemical reactions and equilibria, solubility relationships, mineral weathering, cation and anion adsorption, redox reactions, metal chelation, and fixation of nutrients in the soil. 3 lectures. F.

SOIL 763. Advanced Soil Physics. 3 Credits.

Composition of soil in terms of solid, liquid, and gaseous phases. Theory of water, heat, and solute transport processes. Water availability for plant growth. 2 lectures, 1 laboratory. Prereq: SOIL 633. (even years).

SOIL 782. Advanced Soil Fertility. 2 Credits.

Advanced study of soil-plant-nutrient relationships with emphasis on concepts of soil fertility, ion absorption, nutrient transformation, and interpretation of experimental data. 2 lectures. F (even years).