

SOIL SCIENCE (SS)

undefined

SS Courses

SS 120. Introductory Soil Science. 4 units

Term Typically Offered: F, W, SP

2020-21 or later catalog: GE Area B1

2020-21 or later catalog: GE Area B3

2019-20 or earlier catalog: GE Area B3

2019-20 or earlier catalog: GE Area B4

Sustainability Focused

Biological, chemical, physical and genetic properties of soils. Application of scientific principles to solving land use, water management, and soil conservation problems. Interpretation of soils data for making environmental decisions, applying management practices, and sustainable food production. 3 lectures, 1 laboratory. Fulfills GE Areas B1 and B3 (GE Areas B3 and B4 for students on the 2019-20 or earlier catalogs).

SS 130. Soils in Environmental and Agricultural Systems. 4 units

Term Typically Offered: TBD

2020-21 or later catalog: GE Area B1

2020-21 or later catalog: GE Area B3

2019-20 or earlier catalog: GE Area B3

2019-20 or earlier catalog: GE Area B4

Sustainability Focused

Soils' ecological functions; soil and the water cycle; soil in production of food, fiber, and forest materials; techniques and reports of soil analyses with agricultural and environmental applications; soil quality; introductory overview of soils and civilizations. Not open to students with credit in SS 120. 3 lectures, 1 laboratory. Fulfills GE Areas B1 and B3 (GE Areas B3 and B4 for students on the 2019-20 or earlier catalogs).

SS 221. Soil Health and Plant Nutrition. 4 units

Term Typically Offered: F, W, SP

Prerequisite: SS 120 or SS 121.

Plant nutrient requirements in the context of soil health. Composition, value, and use of fertilizer materials, conditioners and agricultural minerals for sustainable crop production and environmental quality. 3 lectures, 1 laboratory.

SS 270. Selected Topics. 1-4 units

Term Typically Offered: TBD

Prerequisite: Consent of instructor.

Directed group study of selected topics. The Class Schedule will list topic selected. Total credit limited to 12 units. 1 to 4 lectures. Crosslisted as ERSC/SS 270.

SS 321. Soil Morphology. 4 units

Term Typically Offered: F, W, SP

Prerequisite: SS 120 or SS 121.

Identification of soil morphological and site properties. Correlation of soil physical and chemical properties with soil taxonomy and land use. Techniques of interpretations for agriculture, forest lands, wetlands, range lands and urban development. 3 lectures, 1 laboratory.

SS 322. Soil Plant Relationships. 4 units

Term Typically Offered: TBD

Prerequisite: one of the following: BOT 121, PLSC 120, or SS 120; and CHEM 124 or CHEM 127.

Investigation and evaluation of soil functions. Nutrient supplying ability, conditions and processes involved in the delivery of soil functions. Effects of cultural treatments on soil fertility. Diagnostic techniques and data interpretation in soil health. 3 lectures, 1 laboratory.

SS 339. Internship in Environmental Earth and Soil Sciences. 1-12 units

Term Typically Offered: F,W,SP,SU

CR/NC

Prerequisite: Consent of internship instructor.

Selected students will spend up to 12 weeks with an approved firm or agency engaged in work and study related to their major. A detailed written proposal and written interim and final reports required. One unit of credit may be allowed for each full week of internship. Credit/No Credit grading. Crosslisted as ERSC/SS 339.

SS 400. Special Problems for Advanced Undergraduates. 1-4 units

Term Typically Offered: F, W, SP

Prerequisite: Consent of instructor.

Individual investigation, research, studies or surveys of selected problems. Total credit limited to 12 units. Crosslisted as ERSC/SS 400.

SS 402. Soil, Compost, and Water Testing Enterprise. 3 units

Term Typically Offered: TBD

Prerequisite: CHEM 111, CHEM 125 or CHEM 128; SS 221; and junior standing.

Experience in soil, compost, and water testing. Sampling rationale and protocol. Analyses of compost feedstocks and finished compost; monitoring for consistency. Theory and practice in use of analytical instrumentation. Interpretation of results for soil, compost, and water management. Total credit limited to 6 units for SS or ERSC majors. Total credit limited to 3 units for Soil Science minor.

SS 421. Wetlands. 4 units

Term Typically Offered: TBD

Prerequisite: BOT 121 or BIO 162; CHEM 127; and SS 120 or SS 130.

Recommended: one of the following: BIO 327, BOT 313, BOT 326, MSCI 300, NR 304, NR 305, or NR 306.

The formation, characteristics, and functions of wetlands. Genesis of hydric soils. Plant adaptations to saturated soils. Wetlands as wildlife habitat. Policies and social issues associated with wetlands. The procedures of wetland delineations. 3 lectures, 1 laboratory. Crosslisted as BIO/NR/SS 421.

SS 422. Soil Ecology. 4 units

Term Typically Offered: SP

Prerequisite: CHEM 212, CHEM 312, CHEM 313, or CHEM 314; and SS 221; or graduate standing.

Biochemical activities, ecology and environmental implications of soil organisms. Effects on the formation, characteristics, and productivity of soils. Methods of studying soil organisms. 3 lectures, 1 laboratory.

SS 423. Environmental Soil and Water Chemistry. 5 units

Term Typically Offered: F

Prerequisite: CHEM 129; CHEM 212, CHEM 216, CHEM 312, or CHEM 316; ERSC 223; MATH 118, MATH 141, or MATH 161; or graduate standing.

Chemical processes governing weathering, soil mineral formation and stability, common solubility equilibria. Use of chemical principles to explain surface chemical properties of soils and environmental problems in water and soil chemical systems. Preparation of professional quality reports based on laboratory data and library research. 3 lectures, 1 laboratory, 1 activity.

SS 424. Environmental Soil Physics - Senior Project. 5 units

Term Typically Offered: W

Prerequisite: CHEM 125 or CHEM 128; MATH 141 or MATH 161; PHYS 121 or PHYS 141; SS 120; NR 363; or graduate standing.

Matter and energy in soils, with emphasis on properties and behavior of solids, water, air, and heat. Applications to agriculture, forestry, range management, engineering, and environmental sciences. Preparation of professional reports based on laboratory data and library research. Satisfies senior project requirement. 3 lectures, 1 laboratory, 1 activity. Formerly SS 432.

SS 431. Digital Soil Mapping. 4 units

Term Typically Offered: SP

Prerequisite: GEOG 318 or LA/NR 218; STAT 217 or STAT 218; or graduate standing. Recommended SS 321.

Development and production of digital soil surveys for interpretive purposes. Use of soil taxonomy, land classification systems, geographic information system (GIS) software, and geostatistics to evaluate land for best management practices. 2 lectures, 2 laboratories.

SS 440. Forest and Range Soils. 4 units

Term Typically Offered: SP

Prerequisite: SS 120 or SS 121; and SS 321.

Ecosystem approach to chemical, biological, physical and mechanical properties of forest and range soils. Site quality, nutrient cycling, erosion and mass movement, fire effects. Preparation of soil management reports similar to those required by various land management organizations. Overnight field trips. 3 lectures, 1 laboratory.

SS 444. Soil Judging. 2 units

Term Typically Offered: F, SP

Prerequisite: SS 321.

Morphological description of soils in the field. Taxonomic determination of classifications and interpretive properties from soil descriptions. Participation in collegiate soil judging contests. Total credit limited to 12 units. 1 lecture, 1 laboratory.

SS 463. Undergraduate Seminar. 2 units

Term Typically Offered: TBD

Prerequisite: SS 461.

Review of current research, experiments, and problems related to the student's major field of interest. Preparation and presentation of reports on problems or research activities. 2 seminars.

SS 470. Selected Advanced Topics. 1-4 units

Term Typically Offered: TBD

Prerequisite: Consent of instructor.

Directed group study of selected topics for advanced students. Open to undergraduate and graduate students. The Class Schedule list topic selected. Total credit limited to 12 units. 1 to 4 lectures. Crosslisted as ERSC/SS 470.

SS 471. Selected Advanced Laboratory. 1-4 units

Term Typically Offered: TBD

Prerequisite: Consent of instructor.

Directed group laboratory study of selected topics for advanced students. Open to undergraduate and graduate students. The Class Schedule will list topic selected. Total credit limited to 8 units. 1 to 4 laboratories. Crosslisted as ERSC/SS 471.

SS 500. Individual Study in Soil Science. 1-6 units

Term Typically Offered: F,W,SP,SU

Prerequisite: Consent of instructor.

Advanced independent study planned and completed under the direction of a member of the Earth and Soil Sciences faculty. Total credit limited to 6 units.

SS 522. Advanced Soil Fertility. 3 units

Term Typically Offered: W

Prerequisite: SS 221, graduate standing, or consent of instructor.

Current research frontiers in soil fertility. Evaluating soil testing philosophy, theories and interpretation. Optimizing soil conditions for maximizing crop production. Consequences of environmental pollution, trace elements and organic amendments. Use of biofertilizers, soil amendments, and enhanced efficiency fertilizers. Isotopes in soil fertility. 3 lectures.

SS 570. Selected Topics in Soil Science. 1-4 units

Term Typically Offered: TBD

Prerequisite: Graduate standing or consent of instructor.

Directed group study of selected topics for advanced students. Open to undergraduate and graduate students. The Class Schedule will list topic selected. Total credit limited to 12 units. 1 to 4 seminars.

SS 571. Selected Advanced Laboratory. 1-4 units

Term Typically Offered: TBD

Prerequisite: Graduate standing or consent of instructor.

Directed group laboratory study of selected topics for advanced students. Open to undergraduate and graduate students. The Class Schedule will list topic selected. Total credit limited to 8 units. 1 to 4 laboratories.

SS 582. GIS in Advanced Land Management. 3 units

Term Typically Offered: TBD

Prerequisite: Graduate standing, NR/LA 318, or consent of instructor.

Development of plans and practices for the management of crop, range, urban and wood land. 2 seminars, 1 laboratory.

SS 599. Thesis. 1-6 units

Term Typically Offered: F,W,SP,SU

Prerequisite: Graduate standing and consent of instructor.

Individual research in soil science under faculty supervision, leading to a scholarly written presentation exhibiting originality, clarity, critical and independent thinking, proper analysis of data, appropriate organization and format, and accurate and thorough documentation. Six units required for the M.S. degree.