

SOILS & BIOGEOCHEMISTRY (GRADUATE GROUP)

College of Agricultural & Environmental Sciences

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Group Office

1152 Plant & Environmental Sciences Building; 530-752-1669; Soils & Biogeochemistry Graduate Group (<http://soils.ucdavis.edu/>); Faculty (<http://soils.ucdavis.edu/people/faculty/>)

- Soils & Biogeochemistry, Master of Science (<https://catalog.ucdavis.edu/departments-programs-degrees/soils-biogeochemistry-graduate-group/soils-biogeochemistry-ms/>)
- Soils & Biogeochemistry, Doctor of Philosophy (<https://catalog.ucdavis.edu/departments-programs-degrees/soils-biogeochemistry-graduate-group/soils-biogeochemistry-phd/>)

Soil Science (SSC)

SSC 202 – Topics in Advanced Soil Chemistry (4 units)

Course Description: Reviews of current research in soil chemistry. Topics include double layer theory; clay mineral and oxide surface chemistry; adsorption on soil surfaces; speciation and modeling of solution ions; solubility and mineral stability diagrams.

Prerequisite(s): Consent of instructor; general chemistry; SSC 100 or equivalent recommended.

Learning Activities: Lecture 3 hour(s), Discussion 1 hour(s).

Enrollment Restriction(s): Restricted to 18 students.

Repeat Credit: May be repeated 1 time(s) when topic differs.

Grade Mode: Letter.

SSC 205 – Field Studies of Soils in California Ecosystems (5 units)

Course Description: Field-based soil studies in California ecosystems.

Description and classification of soils; relationships among soils, vegetation, geology, and climate; physical, chemical, and biological processes; their role in land use. Similar to SSC 105; requires additional work for graduate credit.

Prerequisite(s): SSC 100 and SSC 120 or equivalent recommended.

Learning Activities: Fieldwork 50 hour(s), Discussion 15 hour(s), Lecture 5 hour(s).

Enrollment Restriction(s): Limited to 24 students.

Repeat Credit: May be repeated 1 time(s) when geographic locale differs.

Grade Mode: Letter.

SSC 208 – Soil-Plant Interrelationships (3 units)

Course Description: Plant needs, occurrence and reactions of water and mineral nutrients in soils; root systems and their growth in soils; mass flow and diffusion mechanisms in nutrient acquisition; models relating nutrient uptake to soil and plant characteristics; nutrient assimilation and crop quality.

Prerequisite(s): SSC 100; PLB 111; or consent of instructor.

Learning Activities: Lecture 3 hour(s).

Grade Mode: Letter.

SSC 211 – Advanced Soil Microbiology (3 units)

Course Description: Microbial metabolism of organic chemicals in soil, both natural and xenobiotic. Decomposition of organic matter. Kinetics of microbial processes in soil.

Prerequisite(s): CHE 008A; CHE 008B; SSC 111; BIS 102, BIS 103 or an equivalent course recommended.

Learning Activities: Lecture 3 hour(s).

Grade Mode: Letter.

SSC 219 – Ecosystem Biogeochemistry (4 units)

Course Description: Multidisciplinary analysis of energy and nutrient transfers within terrestrial ecosystems. Examination of processes and inter- and intra-system interactions between the atmosphere, biosphere, lithosphere and hydrosphere. Laboratory section uses biogeochemical simulation models to examine case studies.

Prerequisite(s): Introductory courses in ecology/biology and soils recommended; undergraduates accepted with consent of instructor.

Learning Activities: Lecture 3 hour(s), Discussion/Laboratory 2 hour(s).

Cross Listing: ECL 219.

Grade Mode: Letter.

SSC 220 – Pedology (3 units)

Course Description: Topics selected from studies of soil-forming processes, soil-geomorphic relations, mineral weathering, new developments in soil classification, and development of pedologic theory. Topics vary from year to year.

Prerequisite(s): Consent of instructor; SSC 120 recommended.

Learning Activities: Lecture 3 hour(s).

Repeat Credit: May be repeated 1 time(s).

Grade Mode: Letter.

SSC 222 – Global Carbon Cycle (3 units)

Course Description: Global carbon cycle from Phanerozoic epoch to modern times. Examination of long and short-term carbon cycles. Transfer of carbon among ocean, land and life with emphasis on humic substance formation, methods of characterization, reactions with organics and soil carbon stabilization.

Prerequisite(s): CHE 008A; CHE 008B; MAT 016A; MAT 016B; SSC 100; or the equivalent of SSC 100.

Learning Activities: Lecture 3 hour(s).

Grade Mode: Letter.

SSC 290 – Special Topics in Soil Science (1-4 units)

Course Description: Seminars and critical review of problems, issues, and research in soil science.

Prerequisite(s): Graduate standing.

Learning Activities: Seminar 1-4 hour(s), Variable.

Repeat Credit: May be repeated.

Grade Mode: Satisfactory/Unsatisfactory only.

SSC 298 – Group Study (1-5 units)

Course Description: Group study.

Prerequisite(s): Consent of instructor.

Learning Activities: Variable 1-5 hour(s).

Repeat Credit: May be repeated when topic differs.

Grade Mode: Satisfactory/Unsatisfactory only.

SSC 299 – Research (1-12 units)

Course Description: Research.

Prerequisite(s): Consent of instructor.

Learning Activities: Variable.

Grade Mode: Satisfactory/Unsatisfactory only.