SSC 202 — Topics in Advanced Soil Chemistry (4 units)
Course Description: Reviews of current research in the field of 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): Limited to 24 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 1 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.