280. Organizations and Institutions (4) Seminar—4 hours. Theory of formal organizations and bureaucracy. Methods of research in organization and institutional studies. Historical and comparative analysis of political, religious, educational, military, and economic structure. Offered irregularly.

288. Integrative Research Practicum (4) Seminar—6 hours, electric attendance, term paper. Prerequisite: courses 207A, 242A, 292A, consent of instructor. Continuing training in field, quantitative, and/or comparative-historical methods. Emphasis on students' research projects and applications of principles related to research design, concept range, theory construction causality and interpretation, and data and measurement. Completion of research paper is required. — S. S. Grinolstad, Hall, Lo, Shumann, Sh, Woll.

290. Seminar (4) Seminar—3 hours, term paper. (S/U grading only.) Offered irregularly.

292A. Field Research (4) Seminar—3 hours, fieldwork. Prerequisite: graduate standing in Sociology or consent of instructor. Introduction to the logic, methods, and practices of field research, with particular emphasis on the ethnographic tradition of participant observation. Interviewing, and other qualitative techniques will also be covered. Students will develop original research projects based on their own fieldwork.

293. Proseminar in Sociology (2) Seminar—2 hours. Prerequisite: first-year Sociology graduate student, introduction to graduate training in sociology. A seminar designed to introduce students entering graduate work in the department to ongoing research activities. (S/U grading only.) Offered irregularly.

295. Special Topics Seminar. (4) Lecture/discussion—3 hours, term paper. Prerequisite: graduate standing or consent of instructor. Research topics in Sociology. Specific topic will vary according to faculty interest and student demand. May be repeated for credit when topic differs. Offered irregularly.

298. Group Study (1-5) Prerequisite: consent of instructor. (S/U grading only.) Offered irregularly.

299. Individual Study (1-12) (S/U grading only.) Offered irregularly.

Professional

390A. The Teaching of Sociology (2) Lecture—1 hour; discussion—1 hour. Prerequisite: graduate standing, required for first-time teaching assistants. Practical instruction in teaching methods for qualitative and quantitative courses. Pedagogical issues involved in critical sociological analysis. (S/U grading only.) Offered irregularly.

390B. The Teaching of Sociology (2) Lecture—1 hour; discussion—1 hour. Prerequisite: graduate standing. Practical instruction in designing course syllabi, lectures and assignments for Associate-instructors and others interested in college teaching. Discussion of pedagogical methods of teaching qualitative and quantitative courses. (S/U grading only.) Offered irregularly.

396. Teaching Assistant Training Practicum (1-4) Prerequisite: graduate standing. May be repeated for credit. (S/U grading only.) Offered irregularly.

Professional

466. Research Paper Workshop (2) Workshop—1.5 hours; discussion—0.5 hours. Prerequisite: Master of Arts standing. A workshop to assist advanced graduate students in the preparation of an original research paper. Students present their research papers and discuss issues in theory, research design, data, empirical inference, and verbal and written presentation of a professional research paper. (S/U grading only.) Offered irregularly.

Soil and Water Science

[College of Agricultural and Environmental Sciences] This major has been discontinued as of Fall 2008; see Environmental Science and Management, on page 325.

Soil Science

See Earth and Planetary Sciences, on page 237; Soil Science, on page 551; and Soils and Biogeochemistry (A Graduate Group), on page 552.
92. Soil Science Internship—1-12
Internship—3-36 hours. Prerequisite: lower division standing and consent of instructor. Work experience off and on campus in soil science. Internship supervised by a member of the faculty. (P/NP grading only.)—F, W, S. (F, W, S.)

Upper Division

100. Principles of Soil Science (5)
Lecture—3 hours; laboratory—3 hours; term paper. Prerequisite: Chemistry 2A-2B, Physics 1A-1B, Biological Sciences 1C, Geology 50, Biological Sciences 1C recommended. Soil as part of natural and managed ecosystems and landscapes. Solid, liquid, and gas phases and their interactions in the soil. Water, gas and heat movement in soil. Soil biology. Plant nutrient acquisition and use. Soil development, management and use. GE credit: SciEng | QL, SE, SL, VL—F (F) Scow, Southard

102. Environmental Soil Chemistry (3)
Lecture—3 hours. Prerequisite: course 100 or the equivalent; general chemistry. Soil chemistry processes related to the fate and transport of contaminants in soil. Soil minerals, naturalorganic matter, surfacecharge, soil solution chemistry, redox reactions, and formation of inorganic and organic contaminants. GE credit: SciEng | QL, SE, SL.—W. (W.) Scow

105. Field Studies of Soils in California Ecosystems (5)
Prerequisite: courses 100 and 120, or equivalent recommended. Class size limited to a minimum of 10 and a maximum of 24 students. Field-based studies of soils in California ecosystems, away from campus, throughout California. Emphasis on description and classification of soils; relationships among soils, vegetation, geology, and climate, physical, chemical, and biological processes in soils on the landscape; and the role of soils in land use. May be repeated one time for credit. GE credit: SciEng | QL, SE, SL, VL, WE—So. (Su.) Amundson, Dahlgren, O’Geen, Southard

107. Soil Physics (5)
Lecture—3 hours; laboratory—3 hours; discussion—1 hour. Prerequisite: course 100, Environmental and Resource Sciences 100, Mathematics 16A, or the equivalent. Physical properties of soil. Principles of water, gas, heat, and solute movement in soil with selected examples related to soil and water management. Influence of soil properties on transfer processes. GE credit: SciEng | QL, QL, SE, SL, VL—W. (W.) Hoppin

109. Sustainable Nutrient Management (4)
Lecture—3 hours; laboratory—3 hours. Prerequisite: course 100 or the equivalent. Availability of nutrients in organic and conventional agricultural, vineyard, orchard and other forest soils; management of fertilizers, cover crops, compost, sewage sludge and manures for crop production and to prevent loss to the environment is emphasized. GE credit: SciEng | QL, QL, SE, SL, VL—W. (W.) Scow

111. Soil Microbiology (4)
Lecture—3 hours; laboratory—3 hours. Prerequisite: Chemistry 1C and Biological Sciences 1C. Major groups of microorganisms in soil, their interrelationships, and their responses to environmental variables. Role of microorganisms in cycling of nutrients. Plant-microbe relationships. Transformations of organic and inorganic pollutants. GE credit: SciEng | QL, QL, SE, SL, VL—W. (W.) Scow

118. Soils in Land Use and the Environment (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: course 100 or consent of instructor. Soils are considered as elements in land use planning and environmental quality. Topics include: soil survey reports, remote sensing, land capability classification, soil erosion/conservation, waste disposal on soils and soil reclamation. One one-day field trip. GE credit: SciEng | QL, SE, SL, VL—S. (S.) O’Geen

120. Soil Genesis, Morphology, and Classification (5)
Lecture—4 hours; laboratory—3 hours (includes five one-day field trips). Prerequisite: course 100; Geology 50 recommended. Recognition and description of soils; chemical, biological and physical processes of soil formation. Factors of soil formation. Interactions of soils with diverse ecosystems. Introduction to soil classification. Practice using soil taxonomy. Practical experience describing soil properties in the field. GE credit: SciEng | QL, SE, SL, VL—S. (S.) Southard

192. Soil Science Internship—1-12
Internship—3-36 hours. Prerequisite: completion of 84 units and consent of instructor. Work experience off and on campus in soil science. Internship supervised by a member of the faculty. (P/NP grading only.)—F, W, S. (F, W, S.)

195. Directed Group Study—1-5
(P/NP grading only.)—F, W, S. (F, W, S.)

199. Special Study for Advanced Undergraduates—1-5
(P/NP grading only.)—F, W, S. (F, W, S.)

Graduate

202. Topics in Advanced Soil Chemistry (4)
Lecture—3 hours; discussion—1 hour. Prerequisite: undergraduate course in soil chemistry, water chemistry or consent of the instructor. Restricted to 18 students. 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. May be repeated one time for credit if topic differs. GE credit: SciEng | QL, QL, SE, SL, VL—W. (W.) Parikh

205. Field Studies of Soils in California Ecosystems (5)
Fieldwork—50 hours; discussion—15 hours; lecture—5 hours. Prerequisite: courses 100 and 120 or equivalent recommended. Class size limited to 24 students. 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 course 105; requires additional work for graduate credit. May be repeated one time for credit if geographic locale changes. Offered irregularly.—So. (Su.) Amundson, Dahlgren, O’Geen, Southard

208. Soil-Plant Interrelationships (3)
Lecture—3 hours. Prerequisite: course 100, Plant Biology 111B or consent of instructor. Plant needs, occurrence and functions 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. Offered in alternate years.—W. (W.)

211. Advanced Soil Microbiology (3)
Lecture—3 hours. Prerequisite: course 100, Plant Biology 111B or consent of instructor. Plant needs, occurrence and functions 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. Offered in alternate years.—F, W, S. (F, W, S.)

219. Ecosystem Biogeochemistry (4)
Lecture—3 hours; laboratory/discussion—2 hours. Prerequisite: introductory courses in ecology/biology and soils recommended; undergraduates accepted with consent of instructor. 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. (Same course as Ecology 219) S. (S.) Houlton

220. Pedology (3)
Lecture—3 hours. Prerequisite: consent of instructor; course 120 recommended. Topics selected from studies of soil-forming processes, soil-geomorphologic relationships, mineral weathering, new developments in soil classification, and development of pedologic theory. Topics vary from year to year. May be repeated one time for credit. Offered in alternate years.—W. (W.) Southard

222. Global Carbon Cycle (3)
Lecture—3 hours. Prerequisite: Chemistry 8A, 8B, Mathematics 16A, 16B, course 100 or the equivalent. Global carbon cycles 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. Offered in alternate years.—W. (W.) Horwath

290. Special Topics in Soil Science—1-4
Seminar—1-4 hours. Prerequisite: graduate standing. Seminars and critical review of problems, issues, and research in soil science. May be repeated for credit. (S/U grading only.)—F, W, S. (F, W, S.)

298. Group Study—1-5
Prerequisite: consent of instructor. May be repeated for credit when topic differs. (S/U grading only.)—F, W, S. (F, W, S.)

299. Research (1-12)
(S/U grading only.)—F, W, S. (F, W, S.)

Professional

396. Teaching Assistant Training Practicum—1-4
Prerequisite: graduate standing. May be repeated for credit. (S/U grading only.)—F, W, S. (F, W, S.)

Soils and Biogeochemistry (A Graduate Group)

A. Toby O’Geen, Ph.D., Chairperson of the Group

Faculty

Patrick Brown, Ph.D., Professor (Plant Sciences)
William Casey, Ph.D., Professor (Chemistry)
Randy Dahlgren, Ph.D., Professor
Academic Senate Distinguished Teaching Award
Helen Dahlke, Ph.D., Assistant Professor
Valerie Eviner, Ph.D., Assistant Professor
Regis Amundson, Ph.D., Professor (Plant Sciences)
Deborah Fogg, Ph.D., Professor
Mark Grismer, Ph.D., Professor
Rebecca Renee Hernandez, Ph.D., Assistant Professor
Peter Hermes, Ph.D., Professor
Jan Hopmans, Ph.D., Professor
William Horwath, Ph.D., Professor
B. Houlton, Ph.D., Associate Professor
Louise Jackson, Ph.D., Professor
Sanjeev Parikh, Ph.D., Associate Professor
Elishe Rejmankova, Ph.D., Professor
(Environmenal Science and Policy)
Kathryn Rodriguez, Ph.D., Professor
Nick Scow, Ph.D., Professor
David Smart, Ph.D., Professor
(Entomology and Ecology)
Randal Southard, Ph.D., Professor
Kerri Steenwerth, Ph.D., Adjunct Assistant Professor
(Writing Experience)
SUSAN USTIN, Ph.D., Professor
Chris van Kessel, Ph.D., Professor (Plant Sciences)

Emeriti Faculty

Caroline Bledsoe, Ph.D., Professor Emeritus
André Lautz, Ph.D., Professor Emeritus
Roland Meyer, Ph.D., Cooperative Extension Specialist Emeritus
G. Stuart Pettigrew, Ph.D., Soils Specialist Emeritus
Wendy Silk, Ph.D., Professor Emeritus
Michael Singer, Ph.D., Professor Emeritus

http://lawr.ucdavis.edu/graduate_sbg.htm

Soils and Biogeochemistry (A Graduate Group)