A doctoral minor in soil science shall consist of a minimum of 10 credits in the Department of Soil Science. At least 5 of the 10 credits must be from courses numbered 500 or higher. One credit of SOIL SCI 728 Graduate Seminar may be applied toward the 10-credit minimum.

### FACULTY

**Assistant Professor Francisco Arriaga**

Applied Soil Physics, Soil and Water Management and Conservation: Conservation agriculture systems; development of conservation tillage practices that enhance soil quality, soil hydraulic properties, and plant water use through the adoption of cover crops and non-inversion tillage for traditional cropping systems.

**Associate Professor Nicholas Balster**

Soil Ecology, Plant Physiological Ecology, and Education: Energy and material cycling in natural and anthropogenic soils including forests, grasslands, and urban ecosystems; stable isotope ecology; environmental education; nutrition management of nursery soils; tree physiology, production and response; ecosystem response to global change; urban ecosystem processes; invasive plant ecology; biodiversity.

**Professor Phillip Barak**

Soil Chemistry and Plant Nutrition: Nutrient cycling; nutrient recovery from wastewater; molecular visualization of soil minerals and molecules; soil acidification.

**Professor William Bleam**

Surface and Colloid Chemistry: Physical chemistry of soil colloids and sorption processes, chemistry of humic substances, factors controlling biological availability of contaminants to microorganisms, magnetic resonance and synchrotron studies of adsorption and precipitation.

**Professor Alfred Hartemink**

Pedology, Digital Soil Mapping: Application of fundamental soil science to real-world problems; digital soil mapping; history and philosophy of soil science; pedology, soil survey, and soil information systems.

**Professor William Hickey**

Soil Microbiology and Biochemistry: Soil microbiology, biodegradation, environmental toxicants, molecular physiology, functional genomics, microbial nanostructure, biotechnology.

**Professor Carrie Laboski**

Soil Fertility and Nutrient Management: Sustaining agricultural production and environmental quality; elucidate the biogeochemistry and subsequent best management practices for N, P, and K fertilizers and animal manures; soil fertility related to lime, secondary, and micronutrients; evaluation of soil and plant diagnostic tests; development of tools to assist producers, ag. professionals, and regulatory agencies to sustain economically sound production of grain and forage crops.

**Professor Sharon Long**

Applied Environmental and Public Health Microbiology: Microbial source tracking indicators in watershed management; improving detection and quantification, environmental ecology of indicator organisms and infectious diseases, microbial community structure and function in contaminated systems, microbial safety of wastewater sludge and biosolids, biotreatability assessment.

**Professor Joel Pedersen**

Environmental Chemistry/Biochemistry: Behavior of organic contaminants, macromolecules, and engineered nanoparticles in natural and engineered environments.

**Associate Professor Matthew Ruark**

Soil Fertility and Nutrient Management: Soil fertility and management of grain biofuel, and vegetable crops; cover crop management; agricultural production and water quality; sustainability of dairy cropping systems; soil organic matter management.

**Professor Douglas Soldat**

Turfgrass and Urban Soils—Turfgrass, urban soils, nutrient management, water resources, soil testing, landscape irrigation; soil contamination.

**Professor Stephen Ventura**

Geographic Information Systems (Joint w/Nelson Institute for Environmental Studies): Geographic information systems (GIS), biofuels and production on marginal lands, public participation GIS, urban agriculture, land-scape process modeling, soil survey and soil information systems, land and resource tenure, GIS and land use planning.

**Assistant Professor Thea Whitman**

Soil Ecology, Microbiology, and Biogeochemistry: Soil microbial ecology, organic matter decomposition and carbon stabilization; global environmental change; stable isotopes; linking functional significance of microbial communities with ecosystem processes; fire effects on soil carbon and microbes; management and policy.