

# Soil Science, MS, PhD

**Department:** Plants, Soils, and Climate Department  
**College:** College of Agriculture and Applied Sciences

## Overview

### About This Degree

USU is the only university in the state that offers degrees in soil science. The graduate programs in soil science are concerned with the chemical, physical, and biological aspects of the soil. This program is particularly strong in water-related issues, especially regional issues involving water and irrigation in the West. In particular, USU boasts unique and renown areas concentrating on digital soil mapping which aids in flood prediction, land restoration, using state-of-the-art environmental sensors to monitor greenhouse gas emissions, and tracking contaminant transport through soils caused by mountain snowmelt.

Students are able to focus their research on solving current issues and problems in areas including soil and water chemistry/biogeochemistry, soil biology and ecology, soils and nutrient bioavailability, environmental soil physics, soil and water management, soil genesis, morphology, and classification, and sustainable agroecosystems. Soil scientists fill the gap between engineers, geologists, and ecologists, and play a major role in ensuring that high-quality soil and water are available to current and future generations.

## Career Options

Graduates in soil science can pursue the following careers:

- Soil scientists with government agencies
- Conservation
- Land management
- Soil testing
- Soil fertility research
- Fertilizer development
- Monitoring and remedying environmental pollution in soil and water
- Environmental consultants
- Fertilizer retail
- Irrigation system design
- Waste management
- Mine land reclamation

## What it takes

### Admissions Requirements

Students without an undergraduate or graduate degree in plants, soils, biometeorology, or a closely related field may be required to complete selected undergraduate courses prior to admission.

### Application Requirements:

- Complete the [online application](#)
- Pay the \$55 application fee
- Score at or above the 40<sup>th</sup> percentile on the GRE
- Have a 3.0 or higher GPA on your last 60 semester or 90 quarter credits
- Provide transcripts of all college/university credits
- Provide three contacts for letters of recommendation

International students have [additional admissions requirements](#).

### Admissions Deadlines

Applications for graduate programs are accepted year-round. However, chances for acceptance are best if students apply between October and January of each academic year. The time it takes to process an application is primarily dependent on the speed with which the School of Graduate Studies receives letters of recommendation, transcripts, and test scores. For most students, this process may take six to eight weeks. Applicants should plan accordingly.

## Master's Degree Plan Options

Students can receive the MS by pursuing one of two options:

- In the **Plan A** option, students complete graduate-level coursework and must write a thesis.
- The **Plan B** option requires the production of a paper or creative work of art and is expected to reflect equivalent scholarship standards as a thesis.

Students are encouraged to pursue the Plan A option.

## Financial Assistance

The department typically funds all of its graduate students with research [assistantships](#).

A variety of additional funding opportunities are available, including [fellowships](#), [scholarships](#), [tuition awards](#), and [travel support](#). Additionally, students may be eligible for subsidized [health insurance](#) through qualifying assistantships.

## Program Requirements

[Click here](#) to see course requirements for the **Master of Science**.

[Click here](#) to see course requirements for the **Doctor of Philosophy**.

### PhD Qualifying Exams:

Each student must undergo some sort of qualifying experience. Depending on the student's particular research and their faculty committee, the exam can either be a traditional oral and written exam, a scholarly proposal, or another option best suited to the student's individual situation.

## Contact

### Advisor(s)

#### Scott Jones

Associate Professor, PSC Graduate Program Coordinator

**Office:** AGSC 158

**Phone:** (435) 797-2175

**Email:** [scott.jones@usu.edu](mailto:scott.jones@usu.edu)

### Faculty

#### Brent Black, PhD, Oregon State University

Associate Professor

**Area:** Pomology

**Office:** AGSC 308

**Phone:** (435) 797-2174

**Email:** [brent.black@usu.edu](mailto:brent.black@usu.edu)

#### Janis Boettinger, PhD, University of California – Davis

Professor

**Area:** Soil genesis, classification and mineralogy

**Office:** AGSC 354

**Phone:** (435) 797-4026  
**Email:** [janis.boettinger@usu.edu](mailto:janis.boettinger@usu.edu)

**Grant Cardon**, PhD, University of California – Riverside  
Associate Professor  
**Area:** Soil management and environmental quality  
**Office:** AGSC 164  
**Phone:** (435) 797-2278  
**Email:** [grant.cardon@usu.edu](mailto:grant.cardon@usu.edu)

**John Carman**, PhD, Texas A&M University  
Professor  
**Area:** Plant reproduction and development  
**Office:** BTEC 211  
**Phone:** (435) 797-2238  
**Email:** [john.carman@usu.edu](mailto:john.carman@usu.edu)

**Earl Creech**, PhD, Purdue University  
Assistant Professor  
**Area:** Agronomy  
**Office:** AGSC 328  
**Phone:** (435) 797-7319  
**Email:** [earl.creech@usu.edu](mailto:earl.creech@usu.edu)

**Daniel Drost**, PhD, Cornell University  
Professor  
**Area:** Vegetable production  
**Office:** AGSC 310  
**Phone:** (435) 797-2258  
**Email:** [dan.drost@usu.edu](mailto:dan.drost@usu.edu)

**Robert Gillies**, PhD, University of Newcastle, England  
Associate Professor  
**Area:** Biometeorology  
**Office:** JQL 231  
**Phone:** (435) 760-8023  
**Email:** [robert.gillies@usu.edu](mailto:robert.gillies@usu.edu)

**Paul Grossl**, PhD, Montana State University  
Associate Professor  
**Area:** Soil chemistry, biogeochemistry  
**Office:** AGSC 348  
**Phone:** (435) 797-0411  
**Email:** [paul.grossl@usu.edu](mailto:paul.grossl@usu.edu)

**Lawrence Hipps**, PhD, University of California – Davis  
Professor  
**Area:** Biometeorology  
**Office:** AGSC 360  
**Phone:** (435) 797-2009  
**Email:** [lawrence.hipps@usu.edu](mailto:lawrence.hipps@usu.edu)

**David Hole**, PhD, Texas A&M University  
Professor  
**Area:** Cereal breeding  
**Office:** AGSC 334  
**Phone:** (435) 797-2235

**Email:** [david.hole@usu.edu](mailto:david.hole@usu.edu)

**Astrid Jacobson**, PhD, Cornell University  
Assistant Professor  
**Area:** Soil chemistry  
**Office:** AGSC 356  
**Phone:** (435) 797-2184  
**Email:** [astrid.jacobson@usu.edu](mailto:astrid.jacobson@usu.edu)

**Jiming Jin**, PhD, University of Arizona, Chinese Academy of Sciences  
Assistant Professor  
**Area:** Global climate modeling and analysis  
**Office:** NR 358  
**Phone:** (435) 797-8175  
**Email:** [jiming.jin@usu.edu](mailto:jiming.jin@usu.edu)

**Paul Johnson**, PhD, University of Minnesota  
Professor, Associate Department Head  
**Area:** Turfgrass science  
**Office:** AGSC 306  
**Phone:** (435) 797-7039  
**Email:** [paul.johnson@usu.edu](mailto:paul.johnson@usu.edu)

**Scott Jones**, PhD, Utah State University  
Associate Professor, PSC Graduate Program Coordinator  
**Area:** Soil physics  
**Office:** AGSC 158  
**Phone:** (435) 797-2175  
**Email:** [scott.jones@usu.edu](mailto:scott.jones@usu.edu)

**Roger Kjølgren**, PhD, University of Washington  
Professor  
**Area:** Ornamental horticulture  
**Office:** AGSC 316  
**Phone:** (435) 797-2972  
**Email:** [roger.kjolgren@usu.edu](mailto:roger.kjolgren@usu.edu)

**Kelly Kopp**, PhD, University of Connecticut  
Associate Professor  
**Area:** Turfgrass science  
**Office:** AGSC 314  
**Phone:** (435) 797-1523  
**Email:** [kelly.kopp@usu.edu](mailto:kelly.kopp@usu.edu)

**Jennifer MacAdam**, PhD, University of Missouri  
Associate Professor  
**Area:** Forage production and physiology  
**Office:** AGSC 330  
**Phone:** (435) 797-2364  
**Email:** [jennifer.macadam@usu.edu](mailto:jennifer.macadam@usu.edu)

**Jeanette Norton**, PhD, University of California – Berkeley  
Professor  
**Area:** Soil microbiology  
**Office:** AGSC 352  
**Phone:** (435) 797-2166  
**Email:** [jeanette.norton@usu.edu](mailto:jeanette.norton@usu.edu)

**Corey Ransom**, PhD, Michigan State University  
Assistant Professor  
**Area:** Weed science  
**Office:** AGSC 336  
**Phone:** (435) 797-2242  
**Email:** [corey.ransom@usu.edu](mailto:corey.ransom@usu.edu)

**V. Philip Rasmussen**, PhD, Kansas State University  
Professor  
**Area:** Sustainable agriculture  
**Office:** AGSC 305 B  
**Phone:** (435) 797-3394  
**Email:** [philip.rasmussen@usu.edu](mailto:philip.rasmussen@usu.edu)

**Jennifer Reeve**, PhD, Washington State University  
Associate Professor  
**Area:** Organic and sustainable agriculture  
**Office:** AGSC 332  
**Phone:** (435) 797-3192  
**Email:** [jennifer.reeve@usu.edu](mailto:jennifer.reeve@usu.edu)

**Teryl Roper**, PhD, Washington State University  
Department Head, Plants, Soils, and Climate Department  
**Area:** Pomology  
**Office:** AGSC 322C  
**Phone:** (435) 797-8698  
**Email:** [teryl.roper@usu.edu](mailto:teryl.roper@usu.edu)

**Larry Rupp**, PhD, Cornell University  
Professor  
**Area:** Ornamental horticulture  
**Office:** AGSC 322  
**Phone:** (435) 797-2099  
**Email:** [larry.rupp@usu.edu](mailto:larry.rupp@usu.edu)

**Simon Wang**, PhD, Iowa State University  
Assistant Professor  
**Area:** Climate diagnostics and prediction  
**Office:** AGSC 136  
**Phone:** (435) 757-3121  
**Email:** [simon.wang@usu.edu](mailto:simon.wang@usu.edu)

**Ralph Whitesides**, PhD, Oregon State University  
Professor  
**Area:** Weed science  
**Office:** AGSC 326  
**Phone:** (435) 797-8252  
**Email:** [ralph.whitesides@usu.edu](mailto:ralph.whitesides@usu.edu)

**Stanford Young**, PhD, Oregon State University  
Research Professor  
**Area:** Seed production  
**Office:** AGSC 320  
**Phone:** (435) 797-2082  
**Email:** [stanford.young@usu.edu](mailto:stanford.young@usu.edu)

## Get Involved

### Professional Organizations, Honor Societies, and Clubs

**American Chemical Society:** With more than 163,000 members, the ACS is the world's largest scientific society and one of the world's leading sources of authoritative scientific information. A nonprofit organization, chartered by Congress, ACS is at the forefront of the evolving worldwide chemical enterprise and the premier professional home for chemists, chemical engineers, and related professions around the globe.

**American Geophysical Union:** AGU is a nonprofit corporation dedicated to the furtherance of the geophysical sciences through the individual efforts of its members and in cooperation with other national and international scientific organizations.

**American Meteorological Society:** AMS promotes the development and dissemination of information and education on the atmospheric and related oceanic and hydrologic sciences and the advancement of their professional applications. AMS publishes nine journals, sponsors more than 12 conferences annually, and offers numerous programs and services.

**American Society of Agronomy, Crop Science Society of America, and Soil Science Society of America:** ASA, CSSA, and SSSA are prominent international scientific societies headquartered in Madison, Wisconsin. Because of their common interests, all three societies share a close working relationship as well as the same headquarters office staff. Society members are dedicated to the conservation and wise use of natural resources to produce food, feed, and fiber crops while maintaining and improving the environment.

**American Society for Horticultural Science:** ASHS supports the science for specialty crops, global solutions for nutritious food sources, and healthy, beautiful environments. ASHS members (researchers, faculty, and other educational personnel, Extension agents, federal and state experiment station representatives, and growers and distributors of horticultural products) continue to make significant advances in these areas, and are well-positioned to lead the rapid evolution of horticultural science through the 21st century.

**American Water Works Association:** AWWA is the authoritative resource on safe water, with more than 60,000 members worldwide sharing knowledge on water resource development, water and wastewater treatment technology, water storage and distribution, and utility management and operations.

**Ecological Society of America:** ESA is a nonpartisan, nonprofit organization of scientists founded in 1915 to improve communication among ecologists, raise public awareness of the importance of ecology, and influence environmental decision making by enhancing communication between the ecological community and policy makers.

### Labs, Centers, Research

**Center for Integrated BioSystems:** The CIB leads a progressive, interdisciplinary effort in research, core services, and education serving agriculture and life sciences. The CIB is where the first hybrid animal, a mule, was cloned, and was named one of "30 Awesome College Labs" by Popular Science magazine. The CIB has a research program with several active projects in diverse areas of life science that encompass plant, animal, and microbe functional genomics.

**Environmental Quality Laboratory:** The EQL is located at the Utah Water Research Lab and is equipped for analyses of organic and inorganic constituents in air, water, and soil. The EQL consists of chemistry, microbiology, radiological and analytical instrumentation laboratories, two constant-temperature rooms, and research project areas.

**Utah Agricultural Experiment Station:** The UAES is part of a network of researchers and facilities at the nation's land-grant universities and is committed to improving agriculture and managing natural resources for the people of Utah. At research facilities on the USU campus and throughout the state, UAES supports hundreds of research projects that promote agriculture and human nutrition and enhance the quality of rural life.

**Utah Botanical Center:** The UBC, located in Kaysville, Utah, is home to research and demonstration projects focused on sustainable living in the Intermountain West. Studies of water conservation, horticulture, water quality enhancement, wetland ecology, integrated pest management, urban forestry, agriculture, fish and wildlife, highway enhancement, and storm-water management combine to make the center a living laboratory.

**Utah Center for Water Resources Research:** The UCWRR facilitates water research, outreach, design, and testing elements within a university environment that supports student education and citizen training.

**Utah On-Site Wastewater Training Center:** This center provides education, training, and technology transfer to installers, inspectors, regulators, and homeowners within the Rocky Mountain Region on the proper design and use of wastewater treatment systems.

**Utah Water Research Laboratory:** The UWRL works on nearly 250 water-related projects a year and has projects in all of Utah's 29 counties and more than 40 countries. The lab is one of the go-to places that addresses the technical and societal aspects of water-related issues, including quality, quantity, and distribution of water.

**Water Initiative:** Utah State University supports a broad community of students and faculty engaged in water education, research, and outreach. The USU Water Initiative provides an overarching umbrella for the activities of this community aimed at fostering interdisciplinary collaboration and collegial sharing of ideas related to water across the departments and colleges of USU.