Soil Science

Soil scientists study and manage land and water resources to protect the environment and enhance agricultural productivity. Graduate education opportunities in Soil Science at NC State prepare students for careers with public and private organizations in soil, agricultural, environmental, and natural resource sciences. Our graduates find employment opportunities with private sector firms, government organizations, academia, and entrepreneurship.

You will have the opportunity to study and do research with world-class faculty in outstanding laboratory and field facilities. Graduate students may specialize in the following sub-disciplines: soil physics; soil chemistry; soil microbiology and biochemistry; soil fertility and plant nutrition; soil genesis, morphology and classification; and soil, water and land management and conservation. Students can also incorporate other disciplines into their work, presenting outstanding opportunities to focus on issues of interest.

Graduate Degrees

The Department of Crop and Soil Sciences offers three graduate degrees in Soil Science. A short description of each follows.

The ***Master of Soil Science*** (the MR degree) is a non-thesis, course-based program that is available as both a campus-based and an online, distance education program (https://go.ncsu.edu/online-soil-science-masters/). This degree is considered a terminal degree and is well suited to professionals requiring further education in soils for their careers.

The ***Master of Science in Soil Science*** (MS) is a research degree that requires the successful completion of coursework, a research problem, and the submission of a written thesis that documents the research.

The ***Doctor of Philosophy*** (Ph.D.) degree symbolizes the ability of the student to undertake original research with minimal supervision and demonstrates the student's ability to write a dissertation reporting the results of this research. Most students in the Soil Science Ph.D. complete an MS degree prior to enrolling in the Ph.D., although exceptions are sometimes made.

All MS and PhD students are required to teach as part of the degree program. Master of Science students teach the equivalent of two sections of SSC 201 Soil Science Laboratory, while PhD students teach the equivalent of three sections.

Admission Requirements

A minimum of a 3.0 GPA at the baccalaureate (BS) or master's (MS) level is required. However, exceptions may be made for master's applicants with a very strong GPA in science classes, an exceptional track record in their final two years, or substantial post-baccalaureate work experience. Students accepted will typically have a BS or MS degree in Soil Science, or closely related fields, with strong preparation in the biological and physical sciences. Research experience is helpful. The Graduate Record Exam (GRE) is not required for application or admission to Soil Science graduate programs. International students must demonstrate proficiency in English prior to admission. Admissions are competitive and subject to adequate funding for research assistantships. A committee of faculty members evaluates each application and admission is offered if funding is available to support a student. Master of Soil Science applicants are admitted without regard to funding; the department does not provide stipends for students in the MR program.

Degrees

- Soil Science (MR) (http://catalog.ncsu.edu/graduate/agriculture-life-sciences/soil-science/soil-science-mr/)
- Soil Science (MS) (http://catalog.ncsu.edu/graduate/agriculture-life-sciences/soil-science/soil-science-ms/)
- Soil Science (PhD) (http://catalog.ncsu.edu/graduate/agriculture-life-sciences/soil-science/soil-science-phd/)
- Soil Science (Minor) (http://catalog.ncsu.edu/graduate/agriculture-life-sciences/soil-science/soil-science-minor/)

Faculty

Professors

Aziz Amoozegar
Area of Research: Environmental Soil Physics

Stephen W. Broome
Area of Research: Environmental Soil Science

David A. Crouse
Area of Research: Soil Science Education

Owen W. Duckworth
Area of Research: Soil Biogeochemistry

Alan J. Franzluebbers
Area of Research: Soil Ecology and Management

John L. Havlin
Area of Research: Soil Fertility

Joshua L. Heitman
Area of Research: Soil Physics & Hydrology

Richard A. McLaughlin
Area of Research: Urban Soil & Water Management

Michael D. Mullen
Area of Research: Soil Biology & Soil Science Education

Deanna L. Osmond
Area of Research: Soil Fertility & Watershed Management

Wei Shi
Area of Research: Soil Microbiology & Ecology

Michael J. Vepraskas
Area of Research: Wetland Soils & Pedology

Associate Professors

Luciano C. Gatiboni
Area of Research: Soil Fertility & Nutrient Management

Alexandria K. Graves
Area of Research: Soil Microbiology

Assistant Professors

Kevin Garcia
Area of Research: Plant-Microbe Interactions & Nutrient Transport

Amy M. Johnson
Area of Research: Soil Science

Stephanie B. Kulesza
Area of Research: Nutrient Management and Animal Waste

Hui Li
Area of Research: Environmental Soil Chemistry

Ekrem Ozlu
Area of Research: Soil Management

Matthew C. Ricker
Area of Research: Pedology

Alex L. Woodley
Area of Research: Sustainable Agricultural Systems

Practice/Research/Teaching Professor

Robert E. Austin
Area of Research: Geospatial Information and Analytics in Soils, Agriculture and Environmental Science