

## PLANT AND SOIL SCIENCE PH.D.

All students must meet the Requirements for the Doctor of Philosophy Degree (<http://catalogue.uvm.edu/graduate/degree/requirements/requirementsforthedoctorofphilosophydegree/>)

### OVERVIEW

The mission of the Department of Plant and Soil Science is to expand, integrate, and extend the knowledge of agricultural systems and environmental quality in plant/soil ecosystems affecting the people of Vermont, the region, and the world. The department will provide excellence in education, research, and extension that will foster environmentally, economically, and socially sound practices.

The department offers graduate programs leading to the Doctor of Philosophy (Ph.D.) in all fields in plant science and soil science. A dissertation, based on original research, is required for this degree. Completion of the requirements normally takes 3 to 4 years for the Ph.D. degree.

The Department is comprised of faculty representing the disciplines of agroecology, agronomy, entomology, horticulture, landscape design, plant pathology, and soil science. Research faculty are involved in studying plant, soil or insect interactions within environments managed for food, fiber, waste utilization, or for landscape purposes. The objectives of these studies are: (1) to develop fundamental knowledge of environmental impacts and interactions and (2) to apply knowledge to better manage systems and promote environmental health. Specifically, departmental projects have included:

- Biological control of insect pests – entomopathogenic fungi
- Integrated pest management (IPM) in greenhouse and field situations
- Agro-ecological practices in Vermont and international communities
- Ecological landscape design
- Green stormwater infrastructure for improving water quality
- Design and analysis of experiments and surveys
- Field and forage crop management and utilization, forage quality, pasture and grazing management, and pest/weed management
- Analytical procedures for testing soils and environmental samples
- Effects of nitrogen (from acid rain) on forest soils and bog ecosystems
- Interaction between soil manganese oxides and heavy metals
- Nutrient dynamics and management in agricultural systems
- Invasive earthworms
- Nematodes and microarthropods as environmental indicators for terrestrial and wetland soils
- Development of sustainable apple production systems

- Evaluation and identification of woody and herbaceous landscape plants adapted to environmental conditions in Vermont/New England
- Diversified horticulture which involves the planning, production, handling, and marketing of horticultural crops with emphasis on multiple, diverse crops produced with environmentally and economically sound techniques.

### SPECIFIC REQUIREMENTS

#### Requirements for Admission to Graduate Studies for the Degree of Doctor of Philosophy

A Master of Science degree in an appropriate agricultural, environmental, biological, or physical science. GREs are recommended but not required.

Students admitted into Master of Science program in the Department may transfer to a Ph.D. program after 1 year. Students petition the Department's Graduate committee.

#### Minimum Degree Requirements for the Degree of Doctor of Philosophy

Credit hours to be earned in partial fulfillment of the Ph.D. requirements	75
Up to 24 credits of graduate-level coursework may be eligible for transfer to meet the credit requirements	
Minimum graded course work credits in Plant and Soil Science and closely related disciplines (e.g. botany, chemistry, forestry, microbiology, biochemistry or geology)	30
Remainder in research credits and seminars	Variable
Satisfactory participation in department seminars during residency is required. Ph.D. students are required to enroll in at least 2 PSS seminar courses (non-graded) during their tenure at UVM.	2
Doctoral students must take part in the department's undergraduate teaching program and in outreach activities related to their research efforts. They are expected to teach for 2 semesters and conduct outreach for 2 semesters	

#### Comprehensive Examination

Comprehensive examinations are typically taken after completion of the majority of all coursework. A written AND oral comprehensive examination must be passed by the candidate at least 6 months before the dissertation is submitted. It is the student's responsibility to schedule an examination time that is satisfactory for all committee members. The written comprehensive examination is taken first followed by the oral examination. The comprehensive examination is not the same as an oral dissertation defense and must be satisfactorily passed before defending the dissertation. A unanimous vote of approval by the members of the Studies Committee is required for the student to pass the preliminary oral examination. Approval may be conditional, depending upon completion of specified additional work. If the oral and or written comprehensive examination is not passed, the student is permitted to retake the examination once.

Failure to pass the second examination will result in dismissal from the graduate program.

**Requirements for Advancement to Candidacy for the Degree of Doctor of Philosophy**

Satisfactory completion of Comprehensive Examination and Dissertation Proposal.