

# Integrated Plant & Soil Sciences

## College of Agriculture, Food & Environment

The interdepartmental graduate program in Integrated Plant and Soil Sciences offers graduate work leading to the Master of Science and Doctor of Philosophy degrees with specialization in Crop Science, Horticultural Science, Forest Science, Plant Biology, and Soil Science. Faculty members belong to the Departments of Forestry, Horticulture, and Plant and Soil Sciences in the College of Agriculture, Food, and Environment.

The IPSS M.S. program replaces the M.S. program in Plant and Soil Sciences. The IPSS PhD program replaces the PhD programs in Crop Science, Plant Physiology, and Soil Science. Students currently matriculating in any of those graduate programs should consult the 2010-2011 version of the Graduate Bulletin for applicable guidelines.

### Admission Requirements

All students with strong training in science, including but not limited to baccalaureate degrees in agronomy, biology, chemistry, and horticulture are encouraged to apply. Admission to the IPSS Program is competitive and based on the applicant's undergraduate and graduate records, performance on standardized exams, and letters of recommendation. It is expected that applicants will meet the minimum standards established by the University of Kentucky Graduate School. Applicants will automatically be considered for departmental research assistantships, which are awarded on a competitive basis.

Graduate students in IPSS have flexibility in designing course work to suit individual goals, but are expected to demonstrate competence in basic areas of plant and soil science and excellence in their chosen area of specialization as demonstrated by novel research leading to a published thesis or dissertation. So that all entering Ph.D. students are at an academic level to successfully complete course requirements, the following courses or their equivalent should have been completed prior to admission:

1. Chemistry – a first semester course in organic chemistry (equivalent to CHE 230)
2. Calculus – a first semester course (equivalent to MA 113)
3. Physics – a first semester course (equivalent to PHY 201)

For PhD students with a specialization in Soil Science, the following additional preparation is suggested:

1. Chemistry - Analytical Chemistry (equivalent to CHE 226) and Organic Chemistry (equivalent to CHE 230 or 236)
2. Introductory Soil Science with a lab (equivalent to PLS 366) and at least two additional soils courses
3. Biology, two courses in basic biology (equivalent to BIO 151/152) and two additional courses in crop science, plant biology, or microbiology
4. Statistics, including regression and experiment design (equivalent to STA 570, 671, and 672)

Students are expected to make up deficiencies in these courses within one year of enrollment.

### Degree Requirements

For the M.S. degree, 24 hours of course work, which includes IPS 610, IPS 625, PLS 772, at least one graduate level statistics course, and an acceptable thesis. There is a non-thesis option requiring 30 hours of coursework for students who wish to make the M.S. a terminal degree. Work leading to advanced degrees must conform to the general rules and regulations of the Graduate School. Individual programs include a strong course work component and a meaningful research experience.

For the Ph.D. degree, a minimum of 36 credit hours of graduate level work of which 18 hours of course work are in residence at the University of Kentucky and includes IPS 610, IPS 625, PLS 772, at least one graduate level statistics course, and an acceptable dissertation. Additional coursework may be required by the student's dissertation committee.

Details regarding the curriculum, program areas, and areas of specialization, financial aid, faculty research interests, and the application process may be found at: [www.ca.uky.edu/pss/academics/IPSS](http://www.ca.uky.edu/pss/academics/IPSS)

## Graduate Courses

IPS 610	Trans-Disciplinary Communication In IPSS	(1)
IPS 625	Trans-Disciplinary Research In IPSS	(2)
PLS 450G	Biogeochemistry (Same As NRE 450G)	(3)
PLS 455G	Wetland Delineation (Same As NRE 455G)	(3)
PLS 456G	Constructed Wetlands (Same As NRE 456G)	(3)
PLS 468G	Soil Use And Management (Same As NRE 468G)	(3)
PLS 470G	Soil Nutrient Management (Same As NRE 470G)	(3)
PLS 502	Ecology Of Economic Plants	(3)
PLS 510	Forage Management And Utilization	(3)
PLS 514	Grass Taxonomy And Identification	(3)
PLS 515	Turf Management	(3)
PLS 520	Fruit And Vegetable Production	(3)
PLS 525	Nursery And Floriculture Crop Production	(4)
PLS 531	Field Schools In Crop Pest Management	(2)
PLS 566	Soil Microbiology	(3)
PLS 567	Methods In Soil Microbiology	(1)
PLS 573	Soil Morphology And Classification	(3)
PLS 575	Soil Physics	(3)
PLS 576	Laboratory In Soil Physics	(1)
PLS 597	Special Topics In Plant And Soil Sciences (Subtopic Required)	(1-3)
PLS 599	Special Problems In Plant And Soil Sciences (Off Campus Independent Research)	(1-8)
PLS 601	Special Topics In Molecular And Cellular Genetics	(1)
PLS 602	Principles Of Yield Physiology	(3)
PLS 620	Plant Molecular Biology (Same As BIO 620)	(3)
PLS 622	Physiology Of Plants I (Same As BIO/FOR 622)	(3)
PLS 623	Physiology Of Plants II (Same As BIO/FOR 623)	(3)
PLS 650	Soil-Plant Relationships	(3)
PLS 655	Spatial And Temporal Statistics	(3)
PLS 660	Advanced Soil Biology	(2)
PLS 664	Plant Breeding I	(3)
PLS 671	Soil Chemistry	(4)
PLS 676	Quantitative Inheritance In Plant Populations	(3)
PLS 697	Special Topics In Plant And Soil Sciences	(1-3)
PLS 712	Advanced Soil Fertility	(3)
PLS 741	Clay Mineralogy (Same As GLY 741)	(3)
PLS 748	Master's Thesis Research	(0)
PLS 767	Post Qualifying Exam Residency Credit	(2)
PLS 768	Residence Credit For The Master's Degree	(1-6)
PLS 772	Seminar In IPSS	(1)
PLS 799	Non Dissertation Research In Plant And Soil Sciences	(1-4)