

Integrated Plant and Soil Sciences (IPSS) Graduate Program Guide

Covering M.S. and Ph.D. Degrees in IPSS



Department of Plant and Soil Sciences
Department of Horticulture
Department of Forestry

Revised June 2021

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1. Introduction

This handbook for the Graduate Programs in Integrated Plant and Soil Sciences (IPSS) is provided as a guide for faculty, current and prospective graduate students. The handbook summarizes the major rules and procedures of the Graduate School, and describes policies specific to the IPSS graduate programs.

The policies and procedures described here are intended to be consistent with those contained in the Graduate School Bulletin (<http://gradschool.uky.edu/graduate-school-bulletin>), but Graduate School rules take precedence in all cases. Students are advised to review the Graduate School Bulletin and become familiar with its contents.

The Graduate Faculty of the Department of Forestry, Department of Horticulture, and Department of Plant and Soil Sciences place the highest priority on excellence in graduate student education. We make every effort to provide an environment conducive to learning, productive graduate research, and professional development. Graduate students should feel free to contact the program Director of Graduate Studies (DGS) (<https://ipss.ca.uky.edu>), any of our faculty, or their department chair, for advice or information at any time.

In general, the advisor or DGS is the best source of advice on procedures, program requirements, application, and admission requirements. The DGS administers the rules of the Graduate School and handles admissions. The Department Chairs administer assistantships and provide general guidance for graduate activities in Forestry, Horticulture, and Plant and Soil Sciences.

2. Graduate Degree Programs

The Integrated Plant and Soil Science program offers two graduate degrees – the Master of Science (M.S.) and the Doctor of Philosophy (Ph.D.). In the M.S. degree program, the student has the option of pursuing the M.S. as a thesis option, which involves research and a thesis, or the M.S. as a non-thesis option with coursework only (i.e., “Plan B” Is there an alternate name we can use here like Non-Thesis M.S.? Plan B may not be the best option). A master’s degree is not a pre-requisite for the Ph.D. degree.

2.1 Graduate Faculty

All graduate faculty currently members of graduate programs affiliated with IPSS (Forestry, Horticulture, and Plant & Soil Sciences) will automatically receive an appointment to the IPSS Graduate Faculty. Assistant professors are typically appointed as associate members of the graduate faculty and moved up to full members of the graduate faculty when promoted to the associate level and tenured. However, it is not a requirement to be associate professor with tenure to be a full member of the graduate faculty (<https://gradschool.uky.edu/graduate-faculty>). Ranks within the graduate faculty are often confused with regular faculty appointment ranks, but they are not the same thing. Please consult the graduate school database to determine the graduate faculty status and rank of a faculty member within a particular graduate program (<https://ris.uky.edu/cfdocs/gs/dgsgradfac/>).

2.2 Contact Information

IPSS Director of Graduate Studies

Ole Wendroth
(859) 257-4768
owendroth@uky.edu
Website: <https://ipss.ca.uky.edu/>

Forestry

Department Chair: Jeff Stringer
Phone: (859) 257-5994
Email: jeffrey.stringer@uky.edu
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Horticulture

Department Chair: Mark Williams
Phone: (859) 257-1758
Email: mark.williams@uky.edu
Website: <http://www.uky.edu/hort/>

Plant and Soil Sciences

Department Chair: Rebecca McCulley
Phone: (859) 257-6388
Email: Rebecca.mcculley@uky.edu
Website: <https://pss.ca.uky.edu/>

3. Access to Departmental Spaces and Facilities

Access to laboratories, greenhouses, and field facilities is arranged and determined by a graduate student's advisor. In general, laboratories and equipment are under the control of individual faculty; however, most equipment is shared and available to all graduate students to the maximum extent possible. Shared use facilities require emphasis on consideration for others and knowledge of proper operation.

All students must receive preliminary safety training before using any research facilities. This can be arranged through the appropriate department office.

The Plant and Soil Sciences computer labs (Agricultural Science Center North Building, Plant Science Building) are designed primarily for use by graduate students and staff. An IT Specialist is available for initial instruction and consulting.

Desk space will be provided and is distributed by floor coordinators in the Agricultural Science Center North Building and Plant Science Building (see [Appendix G](#)). The Major Advisor and/or DGS are responsible for informing the area coordinator of an arriving student requiring desk space. Keys to appropriate office and laboratory facilities can be obtained by contacting office staff in 105 Plant Science Building (for rooms in the Department of Plant and Soil Sciences) or 401D Plant Science Building (for rooms in the Department of Horticulture).

A mailbox is provided for each student. Students should check their mailboxes daily for announcements of importance. Upon registration, all students are provided with an '@uky.edu' email address, which is the official venue by which University and departmental announcements are transmitted electronically.

4. Application Process and Admission Requirements

4.1 Application Procedure

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, resume, and letters of recommendation. The first step for students interested in applying to the IPSS program is to apply to the University of Kentucky Graduate School.

All applications for graduate study at the University of Kentucky Graduate School must be submitted [online](#). The first step in the process is to set up a new account and establish a username and password. Each application will require a separate account: email address, username and password. Do not lose this information; you will need it if you wish to return to continue an unfinished application or review a completed application.

Applicants will need to submit the following materials to be considered for admission:

- Application fee
- Official transcripts showing, at minimum, a baccalaureate degree from a fully accredited U.S. institution of higher learning or from a recognized foreign institution
- Official GRE test score(s) are optional and not required by the IPSS program. They may be required for consideration for some university fellowships.
- International applicants whose native language is not English must submit either a TOEFL (Test of English as a Foreign Language) or IELTS (International English Language Testing System) score.
- Current CV
- Personal statement briefly explaining your background, why you want to pursue this degree, your research interests, and your short- and long-term career goals
- Three (3) letters of recommendation which will be requested electronically from your letter writers after you identify them in your graduate school application

Additionally, the student will select the anticipated Ph.D. specialization or M.S. concentration (see description in section 11.2.3).

Application deadlines: (updated as of June 2021; check the Graduate School website for changes)

- Fall
 - June 17 (domestic) | June 15 (international)
- Spring
 - December 4 (domestic) | November 1 (international)
- Summer
 - April 3 (domestic only)

There are requirements both for admission to the graduate school and program-specific requirements for the IPSS program. The requirements are as follows.

- Students seeking admission to the Graduate School must have obtained a baccalaureate degree, prior to the start of the term for which s/he is admitted, from a fully accredited U.S. institution of higher learning or from a recognized foreign institution. An accredited U.S. institution is one that is accredited by the appropriate regional agency (Middle States, New England, North Central, Northwest, Southern or Western Association of Colleges and Schools). A recognized foreign institution is an institution that is recognized by that nation's Ministry of Education or similar authority as a postsecondary, academic degree-granting institution.
- An overall grade point average of **3.00** on undergraduate work and **3.00** on all graduate work on a 4.00 scale (or equivalent) is required by the IPSS program. The IPSS minimum requirements may be waived in exceptional cases if sufficient evidence of the student's ability to do graduate work is presented. In such a case, the Graduate School's minimum requirement of a 2.75 on undergraduate degree work on a 4.00 scale would need to be met.
- The University of Kentucky requires a **minimum TOEFL score of 550 (paper-based), 213 (computer-based) or 79 (internet-based). For IELTS, a minimum mean band score of 6.5 is required.**
- Domestic applicants (U.S. citizens or resident aliens) must pay a **\$65 application fee**; international applicants must pay a **\$75 fee**.

Applicants will automatically be considered for departmental research assistantships, which are awarded on a competitive basis.

4.2 IPSS Admission Expectations for Ph.D. students

Graduate students in IPSS have flexibility in designing coursework to suit individual goals but are expected to demonstrate competence in basic areas of plant science or 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 Ph.D. 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. All specialty areas have also found that additional training in such areas as basic biology, biochemistry,

chemistry, crop science, plant biology, microbiology, and soil science (as some examples) promote student success. It is the prerogative of the student's advisory committee to address and correct any deficiencies in a student's academic background by requiring additional coursework.

5. Part-time Students

The M.S. and Ph.D. programs in IPSS may accommodate limited numbers of part-time graduate students. Part-time students are ineligible for graduate research assistantships and pay tuition per credit hour. Part-time students are often individuals wishing to continue their graduate education, perhaps as a requirement of their employment. Employees of UK may be eligible for tuition waivers for up to 18 credit hours of graduate credit each year under the Employee Education Program (EEP). Up to 9 hours of graduate credit may be transferable to UK graduate programs from other public universities. Contact your DGS for more information on part-time programs and EEP.

6. Funding

Each student enrolled in the IPSS program through either departmental or grant-funded research assistantships will receive a uniform base stipend depending on the degree program (M.S. or Ph.D.), tuition scholarship, and health insurance. Other university fees (see below) will be the responsibility of the student. The base stipend for grant-funded assistantships may be supplemented for exceptional candidates and performance at the discretion of the department chairs. Applicants will automatically be considered for departmental research assistantships, which are awarded on a competitive basis.

6.1 Assistantships/Fellowships

Current annual pay for teaching or research assistantships is \$21,000 for Ph.D. students and \$18,000 for M.S. students. Annual pay may be increased for an individual student demonstrating outstanding abilities and paid from extramural grant funds. Some funding agencies specify minimum payment levels for supported fellowships which will be honored when students are supported by those fellowships. Payment of tuition may also be included in the compensation package. Benefits include all scheduled and announced University holidays, and health insurance. Graduate students are responsible for the Johnson Center Fee (campus recreation), the Student Health Fee (access to Student Health Services facilities), any lab or departmental fees, any distance learning fees, and other fees imposed by the university.

6.1.1 Research Assistantships

Research assistantships are awarded on a competitive basis by individual departments and faculty, not by graduate programs. They may be funded from College research funds or from grants. Beyond the base amounts cited above, payment depends on research experience, academic record, and the availability of funds in particular program areas. Students will be notified of stipend amounts during the application and admission process.

6.1.2 Teaching Assistantships

Teaching assistantships are awarded on a competitive basis by individual departments, not by graduate programs. Recipients are expected to assist in teaching, usually as laboratory instructors. Students recruited for teaching assistantships may subsequently be awarded a research assistantship, but are usually expected to serve as a teaching assistant for several semesters. Departments in the IPSS program award very few, if any, teaching assistantships.

6.1.3 Graduate School Fellowships

Several different fellowships are awarded by the Graduate School. Contact the DGS for further information on procedures. Many fellowships and scholarships are self-nominated by the student. Information can be obtained from the Graduate School website (<http://gradschool.uky.edu>).

6.2 Application for Financial Support

Application for Assistantships/Fellowships should be made at the time of application for admission. Evaluation for assistantships and fellowships is based on academic record, GRE Scores, TOEFL or IELTS scores (for international applicants), letters of recommendation, and any other available information relevant to evaluating the academic potential of the student.

Details are available on the Graduate School website (<http://gradschool.uky.edu/student-funding>)

6.3 Criteria for Assistantship Awards

Assistantships are awarded on a competitive basis. Because the number of available assistantships is usually fewer than the number of qualified applicants, the requirements for assistantships may exceed the requirements for admission. Students having the best academic record and potential for successfully completing graduate study are given the highest priority for assistantship support. However, exceptions can be made for the following reasons:

1. Extraordinary number of students in an area of specialization or with an individual faculty member.
2. Need for additional students in an area of specialization.
3. Availability of funds, particularly for assistantships supported by research grants.

6.4 Responsibilities of Graduate Assistants

Graduate Research Assistantships are awarded to support a student financially while s/he conducts research for the Master's thesis or Doctoral dissertation. The thesis or dissertation is the student's own work. However, the research is almost always consistent with the long-range objective of the Advisor (M.S. student) or Major Professor's (Ph.D. student) research program. The Advisor or Major Professor may request assistance in research not related to the student's thesis or dissertation, or may request the student to participate in other activities for their educational benefit.

Research assistantships are generally referred to as half-time assistantships, implying that the recipient should devote approximately 20 hours per week to his/her research, with the remaining 20 hours at the discretion of the Major Professor. The departmental philosophy is that commitment and dedication are essential characteristics of a good graduate student; that an assistantship should provide the student the opportunity to devote full attention to study and graduate research; and that successful graduate study demands very frequent evening and weekend work. Graduate study is an avocation, not just a job. An effort is made to evaluate ambition, motivation, and commitment in awarding assistantships. Students are given flexibility in arranging their study and work schedules with the expectation that supervision of working hours will be unnecessary.

Graduate students involved in research are held to the same high standards of ethical and professional conducts as all scientists. Misrepresentation of research or coursework may result in termination of financial support and academic sanctions. The publication 'Student Rights and

Responsibilities' (available [online](#)) provides detailed information about the Code of Student Conduct, academic offenses, and related questions. Further information is available from the Academic Ombud, 109 Bradley Hall. Additionally, all students receiving research assistantships at the University of Kentucky are required to complete Responsible Conduct of Research training (<https://www.research.uky.edu/responsible-conduct-research>).

6.5 Enrollment Requirements

To receive full health and tuition benefits, Master's students receiving assistantships or fellowships:

- must be enrolled for a minimum of nine (9) credit hours each semester
- Enrollment is not required during summer terms and tuition is not covered by most assistantships.
- register for PLS 748 (zero credit hours) if they are not taking other formal courses that are required for the completion of their degree (example: coursework is complete and the student is writing their thesis and about to defend).

To receive full health and tuition benefits, Doctoral students receiving assistantships or fellowships:

- must meet the University residence requirement (two (2) consecutive full-time terms with nine (9) credit hours or three (3) consecutive part-time terms with six (6) credit hours)
- continue to register for a minimum of nine (9) credit hours each semester until the qualifying exam
- After the qualifying exam, students register for two (2) credit hours of PLS 767 each term until the completion of their degree. Two (2) credit hours of PLS 767 are considered by the University to represent full-time status for doctoral candidates.

6.6 Duration of Assistantships

Fellowships are usually awarded for the academic year, the duration being established by the Graduate School. Graduate Research Assistantships are awarded on a 12-month basis.

Providing the student is making satisfactory progress, and depending on the availability of funding, assistantships are automatically renewed annually with the following limits:

1. Master of Science – Assistantships will terminate at the end of three years.
2. Ph.D. Degree
 - a. From the B.S. degree without a Master's degree - Assistantships will terminate at the end of the fifth year.
 - b. From the Master's degree – Assistantships will terminate at the end of the third year.

Extension of assistantships beyond the normal termination date can be granted on a semester- by-semester basis. The extension must be requested by the student, recommended by the M.S. Advisor or the Ph.D. Advisory Committee, and approved by the IPSS Steering Committee or its designee. The request must be accompanied by a report of progress and justification for extension. Please note that these limits are independent of the availability of funding. Assistantships could be terminated earlier if funding is not available (see section 6.7). Contact the DGS of the appropriate program area for more information.

Individual IPSS departments may provide departmentally funded research or teaching assistantships that have additional requirements. Students should contact their department chair regarding those requirements.

6.7 Review of Progress and Termination of Assistantships

Academic progress and research progress will be monitored by the Advisor in the case of M.S. students or by the Advisory Committee in the case of Ph.D. students and candidates. Students will be placed on academic probation if they fail to meet the required 3.0 grade point standing. Graduate research assistants on academic probation forfeit their out-of-state tuition scholarship while they are on probation and are responsible for paying their own tuition. Additionally, students on academic probation will automatically be placed on probation with respect to their assistantship. The assistantship will be terminated if the student is not removed from academic probation after one semester of full-time enrollment or two semesters of part-time enrollment, unless extenuating circumstances can be satisfactorily demonstrated to the IPSS Steering Committee or other designated body.

Other reasons for terminating an assistantship prior to completion of degree requirements or prior to the normal termination date identified under '[Duration of Assistantships](#)' include, but are not limited to:

1. Failure to make satisfactory research progress as determined by the Advisor and/or Advisory Committee.
2. Failure of the Ph.D. Qualifying Examination. If deemed appropriate by the committee, the exam may be retaken no earlier than four months after failure.
3. Failure of the Final Examination for the Master's degree or the Ph.D. degree.

Termination of an assistantship is recommended by the Advisor and/or the Advisory Committee, reviewed by the IPSS steering committee, and finally approved by the appropriate Department Chair.

7. Teaching Requirement

There is no formal teaching requirement for IPSS graduate students. However, any student in the Plant and Soil Science Department supported by departmental funds may be called upon to serve as a teaching assistant for up to two semesters. Students not supported by departmental funds who volunteer or are called upon to serve as teaching assistants may be eligible for a stipend in the amount of \$1,000. Consult the chair of other participating departments for requirements of departmentally supported assistantships.

Students interested in pursuing a career in teaching are encouraged to explore obtaining the Graduate Certificate in College Teaching and Learning offered through the Graduate School. Information on the certificate can be found at: <http://gradschool.uky.edu/graduate-certificates#college>

8. Orientation

Prior to the start of the Fall semester, the IPSS program will conduct an orientation for new and returning students. The orientation will include an introduction to rules and procedures, such as travel and purchasing, an overview of faculty programs in IPSS, a discussion of the importance of attendance and participation in seminars, and information on opportunities for scholarships, fellowships, and other financial support.

9. Registration

Registering for courses is completed via myUK by following these instructions: http://www.uky.edu/registrar/sites/www.uky.edu/registrar/files/reginstructions_0.pdf. New graduate student advisor holds will be lifted automatically on registration dates unless otherwise specified by your graduate program. Questions or comments regarding registration can be sent to registration@uky.edu.

Information on registration windows for each term can be found on the Registrar's website: <http://www.uky.edu/registrar/registration>.

10. Graduate Faculty and Advising

Establishing good working relationships with faculty is critical to a graduate student's success. The IPSS program requires incoming students to have an identified advisor (M.S.) or major professor (Ph.D.). This decision should be made with great care. The Graduate Faculty who are currently approved to advise graduate students and teach graduate level courses can be found on the Graduate School website: <https://ris.uky.edu/cfdocs/gs/dgsgradfac/>.

10.1 Advisor (M.S.) and Major Professor (Ph.D.)

The graduate school has different titles for the direct supervisor of a graduate student. An M.S. student has an **Advisor**, a Ph.D. student has a **Major Professor**. An **Advisor** is appointed for each M.S. student. S/he advises the student on coursework and serves as the **Thesis Director**.

A **Major Professor** for each Ph.D. student is appointed by the Graduate Dean on recommendation by the DGS. Only Full Members of the Graduate Faculty may act as sole advisor to a Ph.D. student. S/he assumes primary advisory functions for the student, chairs the **Advisory Committee**, and serves as **Dissertation Director**. The DGS or his/her designee serves as advisor until a Major Professor is appointed. This formally occurs when the Advisory Committee is formed and approved by the Graduate School.

Students are assigned an Advisor/Major Professor in three ways. Those students entering the program electing to work with an individual faculty member from the outset will work with that faculty member as their advisor. Ph.D. students who enter the program undecided on a Major Professor will work with a faculty member from their area to prepare a program of studies for the first year and a set of program rotations, if applicable. M.S. or Ph.D. students who enter the program uncertain of either an area or advisor will be advised by the DGS. No student will be allowed to continue in the program without having identified an advisor and program of study by the end of their second semester of study.

10.2 Advisory Committees

Normally, Thesis and Advisory Committees will meet at least once each year. A student is required to consult frequently with committee members, and any other appropriate faculty, during the planning and execution of their research project.

10.2.1 M.S.

The Graduate School requires only that an M.S. examining committee be formally designated in writing prior to the Final Examination. However, the IPSS Graduate Program requires that M.S. students form a thesis committee and strongly recommends that this group, which is informally designated on annual review paperwork, meet during their first term of study and subsequently on at least a yearly basis. The examining committee consists of at least three qualified faculty members recommended by the Director of Graduate Studies and appointed by the Dean of the Graduate School. At least two committee members (including the chair or co-chair) must be members of the Graduate Faculty, and at least one of the two must be a Full member of the Graduate Faculty.

10.2.2 Ph.D.

Each doctoral student's program is directed by a Major Professor and an Advisory Committee. In cases where the Major Professor is not yet a full member of the Graduate Faculty, a Co-Director who is a full member of the Graduate Faculty must be a member of the committee. In some cases, given the nature of a student's dissertation research, it is appropriate that two Co-Directors of the Advisory Committee are named, one of whom must be a full member of the Graduate Faculty. The Major Professor and Advisory Committee are formally designated through the 'Formation of an Advisory Committee' form. This form is submitted electronically by the student and approved by the DGS. The DGS submits the approved form to the Graduate School Dean for formal designation of the committee. This should be done during the first semester. **Failing that, it must be done** no later than the point at which 18 credit hours of graduate work have been accumulated. The advisory committee must be formed at least one year prior to the Qualifying Examination. However, it is strongly encouraged for students to form the committee within the first term of study to ensure that the course of study suggested by the committee can be implemented and to allow the committee to provide input on the research proposal.

The Ph.D. Advisory Committee has a core of four members. This core consists of the Major Professor as chair, a co-chair if necessary (as described above), two members from the program area, and at least one committee member from any minor area(s). At least one of these committee members must be from outside the program area (or department). All members of the core must be members of the Graduate Faculty of the University of Kentucky and three (including the Major Professor or Co-Director) must possess full Graduate Faculty status. Additional faculty members may serve as members of the Advisory Committee. The core of the Advisory Committee must be kept at its full complement throughout the graduate career of the individual student. The Advisory Committee provides advice to the student and specifically sets requirements that the student must meet in pursuit of the doctorate (within Program, Graduate School, and University regulations). The Advisory Committee administers the Qualifying Examination, supervises the preparation of the dissertation, and administers the Dissertation Defense and Final Examination.

11. IPSS Degree Requirements

Students enrolled in the IPSS program must meet the minimum requirements of the Graduate School for the awarding of M.S. (30 graduate credit hours) and Ph.D. (36 graduate credit hours, of which at least 18 credit hours must be taken in residence) degrees. Please consult the checklist (appendix X) which provides supplementary information in a concise format to aid in completion of the requirements in a timely fashion.

11.1 Learning Outcomes

At the completion of their program, graduates of the M.S. and Ph.D. program in IPSS will:

1. Have acquired extensive knowledge of the science and technology that supports research, education, and technological innovation in plant biology, crop science, horticultural science, soil sciences, and/or environmental and ecosystem science.
2. Be conversant with the literature, current concepts, and experimental methods that support research, teaching, outreach, and technological innovation in plant biology, crop science, horticultural science, soil sciences, and/or environmental and ecosystem science.
3. Have acquired skills in critical and analytical thinking and in communication that may be applied to research, education, outreach, industry, and government.
4. Have acquired those elements of professionalism necessary for rewarding and developing careers in science devoted to research, education, outreach, and industry

11.2 Plan of Study

Each student will establish, in consultation with their Advisory/Thesis Committee, a proposed set of courses to be taken and arrange for fulfilling any service requirement. This will be forwarded, with the Advisory Committee's approval, to the DGS.

11.2.1 Core Courses

The IPSS program requires all M.S. and Ph.D. graduate students to enroll in IPS 610 Trans-Disciplinary Communication in IPSS (1 credit) and IPS 625 Trans-Disciplinary Research in IPSS (2 credits) at least once. IPS 610 and 625 are interdisciplinary, topic-driven courses, interfaced with current seminar programs in the plant and soil science disciplines. Each student will also be required to enroll at least once in PLS 772 Seminar in Plant and Soil Sciences (1 credit), and a graduate-level statistics course. Additionally, students must present their research at the IPSS graduate student symposium annually to demonstrate their competence in public presentation skills. If students are unable to attend the annual graduate student symposium, they may substitute another presentation which is open to the University of Kentucky Community. Reference the student checklists found in Appendix X for more information.

11.2.2 Additional Coursework

Remaining suggested credit hours outside of the core coursework will be individually developed by the graduate faculty in each specialization (Ph.D.) or concentration (M.S.). The coursework is specific to the needs, training, and career goals of students pursuing the specialty and will

ultimately be determined by the individual students' committees. Additional coursework guidelines for each specialty area are listed below.

Each specialty area will adhere to the goals of general education reform in which graduates demonstrate, through their course selection, competence in four specific areas: understanding and ability to employ processes of intellectual inquiry; competence in employing methods of quantitative reasoning; competent written, oral, and visual communication skills; understanding of the complexities of global citizenship and making informed choices in a multicultural world.

11.2.3 Areas of Specialization/Concentrations

The IPSS program includes five disciplinary areas. These are referred to by the Graduate School as specializations for Ph.D. students and concentrations for M.S. students. The student must select a specialization or concentration; this initially occurs during the application process though it can be changed. In the IPSS program the suggested additional courses are the same for both M.S. and Ph.D. students, although the actual number of credit hours and level of courses taken may differ. The IPSS program is interdepartmental, so the specializations/concentrations do not follow departmental lines and interaction among students and faculty in all of the programs is extensive. Assistantship support, some research projects, many student related activities, and some graduate courses, however, are organized along departmental lines. **Descriptions of the concentrations/specializations are in APPENDIX A.**

Within IPSS (both M.S. and Ph.D.) areas of specialization/concentration include:

- Crop Science
- Environmental Science and Ecosystem Ecology
- Horticultural Science
- Plant Biology
- Soil Science

11.3 Annual Review of Progress

Each student should meet, at a minimum, with their Advisory/Thesis Committee once each year. At this meeting, the progress of the student towards fulfilling the requirements for the degree will be reviewed and discussed. The results of this determination will be communicated to the student in writing with a copy sent to the DGS. In addition, the Graduate School requires an annual report of graduate student productivity from each program. The data to fulfill this request are obtained from the annual review of progress, which each student MUST submit.

11.4 Publication Requirement

The IPSS program believes that publication of research in refereed journals is the key to successful academic careers and represents the final objective of any research project. It is also an essential means of evaluating the success of the student and the academic program. Therefore, it is imperative that students gain this skill during their academic training. To this end, the IPSS program requires each M.S. or Ph.D. student to have submitted a manuscript based on their dissertation or thesis work to an appropriate refereed journal, selected in consultation with their Advisory/Thesis Committee, prior to the dissertation or thesis defense. However, because

circumstances can arise to prevent this, the manuscript requirement can be waived by the DGS upon the recommendation of the student's Advisory/Thesis Committee.

11.5 Master of Science (M.S.)

Requirements for an advanced degree shall be no less than the minimum established by the Graduate School.

11.5.1 Master of Science in Integrated Plant and Soil Sciences (Thesis Option)

In addition to meeting all general requirements for a Master's degree as identified in the Graduate School Bulletin, the candidate must complete 30 semester credit hours of graduate coursework with a standing of 3.0 or higher, and write a thesis.

The general requirements of the Thesis option are as follows:

1. 30 credit hours of approved graduate courses that include IPS 610, IPS 625, and PLS 772. (PLS 772 may be repeated for a maximum of two credits.)
2. 6 credit hours of research (PLS 768; note: variable 1-6 credit hours can spread out over multiple semesters to avoid exceeding maximum credit hours)
3. 50% of the credit hours must be at the 600- or 700-level.
4. 2/3 of the credit hours must be organized courses (not seminars, special topics, or independent research projects).
5. Presentation of an exit seminar.

Provided that these requirements are satisfied, students may apply up to 9 hours of approved post baccalaureate graduate coursework (i.e., completed after the undergraduate program and before graduate school enrollment,/graduate-level courses completed while not pursuing a degree) from the University of Kentucky or other accredited institutions to the 30 credit hour requirement. The plan of coursework in both the major area and in background courses in basic sciences (if required) must meet the approval of the Advisor.

Before the final examination, the Thesis Director (Advisor) and the DGS must indicate to the Graduate School that the thesis satisfies all requirements of the Graduate School and is complete in content and format with the exception of pagination, and that the student is ready for examination. The formatted quality of the completed thesis must be acceptable to the Graduate School.

Students are expected to attend all graduate seminars and all graduate enrichment seminars. They should also attend other departmental seminars related to their subject matter interest. Seminar presentation requirements will vary among the different discipline areas. All students in IPSS will present one seminar each academic year. One of those seminars may be the exit seminar. The other seminar will occur at the annual IPSS graduate student symposium. If students are unable to attend the IPSS graduate student symposium they may substitute another presentation open to the University of Kentucky community.

11.5.2 Master of Science in Integrated Plant and Soil Sciences (Non-thesis Option)

A Non-thesis option is offered by the IPSS graduate program. The Non-thesis option is generally intended for students who already hold professional positions and have no intention of additional

graduate study. This option provides strong technical training, but does not require an extended period of full-time, on-campus research (often, only one semester). An overall GPA of 3.0 is required to graduate.

The general requirements of the Non-thesis option are as follows:

1. 30 credit hours of approved graduate courses that includes IPS 610, IPS 625, and PLS 772.
2. 15 of the 30 hours must be at the 600- or 700-level.
3. 20 of the 30 hours must be organized courses (not research, special problems, or seminars).
4. At least 4, but not more than 8, of the 30 hours must be PLS 799 Research in Horticulture/Plant and Soil Sciences. This course is intended for on-campus (Lexington, Princeton, or Robinson Substation/Forest) independent research. It will consist of a research project involving design, execution, analysis, and a written report by the student.
5. One semester of full-time residence (registration for 9 credit hours)
6. Presentation of an exit seminar.

Provided that these requirements are satisfied, Non-thesis students may apply up to 9 hours of approved post baccalaureate graduate coursework (i.e., completed after the undergraduate program and before graduate school enrollment/graduate-level courses completed while not pursuing a degree) from the University of Kentucky or other schools to the 30-hour requirement. Students may also take up to 8 hours of PLS/HOR 599 Special Problems. This course differs from PLS/HOR 799 in that PLS/HOR 599 may involve off-campus projects conducted under the supervision of any faculty member. This will still require a written report by the student. The plan of coursework in both the specialty area and in background courses in basic sciences (if required) must meet the approval of the Advisor.

Assistantship support is not available to non-thesis students. To be admitted as a non-thesis student, the individual should submit a list of courses to be taken and a brief plan for research credits. This must be approved by the DGS and the appropriate graduate program steering committee.

11.5.3 Master's Thesis

Theses must be prepared in conformity with the instructions published by the Graduate School. Detailed instructions can be found at www.gradschool.uky.edu/thesdissprep.shtml. The thesis in its final form must be received in the Graduate School within 60 days of the Final Examination. Theses must be presented to and accepted in the Graduate School by the last day of the semester if a student plans to graduate that semester. Theses submitted by candidates become the physical property of the University of Kentucky.

The University protects the authors' rights by placing certain restrictions upon the use of theses. All master's theses must be submitted in electronic format. Instructions are available at <http://gradschool.uky.edu/thesis-dissertation-preparation>. To view the current collection of Electronic Theses and Dissertations (ETDs), go to <http://uknowledge.uky.edu/gradschool>.

11.5.4 Final Examination for Thesis and Non-Thesis M.S. Options

A Final Examination (oral and/or written) is given to all candidates for master's degrees not later than eight days before the last day of classes of the semester in which the degree is to be awarded. The examination is scheduled by the Dean of the Graduate School and the report is returned to the Dean upon completion of the examination, which in no case may be later than two weeks after the start of the examination. See section 10.2.1 for a description of the examination committee.

The "Request for Final Master's Degree Examination" form must be filed at least two weeks prior to the date of the examination; <http://gradschool.uky.edu/studentforms>. Students on scholastic probation are not eligible to sit for the final examination. Class must be in session for the student to sit for the exam. If the candidate fails the final examination, the committee may recommend to the Dean of the Graduate School the conditions under which a second examination may be administered. Insofar as it is practicable, the same examining committee gives this examination. In all decisions the majority opinion of the committee prevails. If the committee is evenly divided, the candidate fails. A third examination is not allowed. See Appendix J for a description of the final examination procedures.

11.5.5 Time Limit for Master's Degrees

Students first enrolled in a master's/specialist program in the fall 2005 semester and beyond have 6 years to complete all requirements for the degree, but still have the opportunity to request extensions up to an additional 4 years for a total of 10 years. Extensions up to 2 years may be approved by the Dean of the Graduate School. Requests for extensions longer than 2 years must be considered by Graduate Council. All requests should be initiated by the Director of Graduate Studies. No activity completed more than 10 calendar years preceding the proposed graduation date as appropriate will be considered for graduation. This timeline is independent of funding availability.

A program may submit an appeal to the Graduate Council to allow a time-to-degree terminated student to be readmitted and pursue the degree without re-taking all required coursework. The appeal should:

- Provide an explanation for the failure to initially complete the degree on-time.
- Provide a detailed description of the requirements that must be fulfilled in order to receive the degree.
- Provide confirmation that the appeal was approved by the majority of the program graduate faculty.

11.6 Doctor of Philosophy (Ph.D.)

11.6.1 General Requirements

The degree of Doctor of Philosophy is conferred after completing, usually, at least three years of graduate work devoted to study of a special field of knowledge, passing a comprehensive examination on the dissertation subject and chosen field, presenting a satisfactory dissertation, and demonstrating evidence of scholarly achievement. For the Ph.D. degree, a minimum of 36 credit hours of graduate level work (of which 18 hours must be in residence at the University of Kentucky) must be completed.

Some specific requirements for the Ph.D. degrees granted through the IPSS program are identified below.

11.6.2 Course Requirements

Students are allowed to apply up to 9 credit hours of graduate level coursework beyond those required for the B.S. or M.S. degree to meet the coursework requirements in the Ph.D. program such that all other coursework requirements are satisfied. The course requirements consist of 4 common hours (met by taking a core of IPS 610, IPS 625, and PLS 772), and 3 computational hours (graduate level statistics), and remaining hours up to 36 credit hours are determined by the advisory committee. At least one seminar, such as PLS 772, must also be evaluated for credit; this should not be the exit seminar. Suggested courses for each specialization are provided in Appendix A. There is no minor requirement. To be credited to the program the course must be 400G+-level and at least 50% of the courses must be 500+-level.

11.6.3 Seminar

All graduate students should attend departmental seminars. Departmental seminars are a critical component of graduate education and help to introduce the students to research from a variety of disciplines.

11.6.4 Residency

See the Graduate School Bulletin for specific residency requirements.

1. Ph.D. students must accumulate 18 credit hours minimum to satisfy this requirement before the qualifying exam. Based on this requirement, along with other timing considerations outlined in section 11.6.5, incoming Ph.D. students typically are able to sit for this qualifying exam no sooner than the end of their third semester of residence. For students **without** an M.S. degree, four semesters of full-time residence (36 semester hours) at the University of Kentucky are required prior to the qualifying examination. Students **with** completed M.S. degrees should request that the DGS petition the Graduate School to accept M.S. studies in lieu of two semesters of residency. Alternately, students may be approved for the qualifying exam following three consecutive semesters of part-time enrollment (at least 6 graduate credit hours per semester).
2. Each student must register for 2 credit hours of PLS 767 (Post Qualifying Exam Residency Credit) every semester following the qualifying exam to the termination of their degree. The University of Kentucky considers students in PLS 767 to have full-time status. A student may enroll for IPS/PLS 767 in the same term that they take their qualifying exams, but if they fail those exams, they are required to retroactively add and satisfactorily complete 9 credit hours of coursework for the semester in question. Students can only sit for a qualifying exam when classes are in session. **Therefore, it is the policy of the IPSS program that a student on assistantship may only sit for qualifying examinations in a Fall or Spring Term when they are enrolled as full-time students, or they may take the qualifying examinations during the first or second summer terms, or winter intersession, when classes are in session.**

11.6.5 Qualifying Examination

The qualifying examination must be both written and oral and is normally taken during or after the student's fourth semester of full-time graduate study or the equivalent. Once a doctoral student has passed the qualifying exams, s/he is considered a 'doctoral candidate.' A student may repeat a qualifying exam after a minimum of four months has expired. A student may have no more than two chances to pass a qualifying exam.

1. *The Written Exam.* The form and timing of the written qualifying exam is at the discretion of the Advisory Committee and is completed in advance of the oral exam.
2. *The Oral Exam.* An oral exam will be administered after successful completion of the written exam according to Graduate School rules. Oral exams are open to the participation of every member of the Graduate Faculty in IPSS and must be scheduled at a place and time to permit full participation of the Graduate Faculty.

Students must have the equivalent of 2 years of residency (36 hours or 18 hours plus written approval to use the M.S. degree to partially satisfy residency requirements). In addition, academic transcripts must show that there are no missing grades, 'I' grades, and a GPA of 3.00 or higher. Graduate School policy will not allow a student to sit for the exam if they have unresolved academic issues.

The oral exam must be scheduled with the graduate school a minimum of two weeks before the proposed examination date. It requires that the student have an approved Advisory Committee in place. **The request to schedule the qualifying examination must be submitted a minimum of two weeks in advance via: <http://gradschool.uky.edu/studentforms>. Additionally, classes must be in session when the student sits for the qualifying exam.**

11.6.6 Time Limits

Students first enrolled in a doctoral program in the fall 2005 semester and beyond will be required to take the qualifying examination within five years of entry into the program. Extensions up to an additional three years may be requested. All degree requirements for the doctorate must be completed within five years following the semester or summer session in which the candidate successfully completes the qualifying examination, but extensions up to an additional 5 years may be requested for a total of 10 years. All pre- and post-qualifying extension requests should be initiated by the Director of Graduate Studies and accompanied by a letter of support from the student's Major Professor / Dissertation Director. Extensions up to twelve months may be approved by the Dean of the Graduate School upon receipt of a request from the Director of Graduate Studies. Requests for extensions longer than twelve months must be considered by Graduate Council and will require the positive recommendation of the Director of Graduate Studies, the chair of the student's doctoral Advisory Committee, and a majority vote of Graduate Faculty in the program. If the qualifying examination has not been passed at the end of five years, or at the end of all approved time extensions the student will be dismissed from the program. All requests for extensions in the post-qualifying period must include a recommendation on whether or not a retake of the qualifying examination should be a requirement of the extension. If requested, failure to pass the re-examination will result in the termination of degree candidacy; a second re-examination is not permitted. Failure to complete all degree requirements within 10 years of initially taking the qualifying examination will also result in the termination of degree candidacy.

This new time limit applies to all programs, but the graduate faculty of a doctoral program (or group of programs) has the option to petition Graduate Council for a shorter or longer time limit. If approved, this modification will then apply to all doctoral students in that program.

A program may submit an appeal to the Graduate Council to allow a time-to-degree terminated student to be readmitted and pursue the degree without re-taking all required coursework. The appeal should:

- Provide an explanation for the failure to initially complete the degree on-time;
- Provide a detailed description of the requirements that must be fulfilled in order to receive the degree;
- Provide confirmation that the appeal was approved by the majority of the program graduate faculty.

11.6.7 Dissertation Proposal

Requirements for a dissertation proposal are at the discretion of the individual Advisory Committees.

11.6.8 Partial Publication of Dissertation

A student, in cooperation with the Dissertation Director, may submit manuscripts, derived from the dissertation, for publication prior to completing the dissertation defense and is strongly encouraged to do so as evidence of scholarly achievement. Before such manuscripts are submitted, it is recommended that they be reviewed by the Dissertation Director and faculty members who are on the student's Advisory Committee. It is the current policy of the doctoral programs mentioned in this guide that students will not be allowed to schedule a dissertation defense unless a manuscript has been submitted. This requirement may be waived by the DGS if extenuating circumstances are presented by the student's Advisory Committee.

11.6.9 Final Examination

The Final Examination includes a defense of the dissertation and may be as comprehensive in the major and minor areas as the Advisory Committee chooses to make it. It is conducted by an expanded Advisory Committee chaired by the Director of Graduate Studies or someone designated by the DGS. The Dean of the Graduate School and the President of the University are ex officio members of all final examination committees. The examination is a public event and its scheduling is published and announced beforehand. Any member of the University community may attend. See Appendix J for final examination procedures.

1. **At least 8 weeks prior to the final examination**, student must complete the "Notification of Intent to Schedule a Final Examination" form for the Graduate School via: <http://gradschool.uky.edu/studentforms>. At this time, the Graduate Dean appoints an Outside Examiner as a core member of the Advisory Committee. The dissertation should then be distributed to members of the Advisory Committee and the Outside Examiner at **least four weeks prior to the final examination**.

2. After distributing the dissertation, and **a minimum of two weeks** before the final examination, the student should file a “Request for Final Examination” form online: <http://gradschool.uky.edu/studentforms>. Prior to this, the student should have arranged with the Advisory Committee and Outside Examiner a mutually agreeable time and place to hold the exam. An examination cannot take place unless all participants are present. The DGS will be notified of this request and asked for approval which results in an examination card being released. The Graduate School will designate the final time and place of the examination at least two weeks prior to the date. The final examination must take place no later than eight days prior to the last day of classes of the semester in which the student expects to graduate. Final examinations are public events and must take place while the University is officially in session. They may not be scheduled during the periods between semesters or between the end of the second summer session and the beginning of the fall semester. All members of the committee except the outside examiner must have an opportunity to suggest revisions prior to scheduling the Final Examination. Thus, most revisions should have been completed at an earlier time.
3. The draft dissertation must be complete in its content. The pre-exam copy of the dissertation must include title page, abstract, table of contents with page numbers, complete text, footnotes, list of tables, list of figure, appendices, references, and it must be typed in final format form except that page numbers may be penciled in. It should include any revisions that Advisory Committee members have suggested during their initial review. **This copy should be presented to the Outside Examiner a minimum of two weeks before the scheduled exam date.** A dissertation approval form is not required as part of the dissertation defense.
4. The final copy of the dissertation is prepared after the Final Examination is passed. Contact the Graduate School for detailed regulations on organization and formatting of the dissertation. All theses and dissertations are now required to be submitted electronically. The final copies, with signatures of the Dissertation Director and DGS must be received in the Graduate School within 60 days of the Final Exam. See the Graduate School Bulletin for details. (<http://gradschool.uky.edu/graduate-school-bulletin>)

11.6.10 The Dissertation

Each student must present a dissertation which represents the culmination of a major research project. The dissertation must be a well-reasoned, original contribution to knowledge in the field of study and should provide evidence of high scholarly achievement. Dissertations must be prepared in conformity with the instructions published by the Graduate School. Specific formatting instructions can be found at www.gradschool.uky.edu/thesdissprep.html. The dissertation in its final form must be received in the Graduate School within 60 days of the final examination. If this deadline is not met, the candidate may be required to undergo a second examination. All doctoral dissertations must be submitted in electronic format. Instructions are available at <http://gradschool.uky.edu/electronic-dissertation-preparation>. To view the current collection of ETD's, go to <http://uknowledge.uky.edu/gradschool/>.

12. Academic Performance, Probation, & Termination

A student's grade-point average (GPA) must meet or exceed the 3.0 average established by the Graduate School. A letter grade of 'D' is not allowable for graduate students, and 'D' grades for any graduate student will automatically be converted to 'E' grades (no quality points earned). If, after having earned at least 12 credits of graduate work, a student's GPA drops below 3.0, s/he is placed on probation. One semester is allowed for a student on probation to attain a 3.0 GPA.

The enrollment of a student in the IPSS program may be terminated for the following reasons (these are not the same rules for assistantship termination).

1. Academic probation for three enrolled semesters regardless of whether that enrollment is full-time (9 credit hours) or part-time (<9 credit hours), i.e., being placed on academic probation three different semesters (exclusive of summer sessions).
2. Having failed the final examination for the Master's Degree or the Ph.D. qualifying examination two times. (See the Graduate School Bulletin for rules on the final Ph.D. examination.)
3. Unsatisfactory progress prior to the qualifying examination. Prior to the qualifying examination, the Ph.D. student will meet annually with the Advisory Committee and/or the graduate faculty in the area of specialization for review of his/her progress, coursework, dissertation research, and other areas of professional development. The student will be informed of specific weaknesses requiring improvement. Those weaknesses considered sufficient for possible termination will be reported to the Graduate School, and a period established for correction, and for another evaluation of the student. It is the responsibility of the Advisory Committee to determine if weaknesses have been corrected. If a majority of the Advisory Committee feels the weaknesses have not been corrected by the established time, a recommendation will be made to the Graduate School to terminate the student's enrollment. In cases when the Advisory Committee lacks consensus with respect to termination, the Advisory Committee may consult the faculty of the particular graduate program to establish such consensus.
4. Unsatisfactory progress after the qualifying examination. After passing the qualifying examination the candidate will meet annually – more often if deemed necessary – with his/her Advisory Committee. In cases where the Advisory Committee recommends termination after the qualifying Examination has been passed, the Graduate Faculty in the area of specialization will meet to vote on the recommendation. If a majority of the Graduate faculty concurs with the original decision, a recommendation will be made to the Graduate School for termination of the student.
5. Plagiarism, cheating, or misrepresentation of research. Further information about academic offenses and sanctions is provided in the publication 'Student Rights and Responsibilities,' which is available online at <http://www.uky.edu/deanofstudents/student-rights-and-responsibilities>.

12.1 Repeat Option

A graduate student may elect to repeat a course and count only the second grade as part of his/her GPA. The option can only be used once in a degree program. The student must obtain a **Repeat**

Option Form from the office of the Associate Dean. If the student retakes the course without prior approval, both grades will count in calculating the GPA.

13. Career Placement

Part of the faculty's responsibility in accepting a graduate student advisee is assistance in placing the student in a position at the completion of the degree program. This is not a guarantee that awarding the graduate degree will result in a position. The assistance is given primarily in the form of recommendations and referrals. A student can expect a faculty reference to give an honest appraisal of the student's academic performance, attitude, work habits, grasp of subject matter, capability to conduct independent research, and potential future performance.

Students are encouraged to actively seek from faculty, their Director of Graduate Studies, and their Department Chair, advice on application procedures, interview techniques, and development of a positive professional image.

International students on an F-1 visa may apply for the Optional Practical Training Program, which will enable them to work in their field the United States for a defined time period after graduation (<https://international.uky.edu/issr/students/f1employment>).

APPENDIX A: SPECIALTY AREA GUIDELINES

The description of the specialty areas for the IPSS program are listed below. Courses listed in these specialty areas are suggested electives in addition to the core requirements. The selection of electives will be determined by the students' Advisory Committees. Please note that other courses, particularly new course offerings, may be available at the discretion of faculty. Consult the current schedule of classes for the most updated information on course offerings.

A.1 Crop Science

The following courses, or their equivalent at other institutions, are suggested for a degree in the Crop Science specialization (Ph.D.) and concentration (M.S.).

- BCH 401G General Biochemistry (3)
- BCH 609 Plant Biochemistry (3)
- BIO 430G Plant Physiology (3)
 - Or PLS/BIO 622 Physiology of Plants I (3)
 - Or an advanced genetics course
- STA 570 Basic Statistical Analysis (4)
- STA 671 Regression and Correlation (2)
- STA 672 Design and Analysis of Experiments (2)

A.2 Environmental Science and Ecosystem Ecology

The following courses, or their equivalent at other institutions, are suggested for a degree in the Environmental Science and Ecosystem Ecology (Ph.D.) and concentration (M.S.).

- PLS 679 Ecosystem Ecology (3)
- PLS 560 Ecotoxicology (4)
- PLS 502 Ecology of Economic Plants (3)
- PLS 581 Chemical Analysis of Soils and Plants (4)
- PLS 671 Soil Chemistry (3)
- PLS 566 Soil Microbiology (3)
- PLS 567 Methods in Soil Microbiology (1)
- PLS 575 Soil Physics (3)
- PLS 576 Soil Physics Lab (1)

Additional courses will be taught as special topics courses (PLS 597). Recent examples are below. Consult the schedule of courses or the DGS for up-to-date information.

- PLS 597 Agroecosystem Nutrient Cycles (Poffenbarger)
- PLS 597 Integrated Weed Management (Haramoto)
- PLS 597 Advanced Agroecology (Haramoto and Gonthier)

Students should choose additional electives that meet the students' educational objectives and satisfy credit hour requirements. Suggested courses in addition to those listed above include but are not limited to:

- PLS 573 Soil Morphology and Classification

PLS 650 Soil-Plant Relationships
PLS 514 Grass Taxonomy and Identification
PLS 741 Environmental Clay Mineralogy
CHE 565 Environmental Chemistry
CHE 626 Advanced Analytical Chemistry
CHE 547 Principles of Physical Chemistry
EES 530 Low Temperature Geochemistry
EES 585 Hydrogeology
EES 630 Stable isotopes in the environment
BAE 532 Introduction to Stream Restoration
IPS 790 Supervised Research and Study in Plant and Soil Sciences

Recommended Statistics Courses

STA 570 Basic Statistical Analysis (3)
BST 600 Introduction to Biostatistical Methods (3)

A.3 Horticultural Sciences

The list of required courses for horticultural sciences is under development.

A.4 Plant Biology

The following courses, or their equivalent at other institutions, are suggested for a degree in the Plant Biology specialization (Ph.D.) and concentration (M.S.).

BCH 401G General Biochemistry (3)
BCH 609 Plant Biochemistry (3)
PLS 620 Plant Molecular Biology (3)
PLS/622 Physiology of Plants I (3)
PLS/623 Physiology of Plants II (3)

Additional courses suggested courses are.

BCH 610 Biochemistry of Lipids and Membranes (3)
BCH 611 Biochemistry/Cell Biology of Nucleic Acids (3)
BCH 612 Structure/Function of Proteins and Enzymes (3)
BIO 615 Molecular Biology (3)
CHE 442G Thermodynamics and Kinetics (3)
STA 570 Basic Statistical Analysis (4)
STA 671 Regression and Correlation (2)
STA 672 Design and Analysis of Experiments (2)

A.5 Soil Science

The Advisory Committee is responsible for determining specific course requirements for Ph.D. graduate students in the Soil Science specialty area. The following requirements are intended as minimum guidelines for students and advisors in planning coursework. Significant deviations from these guidelines must be approved by the Advisory Committee.

Preparatory Coursework

So that all entering Ph.D. students are at an academic level sufficient to complete course requirements successfully, entering students need to have taken specific scientific courses. The following courses, or their equivalents, are the minimum levels of preparation expected of students entering the Soil Science Ph.D. specialty area.

1. Chemistry - analytical Chemistry (equivalent to CHE 226) and organic Chemistry (equivalent to CHE 230 or 236)
2. Calculus – a first semester course (equivalent to MA 123 or MA 113)
3. Physics – a first semester course (equivalent to PHY 201)
4. Introductory Soil Science with a lab (equivalent to PLS 366) and at least two additional soils courses
5. Biology, two courses in basic biology (equivalent to BIO 151/152) and two additional courses in crop science, plant biology, or microbiology
6. Statistics, including regression and experiment design (equivalent to STA 570, 671, and 672)

In certain areas of specialization, additional preparatory course work may be recommended by the Advisory Committee. Students are expected to make up any deficiencies within one year of enrollment in the Soil Science Ph.D. program area; the qualifying examination will not be administered until the entry level course deficiencies are made up.

Course Requirements

During the Ph.D. program, students must pass at least three graduate level courses in any of the following basic sciences outside of Soil Science. Certain areas of specialization may require more courses.

Graduate level biochemistry
Graduate level chemistry
Graduate level geology
Graduate level mathematics
Graduate level physiology
Graduate level physics

Recommended courses include:

BCH 401G, 604, 607, 608, 610, 611, 612, 615
BIO 430G, 510, 520

CHE 440G, 442G, 510, 522, 532, 524
GLY 450G, 585
MA 415G, 416G, 417G, 432G, 433G, 537

PLS 620, 622, 623 (these are basic plant biology courses, other upper level PLS courses are not recommended for satisfying this requirement)

All of the basic science courses are to be completed before the qualifying examination is administered. Exceptions may be approved by the director of Graduate Studies upon recommendation of the student's Advisory Committee.

Soil Science is by nature and application an interdisciplinary field. Prior to sitting for the qualifying exam, Ph.D. students are expected to have demonstrated competence in disciplinary areas of soil science by having passed graduate level courses (at the University of Kentucky or elsewhere) in the following areas:

Soil Biology Soil Fertility
Soil Chemistry Soil Morphology and Genesis Soil
Conservation and Management Soil Physics

Appendix B: Master of Science Degree Checklist

Master of Science Degree Checklist

- Official Academic Transcripts Received** – Students accepted conditionally on the basis of partial academic transcripts must provide an official academic transcript notifying that the undergraduate degree has been awarded within 8 weeks of the start of the term.
_____ (Date Transcripts sent to Graduate School)
- Transfer of Credit Form:** Written request to transfer up to 9 hours of post baccalaureate graduate credit (or up to 12 hours for the Non- thesis plan). This form is downloaded from the Graduate School website, filled out by the student, and delivered to the appropriate DGS for approval.
_____ (Date Submitted)
- Identify Program of Course Work (end of First Semester)
_____ (Date Approved by Major Advisor)
- Annual seminars (if required)
_____ (Dates Presented)
- Degree Audit:** Conduct a review of the transcript to insure there are no missing grades, 'I' grades, and the GPA is 3.00 or higher. Graduate School policy will not allow a student to sit for the exam if there are unresolved academic issues.
- Minimum number of hours/requirements for program _
 - 50% of minimum requirements of credit hours at 600/700 level _____ (# of hrs)
 - 2/3 of minimum requirements of credit hours in regular courses _____ (# of hrs)
- Exit seminar**

_____(Date Presented)

Submit the following form during the intended semester of graduation:

- Application for degree:** <http://myuk.uky.edu/> Click on: Student Services / myRecords / Graduate Degree Application. Due 30 days after the beginning of the semester (15 days for 2nd summer session). Please see <http://www.uky.edu/registrar/content/academic-calendar> for specific deadlines.

_____(Date Submitted)

Submit the following form **at least 2 weeks** prior to examination:

- Request for Final Master's Examination:**
https://ris.uky.edu/cfdocs/gs/MastersCommittee/Student/Selection_Screen.cfm
- Thesis Approval Form:** <http://gradschool.uky.edu/studentforms>

Examining Committee consists of at least three qualified members recommended by the DGS and appointed by the Graduate Dean. The final examination must take place no later than eight days prior to the last day of classes of the semester in which the student expects to graduate. Final examinations may not be scheduled during the period between semesters or between the end of the eight- week summer session and the beginning of the fall semester. Consult the Academic Calendar (<http://www.uky.edu/registrar/content/academic-calendar>) for deadlines for the scheduling of final examinations.

_____(Date Submitted)

Thesis (Thesis Students Only):

A student has 60 days following the date of his/her defense to submit the final, accepted document to the Graduate School. Students will not have the entire 60 days if they defend late in the semester and need to graduate that semester (check <http://www.uky.edu/Registrar/AcademicCalendar.htm> for submission deadlines). Prior to final submission, the thesis must be reviewed by the Graduate School for a first format check. This process takes about 48 hours.

- Presentation of the final copy of the thesis in approved form to the Graduate School.

_____ (Date Submitted)

Appendix C: Student Forms for Master's Degree

All updated forms for students can be accessed via <http://gradschool.uky.edu/studentforms>.

- [Check sheet for Master's Non-Thesis Students](#) (pdf)
- [Check sheet for Master's Thesis Students](#) (pdf)
- [Concurrent Master's Degrees](#) (pdf)
- [Request for Final Master's Degree Examination](#) (login required)
- [Master's Exam Survey](#) (completed after exam)
- [Request for Specialist Examination](#) (login required)
- [Graduate School Application for Degree](#) (click on Student Services/myRecords/Graduate Degree Application)
- [Transfer of Credit: Master's or Specialist](#) (login required)
- [Information on Degree Certification](#) (pdf)
- [Request for Degree Certification form](#) (pdf)
- [Electronic Thesis or Dissertation \(ETD\) Approval Form for Final Copy](#) (pdf)

Appendix D: Doctor of Philosophy Degree Checklist

Doctor of Philosophy Degree Checklist

- Official Academic Transcripts Received** – Students accepted conditionally on the basis of partial academic transcripts must provide an official academic transcript notifying that the undergraduate or M.S./M.A. degree has been awarded within 8 weeks of the start of the term.

_____ (Date Transcripts sent to Graduate School)

- Transfer of Credit Form:** Written request to transfer up to 9 hours of post baccalaureate graduate credit. This form is downloaded from the Graduate School website, filled out by the student, and delivered to the appropriate DGS for approval. Note restrictions on the type of credit hours that can be transferred.

_____ (Date Submitted)

- Formation of Advisory Committee:**

http://ris.uky.edu/cfdocs/gs/DoctoralCommittee/Selection_Screen.cfm

_____ (Date Submitted)

The Advisory Committee has a core of four members. This core consists of the Major Professor as Chair, two other members from the major area, and at least one representative from outside the student's home department or program area. All members of the core must be members of the Graduate Faculty of the University of Kentucky and three (including the Major Professor) must possess Full Graduate Faculty status. It is strongly suggested that this committee be formed by the end of the student's first semester and no later than the end of the student's second semester.

- Annual Advisory Committee Meetings**

_____ (Dates Held)

- Qualifying Examination Request** (minimum of two weeks before the requested date)

_____ (Date Submitted)

- Students must have the equivalent of 2 years of residency (36 hours or 18 hours plus written approval to use the M.S. degree to partially satisfy residency requirements). Conduct a review of your transcript to insure you don't have any missing grades, 'I' grades, and your GPA is 3.00 or higher. Graduate School policy will not allow you to sit for the exam if you have unresolved academic issues.
- Language Requirement (only if required by committee) – Before Qualifying Exam
- After passing the Qualifying Exam, students must maintain continuous enrollment in PLS 767 for 2 credit hours each term until the dissertation is successfully defended.

Submit the following form during the intended semester of graduation:

- Application for degree:** <http://myuk.uky.edu/> Click on: Student Services/myRecords/Graduate Degree Application. Due 30 days after the beginning of the semester (15 days for 2nd summer session). Please see <http://www.uky.edu/registrar/content/academic-calendar> for specific deadlines.

_____ (Date Submitted)

Submit the following form **at least 8 weeks** prior to the expected final examination:

- Notification of Intent to Schedule a Final Doctoral Examination**

http://ris.uky.edu/cfdocs/gs/DoctoralCommittee/Selection_Screen.cfm

_____(Date Submitted)

Once submitted, the Graduate School will appoint an Outside Examiner. There must be a two week window given to find an appropriate Outside Examiner. Assigning the Outside Examiner typically takes 4-5 weeks and you will receive an email when an Outside Examiner has been found.

- At least 4 weeks** prior to examination, provide a nearly complete (except for pagination) copy of the dissertation to Advisory Committee. **A dissertation approval form is no longer required by the Graduate School** but it is expected that the student provide the Advisory Committee with a document sufficiently organized and complete that it provides strong evidence the dissertation is ready to defend.

Submit the following form **at least 2 weeks** prior to the expected final examination:

- Request for Final Doctoral Examination**

http://ris.uky.edu/cfdocs/gs/DoctoralCommittee/Selection_Screen.cfm

The candidate must provide the Outside Examiner with an approved (by the Advisory Committee) dissertation giving evidence of sufficient completeness that it is ready to defend.

A student has 60 days following the date of his/her defense to submit the final, accepted document to the Graduate School. Students will not have the entire 60 days if they defend late in the semester and need to graduate that semester (check <http://www.uky.edu/Registrar/AcademicCalendar.htm> for submission deadlines). Prior to final submission the dissertation must be reviewed by the Graduate School for a first format check. This process takes about 48 hours but may take longer during peak periods, especially during the end of the semester. Plan accordingly.

_____(Date Submitted)

- Presentation of Exit Seminar**

_____(Date Submitted)

Appendix E: Student Forms for Doctoral Degree

All updated forms for students can be accessed via <http://gradschool.uky.edu/studentforms>.

- [Check sheet for Doctoral Students](#) (pdf)
- [Transfer of Credit: Doctoral](#) (login required)
- [Concurrent Master's and Doctoral Programs](#) (pdf)
- [Formation of an Advisory Committee](#) (login required)
- [Graduate School Application for Degree](#) (Click on Student Services/myRecords/Graduate Degree Application)
- [Notification of Intent to Schedule A Final Doctoral Examination](#) (login required)
- [The Qualifying Exam](#) (login required)
- [Request for Final Doctoral Examination](#) (login required)
- [Information on Degree Certification](#) (pdf)
- [Request for Degree Certification form](#) (pdf)
- [Outside Reviewer Survey](#) (online)
- [Electronic Thesis or Dissertation \(ETD\) Approval Form for Final Copy](#)
- [Dissertation Agreement](#)

Appendix F: PSB Trainee Space Policy

3rd & 4th Floor PSB Desk Assignment Policy:

Office desk space is prioritized for trainees (grad students, postdocs, and visiting scholars). Each floor will have a 'Desk Coordinator' who will oversee desk assignment, re-assignment, and usage. They are as follows:

3rd floor – Carol Von Lanken (carol.von@uky.edu)

4th floor – Mike Barrett (mbarrett@uky.edu) & Bruce Downie (adownie@uky.edu)

Faculty (PSS, Hort, ENT, FOR) should contact the appropriate Desk Coordinator as soon as they know when a new trainee will arrive. The trainees name will be entered onto a 'wait list' for a desk. The Desk Coordinators will work with each other to try and ensure the most harmonious location of individuals. The Desk Coordinators will be responsible for identifying when people have graduated/left and what desks are free. Requests to change desks should also go through the Desk Coordinators. In the case of conflicting requests to change a desk, seniority may be used to determine the assignment.

If there are more desks than needed, staff members can request and be assigned a desk; however, they must justify their need for a desk (e.g., spending time on data analysis, writing, reviewing manuscripts, etc.), and they may be asked to relinquish their desks, if additional desk space for trainees is required.

In cases where trainee status is questionable/unknown and/or trainees become staff, Desk Coordinators will make the call on desk assignments.

APPENDIX G. Organizational Structure and Administration

Graduate School

The University of Kentucky began offering graduate work in 1870 and awarded its first graduate degrees in 1876. The Graduate School became a distinct unit in the University organization in 1912. The mission of the Graduate School is to promote advanced study, graduate instruction, and research by the faculty and students of all colleges and departments. The total graduate resources of the University are merged under the Graduate School for the purpose of promoting the

acquisition of knowledge in an atmosphere of free and lively inquiry. Graduate work is offered in most colleges in the University.

Dean

The Dean of the Graduate School is charged with administering the policies adopted by the Graduate Faculty and the University Senate relating to graduate studies. The dean presides over all meetings of the Graduate Faculty and calls meetings of this faculty whenever it is advisable or whenever requested to do so by one-fourth of the membership. Recommendations are made by the dean to the Graduate Faculty regarding the requirements for advanced degrees, the regulations necessary to insure a high standard of graduate work and all other aspects of the graduate program. The graduate programs are administered in the interest of efficient instruction and the highest attainment possible on the part of each graduate student. The dean is responsible for determining and certifying to the Registrar candidates who have fulfilled requirements for advanced degrees. The President, the Executive Vice President for Research, the Provost, and the Dean of the Graduate School shall be ex officio members of all committees of the Graduate School.

Director of Graduate Studies

The Director of Graduate Studies (DGS) is the local representative of each graduate program; s/he provides for the program's administration and acts as the official liaison with the Graduate School. The DGS is responsible to the Graduate Faculty of their program and to the Dean of the Graduate School for the recruitment, admission, advising, and examining of students in their program. Consequently, s/he has an important effect on the quality of graduate programs at the University of Kentucky. In addition to a DGS for specific programs, some colleges have designated a faculty member as Associate Dean for Research and Graduate Studies who serves as the local extension of the Graduate School at the college level.

Each DGS is appointed by the Dean of the Graduate School after consultation with the respective Graduate Faculty and administration in a program. The DGS is normally a tenured faculty member, holding the rank of Associate Professor or above, and must be a full member of the Graduate Faculty. The standard term for a DGS is three years however programs have the option to request an appointment for up to four years if appropriate. A DGS who will be absent from the University for a semester or more must inform the Dean so that a substitute can be appointed.

The DGS of a graduate program reports directly to the Dean of the Graduate School or to the Dean's designee on all matters relating to graduate education in the program. S/he is responsible for the administration of the graduate program, including maintenance of records, administration of graduate program funds, admission of graduate students, fellowships, program requirement changes and new programs, advising and registration, appointment of advisory and examination committees, and other degree requirements related to the graduate program. Additionally, the DGS serves as the focal point for dissemination of information from the Graduate School.

The DGS serves as program advisor to each student until the student has a thesis or dissertation director. The DGS then recommends that the thesis or dissertation director be appointed as the student's advisor or committee chair. In areas where a thesis is not required, the DGS is the advisor of all students. The student advisor must endorse all student schedules. If it is desirable, a DGS may recommend that additional advisors in the program be appointed. A list of current Directors of Graduate Studies can be accessed [here](#).

Graduate Program Steering Committee

The IPSS DGS will be assisted by a committee of representatives that reflect the participation of the various involved departments and represent the diversity of focus areas included in the degree programs. The Graduate Program Steering Committee will be responsible for overall direction of the degree, including

1. Coordination of programmatic changes, administration, and assessment;
2. Leading efforts to improve IPSS structure and function (e.g. improve communication, integration across departments, recruitment, student quality and numbers, student experience, etc.);
3. Assist the DGS where appropriate

Composition, Selection, and Terms

The committee members will be chosen by the DGS and the Steering Committee Chair with the support of the participating department chairs. The DGS and SC Chair will annually solicit input from the program faculty as to the performance of the committee members. The committee will be composed of the following representatives:

- ❖ **Chair**
Any tenured, active faculty member from a department participating in the IPSS program; 3-year term
- ❖ **IPSS DGS**
Any tenured, active faculty member from a department participating in the IPSS program; 3-year term
- ❖ **Horticulture Representative(s)**
One to two (fluctuates based on department of DGS and Chair) Horticulture faculty member(s) active in the IPSS program; 2-year term
- ❖ **Plant & Soil Science Representative(s)**
One to two (fluctuates based on department of DGS and Chair) PSS faculty member(s) active in the IPSS program; 2-year term
- ❖ **Forestry & Natural Resources Representative**
One Forestry faculty member active in the IPSS program; 2-year term
- ❖ **At-large Non-IPSS Representative**
One faculty member with familiarity of the IPSS program; 2-year term
- ❖ **IPSS Graduate Student Association Representative**
Elected president of the GSA; 1-year term
- ❖ **At-large IPSS Student**
One active IPSS, preferably international (if President is not), student; 1-year term

Responsibilities of Committee Positions

- ❖ **Chair** – Renews membership terms and/or adds/removes members; provides budgetary oversight and guidance; sets and leads committee meetings
- ❖ **DGS** – In charge of administration of the program; develops the program budget in consultation with the chairs and steering committee.
- ❖ **Other members** – Attend meetings, participate in subcommittees as appropriate or assigned

APPENDIX H. Physical Locations

Excellent facilities and equipment are available for graduate research. Faculty, staff, and laboratories associated with the graduate program are distributed among four buildings: Agricultural Science Center North Building, Kentucky Tobacco Research and Development Center Building, Thomas Poe Cooper Building (Forestry), and Plant Science Building. There are additional outlying buildings on central campus and research farms. The departments have research at multiple research stations: South Farm (Lexington), Spindletop and Maine Chance Farms (Lexington), Oran C. Little Animal Research Farm (Woodford Co.), Quicksand Experiment Station (eastern Kentucky), and Princeton Agricultural Research Center (western Kentucky).

APPENDIX I: Retired, auxiliary, and adjunct service on advisory committees

When faculty members retire or leave the University, they may continue their service on previously established committees, but may not be appointed to new committees. The departing faculty member cannot be the sole chair of the committee; a UK faculty member must serve as co-chair.

Continued service requires the approval of the Dean of the Graduate School. In the case of a faculty retirement or departure, the DGS should inform the Dean of the Graduate School, in writing, if continued service on Advisory Committees is requested for the faculty member. The DGS should specify all student committees for which continued service is requested.

On recommendation of the Director of Graduate Studies and with the approval of the Dean of the Graduate School, persons who normally do not hold academic appointment in the University, but who have demonstrated an interest in collaborative participation in its graduate programs, may be appointed as **Auxiliary Graduate Faculty Members**. They should hold the terminal academic degree in the field and possess a record of research or creative experience that would warrant their inclusion on advisory committees to assist graduate students in conducting research. Auxiliary Graduate Faculty may serve only as nonvoting members of the Advisory Committee.

Adjunct Members of individual graduate programs may be appointed for the specific purpose of serving on advisory committees in those programs. They are voting members of Advisory Committees. Adjunct Members should hold the terminal academic degree in the field and possess a record of research or creative experience that would warrant their inclusion on Advisory Committees to assist graduate students in conducting research. Departmental procedures exist for appointing Adjunct Members to graduate faculties for this purpose.

Contact the DGS of the appropriate program for additional information.

APPENDIX J: Final examination procedures

The following are Graduate School procedures for conducting the Final Examination: At the outset of the Examination, the DGS or committee chair should verify that the Examination Card has been brought to the examination room. If this is not the case, the committee chair or DGS must call the Senior Associate Dean's office at the Graduate School (257.7126) to determine if the examination may proceed.

- The Examination may not begin until all voting members of the committee are present (these names are listed on the examination card)
- One or more members of a master's or doctoral committee may participate remotely in an Examination if a video-conference connection can be established (this option does not apply to the Outside Examiner assigned to final doctoral defenses). The DGS should identify the committee members participating in this fashion on the qualifying or final examination request form. Under exceptional circumstances, the remote participation option may also be extended to the student.
- An Examination may be cancelled prior to its official start for substantive reason with no permanent consequences for the student. The student has not failed the examination in this case because it was never officially begun. Substantive reasons can include a missing committee member, a sudden difficulty in the candidate's personal life that may affect performance, or a (late) opinion on the part of one or more committee members, for example that the dissertation is not ready to defend. In such cases, the committee may hold an open or closed discussion to review the issues at hand and reach a decision on whether to hold the examination or not. Furthermore, the candidate does have the right to cancel the examination prior to its start. If the examination is cancelled, it must be formally rescheduled with the Graduate School in the standard fashion. A minimum two-week interval is required for re-scheduling the examination
- Once the examination has begun, all committee members must remain present for the duration of the process. In cases in which a committee member is participating remotely, if the connection is lost, the examination process should be immediately suspended and not re-started until connection is again fully established.
- Once the examination has begun, it must be carried through until its end. A formal vote must be taken and recorded on the examination card, along with the signatures of all (voting) members. There are only two outcomes possible; by majority vote, Pass or Fail. The only suspensions permitted are short ones to permit the candidate or committee members to refresh themselves.
- If an emergency situation should arise during the course of an examination, the committee chair or DGS should immediately call the Graduate School (257.4905 or 257.1759) to seek guidance.

In all decisions, the majority opinion of the Graduate Faculty members of the Advisory Committee prevails. If the Advisory Committee is evenly divided, the candidate fails. In the event of failure, the Advisory Committee recommends to the Dean of the Graduate School conditions under which the candidate may be re-examined, if re-examination is deemed appropriate. When conditions set by the Dean of the Graduate School have been met, the candidate may be re-examined. The minimum time between examinations is four months. A second examination must be taken within one year after the first examination. Should any vacancies on the Committee occur between the two examinations, the Dean of the Graduate School shall appoint replacements. A third examination is not permitted.

APPENDIX K: Addition or deletion of specialty areas

Graduate faculty are encouraged to cross disciplinary lines and create new specialty areas in the IPSS program to respond to changing research opportunities. Creation of new specialty areas in IPSS must be approved by the Graduate School, Graduate Council, and University Senate as it is a major program change. To create a new specialty area requires a minimum of four faculty, three of whom must be full members of the Graduate Faculty. These faculty must provide a rationale explaining the need for the new specialty area, identify the background knowledge and preparation, core science, and disciplinary coursework required for Ph.D. students in their area. These requirements can be no less than the minimum required by the Graduate School as specified in the Graduate School Bulletin and can be more rigorous at the discretion of the proposed program area. The faculty members must identify the basis for written and oral qualifying examinations and the format that will be followed for written exams. The IPSS DGS will work with the graduate faculty to submit this information to the Graduate School for approval.

At least four active faculty must be identified as members of a specialty area at all times or enrollment in the specialty area will be suspended. At least one student must be enrolled in the specialty area during a three-year rolling period or enrollment in the specialty area will be suspended.