

Crop and Soil Sciences Graduate Student Handbook

August, 2011

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WELCOME

Welcome to the Department of Crop and Soil Sciences (CSS) at Washington State University! We are proud to offer world-class M.S. and Ph.D. degrees in both Crop Science and Soil Science, with the ability to conduct graduate research in a variety of specialized areas within each discipline.

The Department of Crop and Soil Sciences offers programs in the broad area of crop science, including plant breeding and genetics, crop and seed production, turf management, weed science, plant physiology, cereal chemistry, and plant biotechnology; and soil science, including soil fertility and plant nutrition, soil physics, soil chemistry, soil microbiology, soil genesis morphology and classification, organic and sustainable agriculture, and remote sensing technology including GIS, GPS, and soil mapping. Programs are designed to discover and develop principles of crop and soil sciences and to apply these principles to the development of new crop varieties and new crop, soil and water management practices in agricultural, urban, and natural environments.

Our goal is to train tomorrow's leaders, scientists and educators to make valuable and lasting contributions in their chosen field or endeavor. To achieve this goal, CSS provides students the opportunity to develop in-depth knowledge in their field, to develop critical thinking skills and to conduct original, creative, cutting-edge research. CSS students have opportunities to teach in the classroom and in outreach programs. Students also have the opportunity to develop a breadth of knowledge across the varied CSS disciplines and beyond by interacting with colleagues and faculty working in research areas outside of their own.

We have a long-standing commitment to financially supporting our CSS graduate students with a combination of funds from Washington State and from various private and governmental external grants. Since the availability of these funds fluctuates from year to year, we cannot guarantee support for all students throughout their entire programs. Nevertheless, we have an outstanding and consistent track-record of fully supporting our productive and progressive students from the day they start to the day they complete their degree. Graduate students on formal appointment and receiving a stipend are considered full-time graduate assistants in the department. These appointments represent an agreement between the student and the department with each party having defined responsibilities. Academic responsibilities are defined in this handbook. Your advisor and committee define your research responsibilities. Being a graduate student is more than a full time endeavor and requires your full attention and effort to succeed. Employment in addition to an assistantship is not permitted. Students generally devote half of their time to class studies and half to their research under the guidance of a major professor. Students are expected to complete their research project and thesis prior to graduation. Publication of the research is an expected outcome of graduate research.

Most agree that the time they spent in graduate school was some of the most challenging and rewarding in their life. Immerse yourself in the experience and take full advantage of the many social and professional opportunities coming your way. You will make many new and lasting friends from around the U.S. and world. Your time here will be filled with personal and professional growth, change, and accomplishment. At times you may want to give up. Don't. The CSS faculty and staff are dedicated to enriching your graduate experience and ensuring that it is World Class. We wish you every success in your program and your subsequent endeavors in crop and soil science-related professions.

Richard T. Koenig
Chair, Department of Crop and Soil Sciences
August, 2011

INTRODUCTION

Policies and procedures regarding graduate education are set at three levels--- the university, college, and department. The WSU [Graduate Catalog](#) and the [Graduate School's Policies and Procedures](#) contain most of the general policies on admissions and programs. Please refer to these websites for current information. This handbook addresses departmental policies and procedures in addition to the aforementioned. Failure to follow these policies and observe the degree requirements inevitably results in complications and could delay or jeopardize completion of your degree. Please read this handbook carefully and keep refer it throughout your program of study here.

STATEMENT OF ETHICS

The CSS faculty and staff are committed to the basic values of:

Accountability
Integrity
Positive Attitude
Respect
Honesty
Passion
Quality
Work Ethic

By upholding these values we strive for our students to develop scientific and professional values of their own. We highly encourage our students to reflect on and consider the following guiding principles:

1. Uphold the highest standards of scientific investigation and professional comportment, and an uncompromising commitment to the advancement of knowledge.
2. Honor the rights and accomplishments of others and properly credit the work and ideas of others.
3. Strive to avoid conflicts of interest.
4. Demonstrate social responsibility in scientific and professional practice, by considering whom their scientific and professional activities benefit, and whom they neglect.
5. Provide honest and impartial advice on subjects about which they are informed and qualified.
6. As mentors of the next generation of scientific and professional leaders, strive to instill these ethical standards in students at all educational levels.

Adopted by ASA, CSSA, and SSSA

GRADUATE PROGRAM ADMINISTRATION

Graduate Program Bylaws

The Department of Crop and Soil Sciences Graduate Program is governed by official bylaws, approved by the Graduate Faculty in Crop and Soil Sciences, The Graduate School, and the WSU Faculty Senate. The [Department of Crop and Soil Sciences Graduate Program Bylaws](#) define the qualifications for membership for the Crop and Soil Sciences Graduate Faculty, administration of the Crop and Soil Sciences Graduate Program, composition of graduate student committees, and participation of Crop and Soil Science graduate students in the administration of the Crop and Soil Sciences Graduate Program.

The Crop and Soil Sciences Graduate Program is administered by the Graduate Program Director who is also the Department Chair. The Graduate Committee coordinates and advises the Department Chair on the

Crop and Soil Sciences Graduate Program. Currently the committee is composed of the Crop Science and Soil Science Graduate Coordinators.

At the discretion of the Department Chair, student representation may be added or deleted from any committee, but graduate students may not serve on the committees of other graduate students.

Duties of the Department Chair related to the Graduate Program in CSS are to provide overall leadership, development and implement policies, represent the interests of the Graduate Program to the campus and University administrators, be responsible for coordinating all Graduate Program administrative matters within the Graduate School, manage the departmental resources for graduate student support in CSS, coordinate CSS graduate course teaching assignments, and appoint a CSS Graduate Committee and a Chair of that committee.

Areas in which the Graduate Committee assists and advises the Chair include:

- Review, develop and update long-range goals for the CSS graduate program and plans for their attainment. These ideas shall be presented at least once annually to a meeting of all faculty.
- Serve as a sounding board for new ideas, changes, etc., in academic or administrative issues.
- Provide guidance on administration of the CSS Graduate Program.
- Lead the CSS graduate program assessment process.
- Coordinate all activities related to recruitment of CSS graduate students.
- Develop and maintain recruiting materials, including web materials, as required.
- Review all student applications and, in conjunction with the Department Chair after consultation with appropriate CSS Graduate Faculty, determine the appropriate disposition of applications (acceptance or rejection) in a timely manner.
- Make recommendations regarding the use of departmental resources for providing financial support to graduate students, including assistantships, scholarships and awards.
- Regularly (at least annually) review the CSS graduate curriculum.
- Make recommendations to CSS Graduate Faculty regarding curricular revision. Such recommendations are forwarded to the Department Chair to be presented to the Graduate Faculty for approval by majority vote.
- Prepare drafts of course or curricular change forms for revision and submission by the CSS Department Chair.
- With approval by the CSS Department Chair, other ad hoc committees may be appointed as needed. Changes to the existing Graduate Committee responsibilities must be approved by amendment of bylaws.

Department Chair

Dr. Richard Koenig, 291D, Johnson Hall, 335-3471, richk@wsu.edu

Graduate Coordinators

Crop Science

Dr. Kim Campbell, 379 Johnson Hall, 335-0582, kgcamp@wsu.edu

Dr. Ian Burke, 171 Johnson Hall, 3352858, icburke@wsu.edu

Soil Science

Dr. Jim Harsh, 249 Johnson Hall, 335-3650, harsh@wsu.edu

Academic Coordinator

Deb Marsh, 205 Johnson Hall, 335-2615, marshdj@wsu.edu

The academic coordinator is responsible for coordinating graduate admissions, student appointments, initial student orientation, graduate student records, forms processing, office assignments, preliminary and final exam scheduling, as well as curriculum issues such as the catalog and time schedule. She is

your first point of contact upon arrival, and should be your first point of contact thereafter regarding academic policies and procedures.

CSS Statewide Resources

Department of Crop and Soil Sciences, WSU-Pullman <http://css.wsu.edu>
WSU Puyallup Research and Extension Center <http://www.puyallup.wsu.edu/>
WSU Prosser Research and Extension Center <http://www.prosser.wsu.edu>
WSU Mt. Vernon Research and Extension Center <http://mtvernon.wsu.edu/>
WSU Wenatchee Tree Fruit Research and Extension Center <http://www.tfrec.wsu.edu/>

GENERAL ACADEMIC REQUIREMENTS, POLICIES AND PROCEDURES

Degree Options

Master of Science (M.S.). Thesis Option

Because research is an integral part of science, most students complete the thesis degree program. The thesis describes a research project conducted by the student. The thesis typically has three sections: a background or literature review that sets the stage for the research; a section with one or more chapters describing the actual research and containing data and analysis; and a general conclusion. The thesis should be formatted in a style that is consistent throughout. The final exam is in two parts. The first is a seminar presenting the results of research project. This is a public presentation. The second part is an oral exam that focuses on defense of the research project.

Master of Science (M.S.) Non-Thesis Option

In a few instances, students may wish to obtain advanced knowledge but do not want to write a traditional research thesis. Such students may elect the non-thesis option. This option must be chosen within the first semester following enrollment. Students in this option are required to take considerably more coursework than is required of students in the thesis option. Students in the non-thesis option must complete a paper or project in lieu of the thesis. The final oral exam will focus more on broad knowledge and less on project defense than would an exam for the thesis option. More details are provided in the 'Final Exam' section of this handbook.

Doctor of Philosophy (Ph.D)

The PhD degree is awarded in recognition of excellence in scholarship and for an original contribution to the advancement of science. The degree is awarded for originality and creative scholarship rather than for an accumulation of academic credits.

The Ph.D. program is separated into the "initial" period preceding the preliminary examination and the "candidate" period following the preliminary examination. During the initial period, the student acquires knowledge and skills needed for his/her research program and most of the academic program is completed. The preliminary exam should be completed no later than the fourth semester into the Ph.D. degree program. After passing the preliminary examination the candidate concentrates on research and preparation of the dissertation. During the latter period the candidate demonstrates his/her ability to do original research. The final oral examination should reflect that students have developed into mature scientists, which includes the ability to conceive research projects, to critically evaluate the literature, to gain knowledge of acceptable scientific behavior, and to think and discern outside the area of the dissertation. More details are provided in the 'Major Examination' section of this handbook.

Advisor

The *major advisor* is the thesis or dissertation advisor and is the graduate student's primary contact for all matters related to the program of study and thesis research. The major advisor assists in selection of the thesis committee and development of a program of study and thesis or dissertation research proposal. The major advisor monitors the student's academic and professional growth, reviews program changes, and arranges for graduate student support. The major advisor is generally the committee chair.

If the major advisor is located at a Research Station, a *campus advisor* must be identified who will support the academic development of the student while that student is on campus. If the student is conducting their project at least partly on campus, then in an ideal situation the campus advisor will be a co-investigator on the student's research with the major advisor. Although the major advisor is responsible for advising the student on experimental design and manipulation and interpretation of data, and for reviewing initial drafts of theses/dissertations and papers, the student will be integrated into the campus advisor's research program. The campus advisor will also provide *monetary* support for these research activities. For those students whose research program focus is off-campus, the campus advisor will serve on the student's committee, answer day-to-day questions while the student is in Pullman and will invite the student to research group meetings, journal clubs, and similar activities.

Committee

All students have a thesis or dissertation advisory committee. The students must meet with their committee at least twice per academic year.

The initial selection, or subsequent changes of a graduate student's committee shall be determined jointly by the student and the student's major advisor and approved by the Department Chair.

The graduate committee of each student shall have a minimum of three members for M.S. and three members for Ph.D. At least one member of a M.S. and two members of a Ph.D. committee must be both permanent WSU tenured/tenure-track faculty and graduate faculty in CSS.

Crop and Soil Sciences allows non-tenure track professionals internal to WSU (i.e. research, clinical, adjunct, or affiliate such as USDA –ARS researchers) and appointed as adjunct faculty to serve on, co-chair, or chair a committee. In these cases, at least one other member of a master's committee must be a permanent, WSU tenure-track faculty member and a member of the graduate faculty of the student's program. The third member must be a graduate faculty of the student's program but is not required to be a permanent WSU tenure-track faculty. Similarly, at least two other members of a doctoral committee must be permanent, WSU tenure-track faculty and a member of the graduate faculty of the student's program.

Non-tenure track professionals external to WSU may be granted Graduate Faculty participation if they are first officially approved as adjunct faculty, but cannot serve as chair or co-chair of a graduate student committee.

Individuals not officially participating as Graduate Faculty within any graduate program at WSU (i.e. a faculty member from another university or entity) may be approved to serve as a committee member for an individual student on a case-by-case basis. The committee chair for that student should forward the name and curriculum vitae of the desired committee member along with the program of study for approval by the Chair, and final approval by the Dean of the Graduate School.

If a minor is declared, one member of the committee must be from the Graduate Faculty of the minor program. This person may fill the requirement of one of the WSU permanent tenure-track faculty members on the committee.

The committee chair ensures that the student is making satisfactory progress towards a degree.

The committee aids in developing the course program and provides guidance and expertise for the student's research. To ensure guidance in all aspects of their research, many students, especially Ph.D. students, elect to have four or five faculty on their committee. In addition to advising the student, each committee member must read the thesis or dissertation, attend, and vote at the preliminary and final

exam. Committee members often participate in the annual student evaluation. The respective Graduate Coordinator must approve each committee.

[Graduate School](#) policies and procedures, deadlines, guidelines, as well as committee membership and program of study forms are found on their website.

Graduate Student Representatives

In addition to the major advisor and the Graduate Coordinator, CSS students are represented by at least one, but no more than two, graduate students. The graduate student representative acts as a liaison with the faculty and attends all faculty meetings except those involving personal matters. He/she will communicate student's suggestions to the faculty and will serve as their advocate. Departmental committees with graduate student positions include the Computer, Graduate Studies, Safety and Space Committees, and Search committees. These representatives are elected by the graduate students and are the representatives for one academic year.

All graduate students in the university who are currently enrolled in 10 or more hours are members of the [Graduate and Professional Student Association](#) (GPSA). GPSA represents the concerns of graduate students within the university and nationally. The CSS program has at least one representative to the GPSA Senate (the governing body for GPSA) who is elected each fall. Many of the important advisory committees within the university itself have voting positions for graduate students.

Courses at the University of Idaho

Register for cooperative WSU course(s) taught at UI via [zzuSIS](#) along with your other courses. The end of the semesters at UI and WSU do not coincide. Therefore after the WSU grade submission deadline, students may not receive a grade for the UI course(s) on their initial grade report. The Academic Coordinator will work with the UI departments to get the final grades and they will be added to the student's record as soon as it is received and processed from UI.

Many UI courses are not cross-listed in the WSU course catalog; the University of Idaho [catalog](#) should be consulted and course schedules must be verified with the instructor.

Grievances

If grievances arise, the student should discuss the problem with their thesis advisor and the Graduate Coordinator(s). If additional consultation is needed, please consult the Department Chair, or as a final resort, the WSU Ombudsman. The [WSU Ombudsman Office](#) is in Wilson Hall, Room 2, phone (509) 335-1195.

Annual Review and Evaluations

The Graduate School requires an [annual review](#) of each graduate student. In CSS, this review includes academic performance, research accomplishments and presentations, and, when applicable, performance as a TA. These reviews are completed by the thesis or dissertation advisor and discussed with the student and their thesis or dissertation committee. Teaching Assistants are also [evaluated](#) at the end of the semester by their students. If the student's progress is unsatisfactory, the thesis or dissertation committee will be consulted to determine if graduate student status should be continued. The Department Chair will notify the student in writing of the committee's recommendation and forward a copy of the report to the Graduate School.

Continuous Enrollment Policy

All full-time graduate students must register for a minimum of 10 credit hours each Fall and Spring semester, with at least one (1) of those credits being CROPS or SOILS 700, 702, or 800 to track the contributions of your Major Advisor. Part-time graduate students must register for a minimum of 2 credit

hours and a maximum of 9 credit hours each Fall and Spring semesters. International graduate students with F-1 or J-1 visa status should consult with the [Office of International Students and Scholars](#) for enrollment requirements, which in general requires the same enrollment level as full-time graduate students.

Apart from exceptions for graduate leave for personal reasons or internship leave, all M.S and Ph.D. students (prior to preliminary examination) are required by the Graduate School to be continuously enrolled in a minimum of 2 graduate credits each semester, excluding summer, until they have completed all of the degree requirements on their Program of Study. Doctoral Students who have taken their preliminary exams, have met all of their program requirements except completion of their dissertation, and do not have the funding to register for graduate credits may be placed into Continuous Doctoral Status for a limited number of semesters. Doctoral students in Continuous Doctoral Status will be charged a small administrative fee and will have limited access to University resources. Graduate students who are not enrolled for a semester (except doctoral candidates in Continuous Doctoral Status) and have not received approval from the Graduate School for graduate leave or internship leave will have to reenroll and pay an additional fee.

See Chapter 5 of the [Graduate School Policies and Procedures Manual](#) for details on these policies.

Preparing to Graduate

Note: See also 'Thesis/Dissertation Guidelines' later in this handbook

Students should consult the Graduate School's website early in the semester they expect to graduate to obtain information regarding policies and procedures, and deadlines for thesis defense and graduation. Failure to meet the deadlines could require enrollment for an additional semester.

Additionally, CSS requires students to prepare an 'Intent to Graduate' notice. **The notice is due the first week of the semester in which the student plans to graduate.** The student and professor should be prepared to present, in writing, an official timeline of how the process leading up to the thesis defense will be carried out in a timely and fair manner. Please use the template provided in the appendix.

In addition, a 'display' copy of your thesis must be provided prior to the scheduling form being presented for signature. Please email the 'display' copy (final draft, or very close-to-final draft) to the Academic Coordinator (marshdj@wsu.edu) to post on Sharepoint, a secured site with restricted permissions, where it will be available for faculty review. **The department chair will not sign the scheduling form until the electronic thesis is posted on Sharepoint.** This process does not override in any way the responsibility of the thesis committee. Rather, it is meant to offer one more step of preparation by and for the student. Any thesis committee member may deem that the thesis is not ready to be defended at any of the normal steps in the process.

Students who do not complete the steps listed above will not be allowed to conduct their defense until the following semester, NO EXCEPTIONS.

Check List for Graduation

- 1st week of semester intending to graduate- submit written intent to graduate and timeline to Academic Coordinator
- Ensure all deadlines on timeline are met throughout final semester, students intending to graduate who determine that graduation during that semester is not possible, should immediately contact the Academic Coordinator with an updated intent to graduate and revised timeline.
- Submit Application for Degree to the graduate school (see Graduate School Website for specific deadlines).
- After final committee approval of thesis draft, approve defense date and time and obtain committee signatures on final exam scheduling form, contact Academic Coordinator to schedule a room for defense.

- A 'display' copy of the thesis/dissertation must also be submitted electronically to the Academic Coordinator (marshdj@wsu.edu) to load on the faculty Sharepoint site before the Department Chair will sign the final exam scheduling form.
- Conduct final exam, and turn in final copy of thesis/dissertation to Graduate School within 5 working days of defense, and also two hard copies to the CSS Academic Coordinator.

Note: It is the sole responsibility of the student to ensure that all deadlines set forth by the Graduate School are met. Dates and deadlines can be found for each semester on the Graduate School website at <http://gradsch.wsu.edu> Failure to follow the CSS Policies and Procedures or to meet the deadlines set forth by the Graduate School will result in a delayed graduation date.

Thesis/Dissertation Binding

The student is also responsible for providing two copies of the thesis/dissertation to the Academic Coordinator simultaneous with turning it into the Graduate School. The Department will pay to hard-bind these two copies. One is for the Department's thesis and dissertation library, the other is for Committee Chair. Additional bound copies can be arranged for \$20/ea, either at the expense of the student, or funding provided by the major professor. Personal checks should be made payable to J&S Bindery.

Exit

Before departure from CSS, students must leave a forwarding address with the Academic Programs Coordinator, schedule an exit interview with the Department Chair, return all keys to the main office, and consult with the advisor about cleaning up samples, chemicals, etc., from the student's research and office space.

Continuation for Another Degree

To continue for another degree you should contact the Academic Coordinator. The following forms/cards may be picked up from the Graduate School:

- Completed MS and continuing for a PhD in the same department.
- Not completing a PhD and continuing for a MS in the same department.
- Not completing a graduate degree and continuing as an undergraduate.
- New Application: Continuing a graduate degree program in a different department.

Milestones to Meet for Successful Completion of the Graduate Degree

Milestone	M.S. Degree	Ph.D. Degree
Committee identified and agrees to serve	End of first semester	End of first semester
Research Topic identified	End of first semester	End of first semester
Initial Committee Meeting, Program of Study approved by committee and submitted to Academic coordinator	Early in second semester (thesis) End of first semester (non-thesis)	Early in second semester
Thesis/Dissertation proposal defended to committee (in the Crops degree this is part of the preliminary examination for Ph.D. students, see below)	End of second semester	End of second semester. Crops Students enroll in Crops511
Course-work completed	End of 4 th Semester	End of 4 th Semester
Oral Preliminary Exam scheduled (Ph.D. students). Scheduling form submitted to Academic Coordinator.	N/A	End of 4 th or early 5 th Semester. Scheduling Form must be submitted 12 work-days prior to exam. See Graduate School deadlines for length of time necessary between completion of preliminary examination and final examination.
Oral Preliminary Exam completed (Ph.D. students)	N/A	End of 4 th or early 5 th Semester,
Crops 510/Soils 501 seminars completed (see below)	Once,	Twice, first one during first year. Second can be final dissertation seminar.
Statewide tour Special Topics completed	During first year	During first or second year
Thesis/Dissertation Research completed	One semester prior to expected graduation	One semester prior to expected graduation
First draft of Thesis/Dissertation submitted to advisor	At end of semester prior to expected graduation.	At end of semester prior to expected graduation.
Schedule for graduation form approved by committee.	During first month of semester in which student expects to graduate.	During first month of semester in which student expects to graduate.
Intent to graduate form submitted to graduate school	During first month of semester in which student expects to graduate.	During first month of semester in which student expects to graduate.
Alert CSS academic coordinator and Crops or Soils graduate coordinator of intent to graduate.	During first month of semester in which student expects to graduate.	During first month of semester in which student expects to graduate.
First draft of Thesis/Dissertation submitted to committee	During second month of last semester.	During second month of last semester.
Committee and Advisor revisions incorporated into Thesis/Dissertation	During third month of last semester.	During third month of last semester.
Final Examination scheduling form submitted to Academic Coordinator and Department Chair for approval.	Scheduling Form must be submitted 12 work-days prior to exam.	Scheduling Form must be submitted 12 work-days prior to exam.
Final draft of Thesis/Dissertation submitted to Committee	Minimum 10 work-days prior to exam.	Minimum 10 work-days prior to exam.
Final Examination	See Graduate School Deadlines	See Graduate School Deadlines
Revisions to Thesis/Dissertation completed and submitted to graduate School	Five working days after examination.	Five working days after examination.
Graduation.	If on RA/TA, eight to nine semesters after beginning study.	If on RA/TA, 8 -16 semesters after beginning study (depending on whether student begins with BS or MS).

GRADUATE COURSEWORK

Program of Study

Your committee chair and other members should aid you in developing your proposed Program of Study (POS). This is an official list of classes you have taken and/or will take, and research you have conducted or will conduct. All students should become familiar with the Graduate School program of study requirements as outlined on the Graduate School website at <http://www.gradsch.wsu.edu/>. The electronic form is available there too.

Your committee chair and other members should aid you in developing your proposed POS. The POS should be submitted early in your second semester. It is your responsibility to have appropriate forms typed, proofread, and presented to your committee.

After the POS is developed and each member has signed, submit the POS to the CSS Academic Coordinator for full faculty review. The general Crop or Science faculty, respectively, must approve your program and may require additional coursework. Once approved, the Academic Coordinator will forward the POS to the Graduate School. The Graduate School then reviews the POS and contacts the student and Academic Coordinator both regarding any problems. Once the problems are resolved, the Dean of the Graduate school will approve the POS and send electronic notification to both the student and Academic Coordinator.

Revisions to the POS are possible should the need arise. These changes are made on a 'Change of Program' form available on the Graduate School website. Do not refile a new POS. Your committee, the respective Graduate Coordinator, and the Department Chair must approve all revisions for presentation to the Graduate School for final approval. Major revisions require a respective all-faculty review as well.

Graduate School Coursework Requirements

Thesis Master's Degree

- 30 hours minimum total credit
- 21 hours minimum of graded course work, which consists of:
 - 15 hours minimum of graded course work at the 500-level
 - 4 hours minimum of 700-level credit in major
 - 6 hours maximum of non-graduate graded course work (300-400 level only)

Non-Thesis Master's Degree

- 30 hours minimum total credit
- 26 hours minimum of graded course work, which consists of:
 - 17 hours minimum of graded course work at the 500-level
 - 4 hours minimum of 702 credit in major
 - 9 hours maximum of non-graduate graded course work credit (300-400 level only)

Doctoral Degree

- 72 hours minimum total credits
- 15 hours minimum of graded graduate-level (500-level) coursework beyond the bachelors degree, *excluding the following departmental requirements:*
 - *Seminar: Crops 510 or Soils 501*
 - *Special Topics--Statewide Tour: Crops 512 or Soils 502*
- 20 hours minimum 800-level research credits
- 9 hours maximum of non-graduate courses
- Courses graded S/F may not be used in the core program (*i.e. Crops/Soils 511 Research Proposal and Soils 505 Teaching Practicum*)
- Courses graded P/F or courses taken as audit may not be included on the program of study

A flexible number of credits are allowed for research and thesis (700 or 800 level) each semester. Students are required to register for Crops or Soils 700, 702 (Research Projects for Non-Thesis Majors) or 800 to bring their credit load up to the maximum allowed, 18 credits each semester. Courses taught at University of Idaho that are not listed in the WSU course catalog can be added to the program of study using the independent study, special topics option, with committee approval.

Once the program has been approved by the Graduate School, the program becomes official and students are required to take all courses listed on the POS. **Any course included in the advanced degree program in which a grade of 'C-' or less has been earned must be repeated for credit.** Students may choose to take courses not on the POS as well.

Department Requirements

Seminar

All graduate students and faculty are expected to attend and participate in the departmental seminars regardless of enrollment, including those scheduled outside of the regular seminar series, whenever they have no class conflicts. Seminars are routinely made available via videoconferencing to the Research and Extension Centers at Puyallup, Prosser, and Mt Vernon. Students residing at off-campus locations are expected to participate via videoconferencing whenever possible. Arrangements for other locations can also be made.

All M.S. thesis and non-thesis students are required to take one credit of Crops 510 or Soils 501, respectively. Thesis students will also be required to give an exit seminar as part of their final defense of their thesis. Soils M.S. students should take Soils 501 and present this exit seminar as part of the course. Crops M.S. students may do the same or they may take Crops 510 earlier and present their exit seminar as a special seminar. Non-thesis MS students do not present a final seminar as part of their final exam.

PhD students are required to take two credits of Crops 510 or Soils 501, respectively, of which one credit must be taken during their first year of study at WSU.

For Crops PhD students, the subject of the first seminar is not the research proposal, and is non-dissertation. [Note—the research proposal seminar is associated with enrollment in CropS 511 and is generally presented to the committee or otherwise informally announced and arranged.]. In contrast, for Soils PhD students, the first seminar IS the research proposal [Note—enrollment in Crops/Soils 511 is not a requirement for Soils PhD candidates].

For Crops PhD students, the second credit of seminar may be for the dissertation seminar presented in the final semester during regularly the scheduled seminar series. Alternatively, Crops PhD students may deliver their dissertation seminar at the same time as the defense, in addition to the second credit of Crops 510. For Soils PhD students, the second credit of seminar will be for the dissertation seminar presented in the final semester during the regularly scheduled seminar series.

It is highly recommended that students in other degree programs (such as Molecular Plant Sciences), who are advised by CSS faculty and are housed in the CSS department, take one credit of Crops 510 or Soils 501.

Faculty members will evaluate student seminars, research proposals, and like presentations using the 'Rubric for Assessing Graduate Student Work in Crop and Soil Sciences' provided in the appendix.

Special Topics, Washington State Tour

To provide graduate students with an overview of the breadth of our departmental resources and the diverse agricultural industries in the state and to acquaint students with our statewide WSU faculty, staff, and graduate students, all incoming graduate students are required to attend the Statewide Tour at their earliest opportunity. The tour occurs sometime during the summer break, usually shortly after finals. Crop Science students should enroll for one credit of Crops 512, Soil Science students should enroll for one

credit of Soils 502 in the Fall semester following the summer in which they participate in the tour. Students who complete a master's degree in our department and enroll in our doctoral program, will be invited but are not required to attend the tour again. The instructor of the course rotates between Crops and Soils faculty. After the tour students must submit a group paper of their impression of Washington's agriculture, industry, and environment, followed by a group presentation during the Fall semester seminar series in which they give an overview of the trip.

Crop Science Graduate Coursework Requirements

Recommended Areas of Competency

The advisor, thesis committee, and Graduate Coordinator will discuss course expectations of incoming students on an individual basis. Entering students should have a solid B.S. level background in mathematics, chemistry, and the biological sciences. If it is determined that an incoming student is deficient, they may be asked to make up those deficiencies by taking or auditing courses or by doing extra reading.

<i>Recommended Areas of Competence (or equivalencies)</i>	<i>Title</i>	<i>Cr</i>	<i>Sem</i>	<i>Offered</i>
SOILS 201	Soil Science: A Living System	3	F	every year
CROPS 202	Crop Growth and Development	4	S	every year
STAT 212	Introductory Statistics	4	F, S	every year
CHEM 102	Chemistry Related to Life Sciences	4		
CHEM 345	Organic Chemistry I	4		
CHEM 346	Organic Chemistry II	3		
BIOL 320	Introductory Plant Physiology	3	F	every year
CROPS 411	Crop Environmental Interactions	3	S	every year
PI P 429	General Plant Pathology	3	F	every year
SOILS 441	Soil Fertility	3	S	every year
CROPS 445	Plant Breeding	4	S	every year
or MBIOS 301	General Genetics	3		

Master Degree Requirements

<i>M.S. Core Course Requirements</i>	<i>Title</i>	<i>Cr</i>	<i>Sem</i>	<i>Offered</i>
CROPS 510	Seminar	1	F, S	every year
CROPS 512	Special Topics, State Tour	1	F, S	every year
CROPS 700	Master's Research (Thesis)	4	F, S	every year
CROPS 702	Master's Special Problems (Non-Thesis)	4	F, S	every year

<i>M.S. Suggested Course Options</i>	<i>Title</i>	<i>Cr</i>	<i>Sem</i>	<i>Offered</i>
MBIOS 303	Introductory Biochemistry	4	F, S	every year

STAT 412	Biometry	3	F, S	every year
CROPS 445	Plant Breeding	4	S	every year
CROPS 503	Advanced Cropping Systems	3	F	every year
STAT 512	Analysis of Variance of Designed Exp.	3	F, S	every year
STAT 519	Applied Multivariate Analysis	3	S	every year

[Faculty approval of this addition is pending as of 8/25/11.....

Crops Non-thesis Masters Degree

Within the Graduate School's minimum requirements, the non-thesis student's graded course work will include 6 credits in plant and soil biology (soil science, agronomy, horticulture, forestry, crop protection, plant ecology, biology, microbiology), 15 credits in crop science (crop production, crop protection, genetics, molecular genetics, plant physiology), and 5 credits in other professional core courses (e.g., statistics, biochemistry, plant pathology). The student must demonstrate skill in critical thinking, scholarship, and written and oral communication through course work, the seminar course, and the final report and examination. The non-thesis option requires the student to form a committee and develop the program of study during the first semester of enrollment. Students in this option will have lowest priority for state-funded assistantships and will generally be expected to be self-funding.

End]

Doctoral Degree Requirements

<i>PhD Core Course Requirements</i>	<i>Title</i>	<i>Cr</i>	<i>Sem</i>	<i>Offered</i>
CROPS 510	Seminar	2	F, S	every year
CROPS 511	Research Proposal Development	2	F, S	every year
CROPS 512	Special Topics, State Tour	1	F, S	every year
CROPS 800	Doctoral Research	20	F, S	every year

Teaching Experience

An educational delivery experience equal or equivalent to a semester teaching assistantship is required. A teaching assistantship is required of Ph.D. students, regardless of funding. Equivalent experience can include lecturing in a course multiple times, extension program delivery, and assistance with education courses.

Suggested Course Options

<i>Breeding/Genetics Suggested Course Options</i>	<i>Title</i>	<i>Cr</i>	<i>Sem</i>	<i>Offered</i>
BIOL 519	Introduction to Population Genetics	3	F	even years
BIOL 520	Conservation Genetics	2		
BIOL 521	Quantitative Genetics	2	S	even years
CROPS 505	Adv. Classical and Mol. Breeding	3	F	odd years
CROPS 512	Special Topics, History of Genetics	1-2	S	odd years

CROPS 520	Plant Cytogenetic Tech. (UI PISc 520)	3	S	odd years
F S 583	Advances in Cereal Science and Technology	3	F	
MATH 563/BIOL 566	Mathematical Genetics (UI)	2	S	even years
MBIOS 513	General Biochemistry	3	F	every year
MBIOS 525	Plant Molecular Genetics	3	F	every year
or 514	General Biochemistry	3	S	every year
PL P 525	Field Plant Pathology and Mycology	1	S	odd–alt yrs, summer
PL P 535	Mol. Genetics of Plant & Pathogen Inter.	2	S	even years

<i>Physiology Suggested Course Options</i>	<i>Title</i>	<i>Cr</i>	<i>Sem</i>	<i>Offered</i>
BIOL 513	Plant Metabolism	3		
BIOL 517	Stress Physiology of Plants	3		
MBIOS 513	General Biochemistry	3	F	every year
MBIOS 514	General Biochemistry	3	S	every year

<i>Production/Management Suggested Course Options</i>	<i>Title</i>	<i>Cr</i>	<i>Sem</i>	<i>Offered</i>
CROPS 503	Advanced Cropping Systems	3	F	every year
CROPS 512 special topic	Herb. Fate Mode of Action	2		
CROPS 512 special topic	Herbicides, Tox. and Mode of Action	1		
CROPS 513	Biology of Weeds	3	F	even years
F S 583	Cereal Science and Technology	2	F	odd years
SOILS 413	Introduction to Soil Physics	3	F	every year

<i>Turf Management Suggested Course Options</i>	<i>Title</i>	<i>Cr</i>	<i>Sem</i>	<i>Offered</i>
BIOL 462	Community Ecology	3		
BIOL 517	Stress Physiology of Plants	3	S	even years
BIOL 548	Evolutionary Ecology of Populations	3		
CROPS 512 special topic	Herb. Fate Mode of Action	2		
CROPS 512 special topic	Herbicides, Tox. and Mode of Action	1		
ENT 558	Pesticide Topics	1		
IPM 452	Pesticides and the Environment	2		
PL P 521	General Mycology	4	F	every year
SOILS 547	Advance Soil Fertility Management	3	F	even years
STAT 412	Biometry	3	F, S	every year
STAT 512	Analysis of Var. of Designed Exp.	3	F, S	every year
STAT 519	Applied Multivariate Analysis	3		
STAT 530	Advanced Linear Models	3	S	
STAT 547	Multivariate			

Soil Science Graduate Coursework Requirements

Recommended Areas of Competency

To the extent possible, Soils graduate students should be knowledgeable in all five sub-disciplinary areas of Soils (chemistry, fertility, morphology, biology, and physics). However, because many students entering graduate school have received their B.S. degrees from an area outside of Soils, it is sometimes impractical and often very time consuming to take a graded course in each of these areas for the M.S. degree. For this reason, the Soils Faculty require that a graded Soils course be taken in a minimum of three of the five sub-disciplinary areas in Soils. Additional Soils and other courses to make up deficiencies can be taken as P/F as determined by the M.S. thesis committee and Soil Faculty. (It is generally expected that all deficiencies will be taken for a letter grade, but recognize that in special cases, it may make sense to take one as P/F, if agreed to by the thesis committee and Soils Faculty.)

It is recommended that students enter the program with established competence in soil science and supporting subjects. Minimum degree of competence include introductory soil science (Soils 201), organic chemistry (Chem 345), statistics (Stat 412), soil analysis (Soils 442 or 503) and at least two courses in upper level soil science [Soils 414/415(WSU), 413(UI), 422(UI), 441(WSU), 451(UI)]. Deficiencies should be made up in the first one or two semesters following admission and should be done at the student's expense.

Special Soils Course Descriptions.

Soils 502 – Advanced Topics

All graduate students in Soils are encouraged to enroll and to participate in this course. Sections of this course are designed to acquaint you with the literature in Soils. The course is organized on an informal basis by subject matter areas, with each area being the responsibility of a faculty member who specializes in that area. You may register and repeat this course for up to six credit hours, but not more than three credits per semester. One Soils 502 course is required of all soils graduates—the State Tour course.

Soils 503 – Advanced Soil Analysis

Courses ranging from one to three credits are offered on specialized topics relating to instrumentation and to soil analysis. Topics include site selection and characterization, flame emission and absorption, organic matter analysis, electronics, fluorescent antibody techniques, elemental analysis, microcomputer software, tracer techniques, N-15 mass spectrometry, and others. Students may develop an independent study course in consultation with their advisors and the graduate coordinator. The course should involve mastering the use of instruments or techniques or developing new methodologies applied to research in soil science.

Soils 505 – Teaching Practicum

All Soils Ph.D. degree candidates are required by department policy to enroll in Teaching Practicum (Soils 505) prior to graduating. This course offers credit for experience in Teaching Assistant (TA) duties obtained in a soils course. Foreign TAs must pass an English Proficiency Exam, which tests communication skills in English prior to engaging in Practicum. The type of experience obtained depends upon several factors, including the nature of the course, the capabilities of the student, and the needs of the instructor. Experience could include lecturing in a discussion or laboratory section, preparing and grading exams or homework, or helping set-up laboratory or discussion sessions.

Master's Degree

The M.S. in Soils is awarded to graduate students for substantial scholarly achievement beyond the baccalaureate. To earn this degree a student is expected to demonstrate in-depth knowledge of a basic subject matter area in Soil Science and research competence in the form of a thesis or competence in the application of soil science in the form of a special project. The M.S. degree in Soils at WSU includes both the thesis and non-thesis options. The students' advisory committee will develop an appropriate program of study that must be approved by the Soils Faculty. In addition to competence in selected areas of soil science, students may be required to obtain competencies in core technical areas including, but not limited to, mathematics, statistics, natural sciences, and computer sciences.

Non-thesis Masters Degree

Within the Graduate School's minimum requirements, the non-thesis student's graded course work will include 6 credits in plant and soil biology (agronomy, horticulture, forestry, crop protection, plant ecology, biology, microbiology, plant physiology), 15 credits in soil science (soil chemistry, soil physics, soil biology, soil fertility, pedology, environmental biophysics), and 5 credits in other professional core courses (e.g., statistics, sustainable agriculture, colloid science, hydrology). The student must demonstrate skill in critical thinking, scholarship, and written and oral communication through course work, the seminar course, and the final report and examination. The non-thesis option requires the student to form a committee and develop the program of study during the first semester of enrollment. Students in this option will have lowest priority for state-funded assistantships and will generally be expected to be self-funding.

<i>MS Core Course Requirements</i>	<i>Credits</i>	<i>Sem</i>	<i>Offered</i>	
SOILS 501	Seminar	1	F, S	every year
SOILS 502	Special Topics, State Tour	1	F, S	every year
SOILS 700	Master's Research (thesis)	4	F, S	every year
SOILS 702	Master's Research (non-thesis)	4	F, S	every year

<i>MS Suggested Course Options</i>	<i>Credits</i>	<i>Sem</i>	<i>Offered</i>	
CROPS 503	Advanced Cropping Systems	1	F	every year
STAT 512	Analysis of Variance of Designed Exp.	3	F, S	every year
SOILS 368	Intro to GIS	3	F	every year
SOILS 502	Advanced Topics in Soils	1-3	F, S	every year
SOILS 503	Advanced Soil Analysis	1-3	S	every year
SOILS 504	Research Presentation Techniques	1		
SOILS 505	Teaching Practicum	1	F, S	every year
SOILS 514	Environmental Biophysics	2	S	every year
SOILS 515	Environmental Biophysics Laboratory	1	S	every year
SOILS 526	Soil Mineralogy (UI SOILS 526)	2	S	every year
SOILS 531	Advanced Soil Bioch. and Microb.	2	S	every year
SOILS 537	Soil Biochemistry (UI SOILS 537)	3	F	every year
SOILS 541	Soil-Plant-Microbial Interactions	3	F	odd years
SOILS 547	Soil Fertility Management	3	F	even years
SOILS 557	Advanced Soil Genesis and Classification	3		
SOILS 568	ArcGIS and Spatial Analysis	4	S	every year

Doctoral Degree

All students pursuing a Ph.D. are required to have taken an undergraduate course (400 level) in each of the major areas: soil chemistry, soil physics, soil fertility-management, soil genesis, morphology-classification, and soil microbiology-biochemistry. In addition, a graduate (500 level) course must be taken in two of the five Soils areas.

An Interdisciplinary Soils Ph.D. is defined as: expertise in Soils enhanced by another academic discipline (for example, plant physiology, agricultural economics, civil engineering or colloid chemistry). A

representative from outside the discipline must serve on the Doctoral Committee. In the program of study the student may substitute one 400/500 level course in another academic discipline for a required 400/500 level course in Soils. The interdisciplinary program must be approved at the same time the program of study is approved. Also refer to Preliminary Doctoral Examination for guidelines specific to the Interdisciplinary Soils Ph.D.

In addition to the Graduate School requirements shown below, Soil Science Ph.D. candidates must take the following courses:

<i>PhD Core Course Requirement</i>	<i>Title</i>	<i>Cr</i>	<i>Sem</i>	<i>Offered</i>
SOILS 501	Seminar	2	F, S	every year
SOILS 502	Special Topics, State Tour	1	F, S	every year
SOILS 505	Teaching Practicum	1	F, S	every year
SOILS 800	Doctoral Research	20	F, S	every year

Suggested Course Options

<i>Soil Classification & Genesis Suggested Course Options</i>	<i>Title</i>	<i>Cr</i>	<i>Sem</i>	<i>Offered</i>
SOILS 368	Intro to GIS	3	F	every year
SOILS 514	Environmental Biophysics	2	S	every year
SOILS 515	Environmental Biophysics Laboratory	1	S	every year
SOILS 526	Soil Mineralogy (UI SOILS 526)	2		
SOILS 531	Advanced Soil Bioch. and Microb.	2		
or				
SOILS 541	Soil-Plant-Microbial Interactions	3	F	odd years
SOILS 557	Advanced Soil Genesis & Classif. (UI SOILS 557)	3		
SOILS 568	ArcGIS and Spatial Analysis	4	S	every year

<i>Soil Chemistry Suggested Course Options</i>	<i>Title</i>	<i>Cr</i>	<i>Sem</i>	<i>Offered</i>
BSYSE 558	Groundwater Flow and Contaminant Transport	4		
CH E 585	Interfacial Phenomena	3	S	odd years
CHEM 501	Advanced Inorganic Chemistry	3	F	even years
E MIC 586	Special Projects in Electron Microscopy	3	F, S	every year
GEOL 579	Groundwater Geochemistry	3	S	odd years
SOILS 502	Advanced Topics	V	F, S	every year
SOILS 503	Advanced Soil Analysis	V	F, S	every year
SOILS 526	Soil Mineralogy (UI SoilS 526)	2		
SOILS 531	Advanced Soil Bioc. and Microb.	2	S	every year
SOILS 541	Soil-Plant-Microbial Interactions	3	F	odd years

<i>Soil Fertility Suggested Course Options</i>	<i>Title</i>	<i>Cr</i>	<i>Sem</i>	<i>Offered</i>
BIOL 513	Plant Metabolism	3		
BIOL 517	Stress Physiology of Plants	3	S	even years
BSYSE 558	Groundwater Flow and Contaminant Transport	4		
CROPS 503	Advanced Cropping Systems	3	F	every year
SOILS 468	ArcGIS and Geospatial Analysis	4	F	every year
SOILS 514	Environmental Biophysics	2	S	every year
SOILS 515	Environmental Biophysics Laboratory	1	S	every year
SOILS 531	Advanced Soil Bioch. and Microb.	2	S	every year
SOILS 541	Soil-Plant-Microbial Interactions	3	F	odd years
SOILS 547	Advance Soil Fertility Management	3	F	even years
STAT 512	Analysis of Variance of Designed Exp.	3	F, S	every year

<i>Soil Physics Suggested Course Options</i>	<i>Title</i>	<i>Cr</i>	<i>Sem</i>	<i>Offered</i>
BSYSE 558	Groundwater Flow and Contaminant Transport	4		
C E 550	Advanced Hydrology	3		
CE 315	Fluid Mechanics	3	F, S	every year
CH E 585	Interfacial Phenomena	3	S	odd years
E MIC 586	Special Projects in Electron Microscopy	3	F, S	every year
MATH 548	Numerical Analysis	3	F, S	every year
SOILS 442	Soil Analytical Methods	3	F	every year
SOILS 513:	Advanced Soil Physics	3	Fall	even years
SOILS 514	Environmental Biophysics	2	S	every year
SOILS 515	Environmental Biophysics Laboratory	1	S	every year
SOILS 531	Advanced Soil Bioch. and Microb.	2	S	every year
SOILS 533:	Vadose Zone Processes	3	Fall	odd years

<i>Soil Microbiology & Biochemistry Suggested Courses</i>	<i>Title</i>	<i>Cr</i>	<i>Sem</i>	<i>Offered</i>
BIOL (Bot) 563	Field Ecology	2	S	every year
BIOL 548	Evolutionary Ecology of Populations	3	S	every year
BIOL 564	Molecular Ecology and Phylogeography	3		
CHEM 332	Physical Chemistry	3	S	every year
CHEM 340	Organic Chemistry I	3	S	every year
E MIC 587	Special Problems Electronic Microscopy	1	S	every year
MBIOS 301	General Genetics	4	S	every year
MBIOS 303	Introductory Biochemistry	4	S	every year
MBIOS 426	Microbial Genetics	3	F	every year
MBIOS 442	General Virology	3	S	every year

MBIOS 506	Cell Biology of Disease	3	S	every year
MBIOS 513	General Biochemistry	3	F	every year
MBIOS 514	General Biochemistry	3	S	every year
MBIOS 550	Basic & Applied Microbial Physiology	3	S	every year
MBIOS 578	Molecular Biology Computer Techniques	1-4		
SOILS 514	Environmental Biophysics	2	S	every year
SOILS 515	Environmental Biophysics Laboratory	1	S	every year
SOILS 521	Environmental Soil Chemistry	3	S	every year
SOILS 531	Advanced Soil Bioch. and Microb.	2	S	every year
SOILS 541	Soil-Plant-Microbial Interactions	3	F	odd years
STAT 512	Analysis of Variance of Designed Exp.	3	F, S	every year

Reviews

Members of the Faculty in Soils have adopted a firm policy calling for a formal advisory-review of students' programs on a regular basis. As soon as the graduate student committee has been established the members are expected to meet at least twice a year to assist in program and research planning, to carefully review the student's progress and to give advice as needed.

THESIS/DISSERTATION GUIDELINES

Proposal

All students should develop a thesis or dissertation proposal after consultation with their advisor and committee. This proposal forms the basis for the thesis/dissertation research. All students are expected to develop and carry out original, creative research projects. While the advisor and committee members serve as mentors, the student is expected to develop and demonstrate the ability to work independently; to design, conduct, and analyze experiments; and to prepare the work for publication in scientific journals.

Thesis or dissertation preparation involves synthesizing concepts by interpreting experimental and analytical data that are gathered for that purpose. It constitutes a major part of the creative scholarship in a master's or doctoral program. Experience in preparing and writing a research publication, as well as the peer-review process, are important goals of graduate programs.

General Format

The general thesis or dissertation format required by the department is one with three sections: a literature review, several chapters describing methodology, research results, and a chapter with the overall conclusion. The chapters describing research results should be written as papers for publication. For the thesis or dissertation, the papers should be modified to clearly reflect the work of the student. This is especially necessary when Thesis/Dissertation chapters will be submitted for publication with multiple authors. If student is not first author, the paper cannot be used or must be revised. They must also be paginated and formatted to give uniformity to the thesis or dissertation. Thesis or dissertation formatting requirements are posted on the [Graduate School's](#) website.

Publishing

Students are expected to publish thesis or dissertation research in an appropriate scientific journal. If the student has not submitted thesis or dissertation results for publication within a reasonable amount of time

after passing the final exam, the thesis/dissertation advisor will have the option of publishing the student's thesis or dissertation results.

How to Proceed

Formal guidelines for preparation of the thesis or dissertation are available from the Graduate School. However, the following steps and schedule are recommended:

1. Select a problem and review background literature – prepare and defend research proposal, preferably by the end of the second semester after beginning work for a graduate degree.
2. Complete and summarize literature review in written form and develop theories, conduct experimental work, and collect data -- begin this phase as quickly as practical, and complete at least one semester ahead of the completion date for the degree.
3. Summarize and tabulate data, analyze data, apply theories, and develop a written presentation - begin as early as possible on a tentative basis and follow up by preparing a complete, typed draft for submission to the thesis/dissertation advisor at end of semester prior to graduation. Select a style from a scientific journal you wish to follow. Research papers prepared by professionals may be rewritten as many as a dozen times before submission to a journal for editorial review. Graduate students should plan to rewrite several drafts before the manuscript is given to the thesis/dissertation advisor.
4. Comments from the thesis/dissertation advisor should be carefully considered and addressed while preparing the revised draft that is submitted to the graduate committee. This step in preparation of a thesis corresponds to the process involved in preparing a paper for a journal. The graduate committee should be allowed several weeks for the review process. See above for a suggested timeline. If problems surface involving interpretation or meaning of data, the committee may have to meet to resolve issues. Therefore it is important to allow enough time for a thoughtful and thorough study of dissertation material. The revised draft of this document becomes the “final draft” as outlined in the following section on activity and comments.

Students on research appointments may continue to collect and analyze data, write, etc., during the final semester or summer session. Research results generated after submission of the thesis or dissertation to the committee will not automatically be accepted as essential material. If the advisor(s) consider it appropriate, the data collected during the final semester or summer session may be used in the final draft.

The Faculty recommends that the student be in residence (i.e., on-campus or at an off-campus station) during the semester that the thesis or dissertation is prepared so that the full benefit of consultation with the thesis committee can be realized.

The following schedule allows a reasonable amount of time for completion of each step and for details of post-thesis approval and for the preparation of a manuscript for publication. Since faculty members are usually involved with other reviews, as well as regular duties, the following guidelines are suggested:

2 to 6 weeks	Submit drafts to major thesis/dissertation advisor, and campus advisor if appropriate, and allow time for incorporation of the appropriate number of corrections and revisions. Allow 7 to 10 days for each revision by advisor(s) and allow sufficient time for discussion with them.
2 weeks	Submit a revised draft for review by your graduate committee. Because of the greater number of reviewers, allow <i>at least</i> two weeks for return of this draft.
2 to 4 weeks	Revise and correct draft. This is a critical time because you will be getting comments on the draft from your committee for the first time.
2 weeks	Resubmit the draft to the committee or to selected committee members. All technical aspects of the thesis or dissertation should be worked out at this point. Don't present any surprises to the committee at your final exam.

2 weeks	Submit a “final” draft to each committee member and electronically to the department chair (c/o marshdj@wsu.edu) at least 10 days prior to scheduling your final exam. Submit a “final oral scheduling form” and copy of your thesis or dissertation to the Graduate School.
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Concluding Comments. Normally, a minimum of 12 to 16 weeks is required from the time you submit your initial draft of your thesis or dissertation to your advisor to the time of your final oral exam.

Please also refer to the earlier section ‘Preparing to Graduate’ which further outlines general departmental requirements in this regard.

Standards of Conduct

Plagiarism and misconduct in research will NOT be tolerated. Students failing to follow standards of conduct dictated by the [Office of Student Conduct](#) may face dismissal from Washington State University. If you are not sure what constitutes plagiarism, consult the [WSU Plagiarism Information site](#). If you are unsure what constitutes academic integrity, please review the information presented on the [WSU Academic Integrity site](#)

MAJOR EXAMINATIONS

Crop Science Preliminary Doctoral Examination

The preliminary exam is an exam to determine if a student is qualified to be admitted into candidacy for the PhD degree. The exam assesses knowledge of crop science, ability to think critically and independently, and ability to conduct independent research (form hypotheses, design experiments, collect and analyze data, put the research in context of the current state of knowledge, draw conclusions). Ph.D. preliminary examinations in Crops consist of two parts, Crops 511 (Research Proposal Development), and an oral exam. Crops 511 should be taken during the second semester and the oral exam should be taken during the fourth semester (you will be sent a reminder by the Academic Coordinator). This permits appraisal of the student's ability and background before a major amount of time has been invested in a Ph.D. program.

Crops 511, a 2-credit course is to be taken during student's second semester and consists of the following:

1. The student will develop a 15-page (minimum) research proposal on his/her dissertation topic. The graduate coordinator will meet with all students enrolled in Crops511 at least twice at the beginning of each semester to review recommended proposal formats. The draft proposal will be reviewed by the major advisor. After revisions, the proposal will be distributed to members of the committee, as well as the graduate coordinator, 3 weeks prior to the oral presentation. This proposal must be a unique document prepared by the student that demonstrates his/her understanding of the objectives of this research, as well as the strategies and procedures that will be used to address these objectives. A copy of the proposal also will be available in the main office for faculty review.
2. The student will prepare and deliver an oral presentation related to the proposal, which will be open to faculty, staff and students.
3. Following the presentation, the student will participate in a 1 to 2 hour question and answer session with committee members and interested faculty. Suggestions offered up by faculty outside of the student's committee should be taken into consideration, however, these suggestions should not be deemed as mandatory points that must be changed.

4. A satisfactory grade for the course will be assigned to the student based on the average of grades issued by the committee members and participating faculty (grade options: A through C, where “A” indicates that the student demonstrated an excellent understanding of the topic and C indicates that the student failed to successfully demonstrate an understanding of the topic). If a satisfactory grade is received, the students will pass this stage of the process and will be qualified to take the oral prelims. If the student receives an unsatisfactory/fail grade, students will have a 3-4 month period to revise the proposal and prepare another presentation. If the student fails on the second attempt, he/she will not be allowed to continue their graduate training program in Crop Science.

The oral preliminary examination must be scheduled with the Graduate School using a “Preliminary Exam Scheduling Form” found at <http://www.gradsch.wsu.edu/>. The oral should be scheduled in the fourth semester. All committee members must attend and vote. Other members of faculty may attend and members of the graduate faculty in the department may also vote. The purpose of the oral exam is to allow faculty to have the opportunity to probe the depth of a student’s knowledge of the whole field of Crop Science and the ability of the student to think critically and independently.

A student who fails the prelim exam will be given the opportunity to retake the exam. See the graduate school website for policies. A student who fails the prelim exam the second time is terminated from the graduate program.

Soil Science Preliminary Doctoral Examination

The preliminary examinations are designed to evaluate the suitability of the student to become a candidate for the Ph.D. in Soil Science. It is also an opportunity for the student and his/her committee to re-evaluate the appropriateness of remaining coursework, either to correct academic weaknesses or enhance scholarly interests that may surface during these examinations. The exams evaluate the candidate's disciplinary knowledge as well as his/her ability to think creatively, analyze, synthesize, evaluate knowledge and information, and apply that information to establishing new hypotheses for creative research and problem solving. The doctoral committee and chair will coordinate the preliminary doctoral exams. Students should become familiar with the purpose and scope of preliminary examinations well in advance of the time the examination is scheduled.

The preliminary doctoral examinations in Soils, to be completed by the end of the fourth semester, consist of a written evaluation and an oral exam. The options for these requirements are:

Soil Science Prelims: Written Evaluation

1. Traditional Written Exam

As the best preparation for the oral exam the faculty encourages the traditional written exam. The committee will solicit questions from the faculty in four of the five sub-discipline areas in Soils (chemistry, fertility, morphology, biology, and physics), which must include one area of major emphasis. For the Interdisciplinary Soils Ph.D. three areas of Soils (including one major area) and the identified non-Soils discipline will be tested. The thesis committee will determine the format for the written exam. Generally the time allotted for completing the questions are three hours for each non-major area and six hours for the major area. A passing grade for each discipline in the exam must be a B or higher.

2. Research Proposal

In some cases the student and doctoral committee may decide that a proposal is the best option for meeting the written portion of the exam. The proposal should evidence the student’s breadth and depth of knowledge of Soil Science. The proposal may fall within the area of the student’s dissertation, but it must be an original document written solely by the student. The committee will be responsible for seeing that the document is not taken from a previously written proposal. The committee chair should not revise the document before the whole committee reviews it. The research proposal portion should be initiated no later than the second semester into the Ph.D. program. The entire committee will mentor the proposal development. The committee and any appropriate Soils faculty will evaluate the final proposal. The format should be appropriate for submission to a major

funding agency such as USDA-AFRI or NSF. A passing grade for the research proposal will be a B or higher from all reviewers.

The results of the written or research proposal portion of the exam will be available to all CSS faculty for review prior to the oral exam.

Soil Science Prelims: Oral Exam

Ph.D. graduate students must take 400 and/or 500 level courses in all five sub-disciplines of Soil Science and will be expected to defend these areas at the 400 level in the oral preliminary exam. For the Interdisciplinary Soils Ph.D. four areas of Soils and the non-Soils discipline must be defended. A passing grade for the oral exam must be a B or higher in each discipline.

The oral portion of the preliminary exam must be completed within five weeks after successfully completing the written portion of the preliminary exam. If this time schedule is not followed, students must retake both the written and oral exams.

Alternatives and exceptions to the above guidelines must be submitted to the Soils Faculty by the student's advisor for approval no later than the end of the student's second semester of graduate study.

Soil Science Prelims: Guidelines for Scheduling the Preliminary Doctoral Examinations

The student with approval from his/her advisor and committee is responsible for scheduling the preliminary examination with the graduate school. Do not delay, as delaying the preliminary examination can, if the student is unsuccessful, reduce alternative options for a career.

1. Graduate students should set a tentative date for the preliminary examination at the time they develop an academic program. This is normally during the second semester of study for the Ph.D.
2. Graduate students preparation should be consistent with the requirements in the Graduate School policy and procedures – “that a substantial portion of the required coursework has been completed”.
3. If the written evaluation is graded below a B level, the student is given a second opportunity. The re-examination must be in the form of the traditional exam, followed within five weeks by the oral exam. If the written exam is passed but the oral exam is unsuccessful, the oral exam may be repeated. In either case there must be at least one month before re-examination but less than three months.

Alternatives and exceptions to the above guidelines must be submitted to the Soils Faculty by the student's advisor for approval no later than the end of the student's second semester of graduate study.

Crop Science and Soil Science Final Oral Exam

Note: It is also the student's responsibility to comply with the CSS Department policies and procedures found in 'Graduation' section of this handbook.

The final exam has two parts: a seminar and a defense.

The seminar is usually presented before the defense and is a public presentation highlighting the research results and major accomplishments, as previously described. Please refer 'Seminar' in the Departmental Requirements section of this handbook for more information. Non-thesis MS students do not present a final seminar as part of their final exam.

After preliminary approval of the thesis/dissertation by the committee and department chair, and approval of the schedule by the committee, the final exam can be scheduled through the Graduate School. The student is responsible for obtaining signatures on the necessary forms and for securing the required number of copies of the thesis or dissertation.

The thesis/dissertation defense is an oral exam at which the student defends the approach, methods, conclusions, background, etc., of the research. The non-thesis defense will focus more on broad

knowledge and less on project defense than would an exam for the thesis option. Faculty are encouraged to attend the exam and ask questions, but only members of the thesis or dissertation committee and the graduate faculty may vote. Questions asked during the final exam do not have to relate to the thesis or dissertation research.

Members of the thesis or dissertation committee are responsible for checking the thesis or dissertation for style and format. They certify their approval when they sign the “final oral scheduling form”. Committee members cannot sign off on a final exam schedule form if they have not had ample time to review the final draft of the thesis/dissertation. A ‘display’ copy of the thesis/dissertation must also be submitted electronically to the Academic Coordinator (marshdj@wsu.edu) to load on the faculty Sharepoint site before the Department Chair will sign the scheduling form. *Please also refer to the earlier section ‘Preparing to Graduate’ which outlines general departmental requirements in this regard.*

The completed [Dissertation Acceptance/Final Examination Scheduling](#) form must be submitted to the Graduate School at least 10 (ten) working days in advance of the examination date. It is necessary to present an electronic or paper draft copy of the dissertation that is complete in format at the time of scheduling. The examination must be scheduled at least four months, but less than three years, after satisfactory completion of the preliminary examination.

The Graduate School requirements for the dissertation are as follows:

After passing the final examination, an electronic copy of the corrected dissertation/thesis must be submitted following the Graduate School’s guidelines for digital submission within five working days of the final oral examination. Students should use the [Final Dissertation/Thesis Acceptance Checklist](#) when preparing the electronic copy for submission.

In addition, the following must be submitted to the Dissertation/Thesis Acceptance clerk in the Graduate School within five working days of the final oral dissertation:

1. Doctoral candidates will submit their digital/PDF and optional copyright and publication fees (dependent on options chosen) directly to the UMI/ProQuest.
2. The candidates must submit a paper copy of the title page, abstract, and an original signature page (signatures should be in black ink) all on 100% cotton paper to the Graduate School within 5 working days following a successful final examination.
3. Copyright releases from publishers for any copyrighted material in any part of the document must be prepared and submitted in duplicate (one copy will be uploaded to UMI/ProQuest, the other will be submitted to the Graduate School with the final 100% cotton pages).
4. Hold Harmless Agreement Form (whether you are copyrighting or not) must be submitted to the Graduate School.
5. Doctoral students must also submit the Survey of Earned Doctorates (available at <http://www.gradsch.wsu.edu/forms/>).

GRADUATE ASSISTANTSHIPS

Upon Arrival

Upon arrival in Pullman, students appointed to assistantships (TA or RA) should contact the Academic Coordinator on or before the first date of employment to complete required forms such as an [I-9](#) for employment eligibility and W-4 for withholding taxes. **Section 1 of the I-9 must be completed on or before the date of employment.** Section 2 must be completed by WSU staff within the first 72 hours of employment. We prefer to take care of both sections prior to employment. WSU subscribes to the electronic submission process; paper copies are not accepted. Contact department personnel staff for assistance.

A variety of documents can be presented to show employment eligibility and are described in the I-9 link above, but most often we see drivers license and social security cards or state-issued birth certificates for domestic students, and passports and visa documents for international students.

Assistantships are considered to be taxable income in the state of Washington and Federal tax will be deducted from your paycheck. There is no Washington State income tax.

Withholding guidelines for the W-4 are available on the [Payroll](#) website, for both domestic and international hires. The W-4 requires a [Social Security](#) card. If you do not have a social security card, you need to obtain one as soon as possible

For ease, international students can apply for a social security card during the required International Student Orientation. A letter is required from the department in order to apply. This receipt given to the student needs to be presented to our department personnel staff as soon as possible to complete the appointment and assure a timely paycheck.

Alternatively, students can obtain a social security card at a local office (Moscow, or Lewiston), but it is preferable to take advantage of the orientation session as these offices keep limited hours and contact by phone is difficult. Information and forms are available [here](#).

Payroll

Fall assistantships begin August 16, and end December 31st. Spring assistantships begin January 1st and end May 15th. Payroll checks for the last half of the month are issued 10 days later (your first check will be September 10 or January 25). Payroll checks for the first half of the month are issued 10 days later, generally on the 25th of the month. Direct deposit arrangements with the [Payroll](#) office are encouraged.

Residency Requirement and Tuition Waiver

The assistantship appointment will exempt the student from paying in-state tuition **if living in Washington State** during enrollment at WSU. WSU will provide out-of-state tuition waivers for the first year of studies if you are not a resident of Washington State; however, out-of-state tuition waiver cannot be guaranteed beyond one year. If you are not a resident of Washington State, you should begin the process immediately upon enrolling to establish residency. Most required documents need to be in place for one year. Please review the [requirements](#) upon arrival to ensure a successful application. Students who have not established Washington State residency by the one-year limit will be required to pay out-of-state tuition, even if they have an assistantship.

Residency waivers are not up to departmental discretion, and the Graduate School will only grant out of state tuition waivers to domestic students for two semesters.

International students are not eligible to become residents. For international students, the assistantship appointment will exempt them from paying the out-of-state and in-state tuition if living in Washington State during enrollment at WSU.

No Tuition Allowed

There are some instances where tuition is not allowed on grants; the student is instead appointed as a Project Assistant at an inflated salary which covers the resident tuition normally charged to the grant and the student is advised to register for payroll deduction of the tuition.

Residual and Mandatory Fees

All students on an assistantship are required to pay residual and mandatory fees (i.e., fees not covered by the tuition waiver) each semester of approximately \$1,000. The residual fee pays for Health and Wellness Services, Pullman Transit, the Student Recreation Center, and a small portion of tuition not covered by the assistantship. Graduate assistants may choose to enroll in the university's payroll deduction plan to have these fees automatically deducted from their paycheck over the period of 8 pay cycles. Students may check with their department for more information when they arrive. Waiver of the

mandatory fees will be requested by the Academic Coordinator for those students not residing in Pullman to take advantage of the service.

Responsible Conduct of Research Training

The Graduate School requires all graduate students on an assistantship to complete the web-based [Responsible Conduct of Research Training](#). The paperwork for your assistantship cannot be processed until the training has been completed, so please notify our office of the date you completed it.

Health Insurance

Students on a graduate student assistantship are provided health insurance at no charge. Dependent/spouse coverage is not automatically provided, but is available for a fee.

Representatives are available at Health and Wellness Services to answer your questions about WSU Medical Insurance, studentinsurance@wsu.edu or 509-335-3575. Temporary insurance cards are also available online. You may obtain these by creating an account on the [Maksin](#) website. A permanent card will be mailed to your local address on file with the university and will arrive within two weeks of sign up.

For more information about the Graduate Student Medical and Dental Insurance Plan, please visit [here](#).

Students on appointment for the academic year and/or spring semester will be automatically covered throughout the summer.

Once the assistantship has ended, the student is not eligible for COBRA.

Reappointments

Students must maintain a 3.0 Grade point average to be eligible for assistantships and be making satisfactory progress. Reappointment is also contingent upon the availability of funds.

English Proficiency Exam

The University requires that TA's (whose native language is not English) pass an [English proficiency exam](#) prior to beginning their TA duties. International Students must attend New International Student Orientation through the Office of International Students and Scholars.

International Students and Scholars

International students should remain in contact with the International Programs Office, and the Office of International Students and Scholars, both prior to starting their studies at Washington State University and throughout the duration of their studies. This will help to ensure that all deadlines, procedures, and policies with regard to international student status are met. Contact information follows.

International Programs

IP Administration Office, Bryan 206; Phone: 509-335-2541

<http://www.ip.wsu.edu/>

The Office of International Students and Scholars

Bryan Hall 108; Phone: 509-335-4508; Fax 509-335-2373

<http://www.ip.wsu.edu/oiss/index.html>

Terms and Expectations

Graduate students on appointments enter into an agreement with the University that both parties are expected to honor. Graduate assistants must maintain a cumulative 3.0 GPA in all coursework subsequent to admission, and maintain full-time enrollment (10-18 credit hours) for an entire semester.

A half-time appointment requires graduate appointees to work 20 hours per week in addition to their coursework and to **be at work each workday, including periods when the University is not in session (e.g., Spring and Thanksgiving Break), with the exception of legal holidays.** Graduate students do not earn sick leave or annual leave. Therefore, all leave and absences during normal work hours must also be arranged with a student's major advisor and, if applicable, campus advisor.

It is important to note that any change to the duration of the appointment that causes it to be for a period less than a full semester or any change in the percent of appointment may cause an immediate termination of the Qualified Tuition Reduction (QTR), Operating Fee Waiver (OFW) and/or non-resident waiver (NR). If a student decides to terminate employment mid-semester, or if the FTE percentage is changed, **the waivers may be removed and the student may be responsible for paying the full tuition charges.** If a student's employment is terminated for academic performance and/or enrollment is cancelled, the student retains the OFW and non-resident tuition waivers, with the QTR ending when the employment is terminated.

Since dropping below 20 hours per week can jeopardize non-resident tuition waivers, department policy permits exceptions for students to work less than half-time while taking heavy course loads, but full-time during summers and other periods with light academic responsibilities. Research Assistant responsibilities may include research assigned by the student's advisor as well as thesis or dissertation research. Most Teaching Assistants should expect to spend up to 20 hours per week on TA duties. Work schedules must be arranged with the thesis or dissertation advisor and/or TA supervisors.

Students making satisfactory progress can expect funding for 2 to 2.5 years for a M.S. degree. Students working towards a Ph.D. can expect funding for 2 to 3 years beyond the M.S. or 4 years beyond the B.S.

Students who want to withdraw from the appointment should always submit a letter of resignation to the Department Chair. For details on resignation, contact the Academic Coordinator, Johnson Hall Room 205.

Hourly Appointments (Timeslip)

Summer hourly appointments are for one to three months at a rate that is equivalent to the normal RA appointment rate. On-campus students on hourly appointments should see Katrina Shelton, Johnson Hall 207W, as well as the Academic coordinator before the first day of work.

BUSINESS POLICIES

Keys and Card Access

To obtain keys for Johnson Hall, PBS I, your office, labs, greenhouses, etc., see the Office Staff in Johnson 291D. There is no initial charge for the keys, however, in the event that they are lost or the student leaves the University without returning them, the student will be billed a \$3.00 replacement fee per key. If the keys are not returned transcripts may be held by the Registrar's Office. Security is the responsibility of everyone, so please assume responsibility for locking your office and lab doors after regular hours. Access to Vogel and the Plant Growth Facility is made with your WSU Cougar Card. Coordinate this access with your thesis or dissertation advisor.

Offices and Desks

The Department of Crop and Soil Sciences will provide office space and desks for students on regular appointments. Office space is limited and you may have to wait for an opening. Contact the Academic Coordinator for a desk and space assignment.

Telephone

WSU telephones are available for local calls. Most graduate student offices have telephones or one can be found nearby. Students should consult their advisor or main office regarding authorization codes for long distance calls. In most cases, phones are restricted and an authorization code is required.

Email and List Serves

Students must obtain a WSU [network ID](#) and email address. Students must regularly check their WSU email accounts which is the primary communication tool from all points at WSU. This address will also be included in the CSS graduate student list serve. [Additional list serves](#) are described on our website.

Mail

Graduate students share mailboxes in Johnson hall 291D, marked A-Z. Please check this box regularly. Mail sent and received at the university should be official correspondence only. Personal mail should be sent to and from your private residence. Business correspondence can be left in the Main Office for mailing. Letters and packages should not be stamped, and must have the correct departmental return address:

Department of Crop and Soil Sciences
Washington State University
PO Box 646420
Pullman, WA 99164-6420

Photocopying

The copy machine in Johnson 291D is to be used only for copying materials that are clearly related to a faculty research project, or to copy course materials for the course in which the student is a TA. Graduate students may not use the CSS copy machine to copy any personal material such as classroom notes, term papers, books, theses, etc. When in doubt, consult your advisor. Copy machines available for personal use on campus are located at the Fischer Ag Science Library (Johnson Hall Annex) and at Cougar Copies in the CUB.

Purchasing

No student purchases can be made without approval from their advisor. Most research supervisors maintain "blanket" purchase orders at WSU facilities (Central Stores, Chemical Stores, Surplus Stores, Technical Stores, etc.) and service centers (Physical Plant, Technical Services, etc.). To purchase supplies, an authorization number must be obtained from your supervisor. If unforeseen needs arise in the field, contact your advisor and/or the main office for authorization of an emergency purchase order. Students will not receive reimbursement for items purchased from outside vendors without advance authorization.

Greenhouses and Growth Chambers

The Agricultural Research Center operates the [Plant Growth Facility](#), a modern greenhouse for research on wheat and legumes, and other greenhouses along Grimes Way. Growth chambers are located in both sets of the greenhouses. To schedule greenhouse and growth chamber space, contact the greenhouse supervisor Dan Dreesmann dreesmann@wsu.edu, (509)-335-5824.. Greenhouse policies and regulations can be found there, along with the space request form. Greenhouse and growth chamber space is subject to charge and must be coordinated with the thesis or dissertation advisor. All people who use the greenhouses must take a Worker Protection Training course (about 1 hour) that is offered periodically by the greenhouse crew.

Safety

Safety at WSU is regulated by the [Washington State Department of Labor and Industries](#) and the US [Occupational Safety and Health Administration](#) (OSHA), through WSU [Occupational Health and Safety](#). A safe and healthy working environment at WSU is to be maintained at all times.

It is the responsibility of each graduate student to become familiar with safety policies and to follow safe procedures. Departmental policies and procedures regarding safety are detailed in the WSU Safety Policies and Procedures Manual (SPPM) available at the [Office of Procedures, Records and Forms](#), while policies and procedures specific to individual labs are detailed in the Laboratory Safety Manual located in each lab. Information regarding physical and health hazards, entry routes, permissible exposure limits and precautions or controls for safe use, including emergency first aid procedures, and the name, address and telephone number of the chemical manufacturer or supplier for all chemicals is available on [Material Safety Data Sheets](#) (MSDS) located in the individual labs in which the chemicals are used. [Environmental Health and Safety](#) (EH&S) is also responsible for laboratory and workplace safety, public health and environmental issues, hazardous materials and wastes (except radioactive materials), and training. All disposals of hazardous chemical wastes must be made through EH&S's [Environmental Services](#).

The [CSS Department Safety](#) Committee is chaired by John Rumph jrumph@wsu.edu and is a resource for all Pullman departmental safety-related issues, except for radioisotope use, which is handled by the WSU [Radiation Safety Office](#). Students using radioactive materials, must complete online [Radiation Safety Training](#) prior to their use. Greenhouse users on the Pullman campus must attend [Worker Protection Standard Training](#). This training is offered each semester by the CAHNRS Plant Growth Facility Manager, Dan Dreesmann, dreesmann@wsu.edu, 509- 335-5824. Students located at branch campuses or Research and Extension Centers should consult the safety committee and specific safety requirements at those locations. Many departmental employees have First Aid training. American Red Cross First Aid and CPR/AED classes are available to all graduate students through WSU [University Recreation](#). Report all accidents and injuries, however minor, to the CSS administrative office (Johnson Hall 291D in Pullman) and complete an electronic accident/[Illness Incident Report Form](#).

Staff Assistance

Graduate students may request secretarial assistance only in limited situations. Administrative Assistants will not type personal letters, class reports or similar materials for students. Typing of your thesis or dissertation is considered personal work. Students may request assistance with mailing or sending fed-ex packages if they are clearly related to faculty led research work. All requests for staff assistance should be coordinated with your thesis/dissertation advisor.

Thesis Library

CSS maintains a thesis/dissertation library for graduates in Crops, Soils, and the former Agronomy degree. It is located in Johnson Hal 202. Please be sure to use the checkout card provided in the volume. If none present, be sure to give checkout information to the Academic Coordinator in Johnson Hal 205.

Travel

For liability and reimbursement purposes, all students must complete a Travel Authority form for any trip they take that is outside of Pullman (or any other station for off-campus students). This and other forms are available in the CSS main office or on our [website](#). This form must be submitted, signed by the department chair, and initialed by your advisor at least 21 days before a trip. In some circumstances, travel advances may be obtained by submitting a request at least four weeks before the trip. Reimbursement for travel expenses is made by completing and submitting a Travel Expense Voucher within one week upon return.

Students are strongly urged to attend professional meetings; however, the department often does not have funds to pay travel expenses of students on appointment. Advisors may use grant or project monies to pay partial travel expenses for graduate students attending meetings. The Graduate School does disburse some grant-in-aid travel funds, which can be used for travel to professional meetings. Application forms for student travel grants may be obtained from the [Graduate School](#). The Crop and Soil Sciences Department also has the O.A. Vogel Washington State Crop Improvement Association Travel and Education Grant, as well as the Harry E. Goldsworthy Fund that can be used for travel. Check with the Academic Coordinator about the availability of these departmental awards. It is advisable to apply for a travel grant if you are presenting a quality paper at a professional meeting. In addition, space may be available in University vehicles or some faculty members may share travel expenses.

The department owns several vehicles available for department business. They are intended only to provide low-cost transportation to local sites and businesses. Vehicles are checked out in the main office, and specific policies are available at the front desk.

Checkout/Exit

Before departure from CSS, students must leave a forwarding address with the Academic Programs Coordinator, schedule an exit interview with the Department Chair, return all keys to the main office, and consult with the advisor about cleaning up samples, chemicals, etc., from the student's research and office space.

CENTRAL STUDENT SERVICES AND FACILITIES

Campus Student and Hourly Employment Office

141 French Administration; (509) 335-1969
<http://www.hrs.wsu.edu/>

Career Services

Lighty 180; (509) 335-2546
www.careers.wsu.edu/

Center for Advising and Career Development

Lighty 190; (509) 335-6000
<http://www.salc.wsu.edu/>

Center for Human Rights

French Administration 225; (509) 335-8288
www.chr.wsu.edu/

Child Care

(509) 335-8847
www.childrenscenter.wsu.edu/

Counseling and Testing Services

Lighty 280; (509) 335-4511
www.counsel.wsu.edu/

Disability Resource Center

Administration Annex, Room 205; (509) 335-1566
www.drc.wsu.edu/

Human Resource Services

139 French Administration Building; (509) 335-4521
www.hrs.wsu.edu/

Gender Identity/Expression & Sexual Orientation Center

Smith Gym 303; (509) 335-6388
www.thecenter.wsu.edu/

Graduate and Professional Student Association

Administrative Annex, 203; (509) 335-9545
www.wsu.edu/~gpsa/

Health and Wellness Services

(509) 335-3575
<http://www.hws.wsu.edu/>

Housing Services

McCartan Office Suite, Streit-Perham Hall; (509) 335-4577
www.livingat.wsu.edu/hdr/

Intensive American Language Center (IALC)

McAllister Hall, Room 116; (509) 335-6675
www.ialc.wsu.edu

International Center

Compton Union L46 (509) 335-4223
<http://www.ip.wsu.edu/intlcenter/index.html>

International Programs

Office of International Students and Scholars
Bryan 108; (509) 335-4508
<http://www.ip.wsu.edu/oiss/>

Multicultural Student Services

Compton Union Building, 409;
(509) 335-7852
www.mss.wsu.edu/

Office of Student Affairs

Lighty 360; (509) 335-4531
<http://www.studentaffairs.wsu.edu/>

Ombudsman's Office

Wilson Hall 2; (509) 335-1195
www.wsu.edu/~ombuds/

Parking, Vehicle, and Driver Licensing

Parking & Transportation Bldg.; (509) 335-PARK
<http://www.wsu.edu/parking/>

Psychology Clinic

Johnson Tower 233; (509) 335-3587
www.wsu.edu/psychology/psychologyclinic/

Speech and Hearing Clinic

Daggy Hall 133; (509) 335-1509
<http://www.libarts.wsu.edu/speechhearing/clinic/>

Student Legal Services/Housing Commission
(509) 335-9539

University Recreation

(509)335-8732
<http://www.urec.wsu.edu/urec/index.jsp/>

Women's Resource Center

Wilson Hall 8; (509) 335-6849
www.women.wsu.edu

Women's Transit Program

(509) 335-6830
www.women.wsu.edu/Transit/

Veterans Affairs

French Administration, Room 345, 509-335-1875
<http://www.va.wsu.edu/>

APPENDIX

DEPARTMENT OF CROP & SOIL SCIENCES
ANNUAL GRADUATE STUDENT EVALUATION
(Mandatory at the End of Spring Semester, Optional at the End of Fall Semester)

Student: _____ **Date:** _____

Degree sought: _____

Degree status: _____

Year/term studies began: _____

Has program of study been approved by your committee and filed? Yes No

If no, anticipated date to file is: _____

Thesis/dissertation title: _____

Advisor: _____

Graduate advisory committee:

- _____
- _____
- _____
- _____

Number of graduate advisory committee meetings since last review: _____

Date of most recent meeting: _____

PhD Students: _____

Has dissertation proposal been approved? Yes No

If no, anticipated date of proposal defense: _____

Has preliminary examination been passed? Yes No

If no, anticipated date of oral prelim? _____

Performance, Skill Ratings	Excellent	Good	Average	Fair	Poor*	NA
Academic Performance						
Research Performance						
Work Habits						
Technical Skills						
Rate of Progress						
Communication Skills						
Teaching Performance						
Overall Rating						
* If poor or unsatisfactory, the CSS Chair will meet with the thesis or dissertation committee to develop formal written recommendations.						

1. Academic progress since last review:

- **Cumulative GPA in graduate program:**

2. Research progress since last review:

3. Professional activities (include):

- **Awards or scholarships since last review:**
- **Meetings attended:**
- **Abstracts/papers published:**
- **Presentations given:**
- **Courses TA'd (course and semester):**

4. Specific conditions or expectations that must be fulfilled prior to next review:

5. Probable success in completing degree requirements in a timely manner:

Enrollment should be continued ____ **or discontinued** ____

Signatures:

Major Advisor: _____ Date: _____

Campus Advisor: _____ Date: _____

(If major advisor is off-campus, the campus advisor must also sign. It is the advisor major advisor's responsibility to ensure that the campus advisor signs.)

To be signed by student:

This evaluation has been discussed with me. _____
Signature Date

Comments on review by student (optional):

TEACHING ASSISTANT EVALUATION FOR COURSES WITHOUT LABS

TA's Name: _____

Course #: _____

5=Excellent 4=Above Average 3=Average 2=Below Average 1=Failure N/A=Not Applicable

TA's organization/planning/preparedness for class _____

TA's effectiveness in presenting material clearly/logically _____

TA's knowledge of the subject material _____

Degree to which TA appeared to enjoy teaching and was enthusiastic about the subject material _____

Degree to which TA made use of examples and illustrations _____

Degree to which TA was receptive to student's questions and comments _____

Willingness of TA to be available outside of class _____

TA's ability/fairness in grading exercises/exams _____

Your overall rating of the TA _____

Comments on the TA:

TEACHING ASSISTANT EVALUATION FOR COURSES WITH LABS

TA's Name: _____

Course #: _____ Lab Section #: _____

5=Excellent 4=Above Average 3=Average 2=Below Average 1=Failure N/A=Not Applicable

Degree to which exams covered laboratory exercises _____

TA's explanation of lab objectives/grading procedures _____

TA's organization/planning/preparedness for class _____

TA's effectiveness in presenting material clearly/logically _____

TA's knowledge of the subject material _____

Degree to which TA appeared to enjoy teaching and was enthusiastic about the subject material _____

Degree to which TA made use of examples and illustrations _____

Degree to which TA was receptive to student's questions and comments _____

Willingness of TA to be available outside of class _____

Your overall rating of the TA _____

Your overall rating of the lab _____

COMMENTS:

1) Comments on the Lab:

2) Comments on the TA:

**Guidelines for Authorship on Manuscripts
Summarized February, 2010**

**From the Harvard Medical School Guidelines (referenced by the VP for Research/Graduate School:
<http://www.hms.harvard.edu/integrity/authorship.html>):**

- Everyone who is listed as an author should have made a substantial, direct, intellectual contribution to the work. For example (in the case of a research report) they should have contributed to the conception, design, analysis and/or interpretation of data. Honorary or guest authorship is not acceptable. Acquisition of funding and provision of technical services, patients, or materials, while they may be essential to the work, are not in themselves sufficient contributions to justify authorship.
- Everyone who has made substantial intellectual contributions to the work should be an author. Everyone who has made other substantial contributions should be acknowledged.
- When research is done by teams whose members are highly specialized, individual's contributions and responsibility may be limited to specific aspects of the work.
- All authors should participate in writing the manuscript by reviewing drafts and approving the final version.
- One author should take primary responsibility for the work as a whole even if he or she does not have an in-depth understanding of every part of the work.
- The main/first author should define authorship based on the above criteria.

From Michigan State University (<http://rio.msu.edu/authorshipguidelines.htm>):

Authorship - A person claiming authorship of a scholarly publication must have met the following criteria:

- Substantial participation in conception and design of the study, or in analysis and interpretation of data;
- Substantial participation in the drafting of the manuscript or in the substantive editing of the manuscript;
- Final approval of the version of the manuscript to be published;
- Ability to explain and defend the study in public or scholarly settings.

(Note: these criteria follow closely those recommended by several professional associations. See especially the International Committee of Medical Journal Editors, *Annals of Internal Medicine* 1988; 108: 258-65.)

Acknowledgment - Contributions that do not justify authorship should be acknowledged separately in the notes to the manuscript. These may include general supervision of a research group, assistance in obtaining funding, or technical support.

“Honorary Authorship” - A claim of authorship by, or assignment of authorship to, persons who may have been associated in some way with a study but do not meet the four criteria in item 1 may constitute an unethical research practice.

Graduate Student Authorship - “Faculty should be especially aware of their responsibility to safeguard the rights of graduate students to publish the results of their research.” (*MSU Research Handbook*, 1985, p. 16, section 4.3.1.)

Senior Author and Order of Authorship - The senior author is generally defined as the person who leads a study and makes a major contribution to the work. All the authors at the outset of a project should establish senior authorship, preferably in a written memorandum of understanding. This memorandum of understanding should reference the authors’ agreement to abide by their departments’ policy on authorship or this University default policy on authorship. At the outset of the study the Senior Author should discuss the outline of work and a tentative Order of Authorship with the study participants. As projects proceed, agreements regarding authorship may need to be changed. It is the responsibility of the senior author to assure that the contributions of study participants are properly recognized.

Disputes Over Authorship - Disagreements over authorship, e.g. who has a right to be an author or the order of authorship, should be resolved by the Senior Author in collegial consultation with the other authors. When this process cannot reach resolution, the Senior Author should arrange with his or her chairperson for arbitration by a knowledgeable and disinterested third party acceptable to all the authors. If the authors cannot agree on a mutually acceptable arbitrator, then the Vice President for Research and Graduate Studies shall appoint an arbitrator. During the arbitration process all the authors are expected to refrain from unilateral actions that may damage the authorship interests and rights of the other authors.

Accountability - Every author listed on a publication is presumed to have approved the final version of the manuscript. Each author is responsible for the integrity of the research being reported.

Plagiarism -The word *plagiarism* is derived from the Latin *plagiarius*, an abductor, and *plagiare*, to steal. The expropriation of another author’s text, and the presentation of it as one’s own, constitutes plagiarism. Plagiarism, in turn, constitutes misconduct in scholarship under University policies and procedures. Plagiarism in scholarly projects should be reported to one’s chairperson, dean, or the University Intellectual Integrity Officer. (American Historical Association, *Statements on Standards*, 1993, p. 13)

Distribution -This policy should be widely distributed, especially to each new faculty, graduate student and research staff member in academic units.

Rubric for Assessing Graduate Student Work in Crop and Soil Sciences

PROGRAM-LEVEL COMPETENCY TARGETS = 4.0 FOR M.S. STUDENTS AND 5.0 FOR PH.D. STUDENTS

1. KNOWLEDGE OF FIELD. Understands the breadth and depth of knowledge associated with their discipline.

6 - Mastering	5 - Effective	4 - Competent	3 - Developing	2 - Emerging	1 - Minimal	N/A
Clearly understands most or all of the concepts associated with the discipline as well as the challenges and embedded issues.		Understands some of the key concepts associated with the discipline. May or may not describe embedded issues.		Does not understand the key concepts, challenges, or embedded issues associated with the discipline; or does so minimally.		Unable to rate based on this work
Demonstrates accurate and nuanced use of disciplinary language, definitions, and terms appropriate to the audience the work is intended for.		Use of technical language, definitions and terms is generally accurate and appropriate for the audience the work is intended for.		Often misuses technical terms and concepts, and/or relies on overly general layperson's language.		
Demonstrates appropriate breadth AND depth of knowledge associated with the discipline.		Demonstrates appropriate breadth of knowledge associated with the discipline but lacks depth (or visa versa).		Demonstrates limited breadth and depth of knowledge associated with the discipline.		
Comments:						

2. SCIENTIFIC REASONING. Designs, conducts, analyzes and interprets research important to their discipline.

2a. Literature: Search, Selection, & Review.

6 - Mastering	5 - Effective	4 - Competent	3 - Developing	2 - Emerging	1 - Minimal	N/A
Uses appropriate, relevant, and high quality info sources to create a presentation that is current, well balanced and richly supported by the cited sources.		Uses a moderate number of respectable sources that, for the most part, cover the needed info. Some sources may be irrelevant or out of date, and/or key area(s) of the issue may not be addressed.		Minimal or no evidence of search, selection, or source evaluation skills.		Unable to rate based on this work
Evaluates most or all sources for quality, perspectives, relevance, and currency.		Only minimally evaluates sources for quality, relevance and currency		No evaluation of info sources is present.		
Identifies gaps in the literature and/or relevant gaps in their own knowledge or skills. Good knowledge of previous and current research in their discipline.		Shows some signs of evaluating info gaps in the literature or in their own knowledge or skills. Gaps in knowledge of previous and current research in their discipline.		Does not identify the info gaps or what they still need to know. Limited knowledge of previous or current research in their discipline.		
Comments:						

2b. Defining the Problem.

6 - Mastering	5 - Effective	4 - Competent	3 - Developing	2 - Emerging	1 - Minimal	N/A
Identifies a focused, unique, original problem that is challenging and well defined.		Identifies a somewhat focused problem that is interesting but not particularly challenging or is simplistic. OR the problem is unsatisfactorily defined and characterized, with important omissions of key considerations.		The problem, if identified, is confused or simplistic.		Unable to rate based on this work
Potential for significant contribution of the research to their discipline		Limited potential for contribution of the research to their discipline or with more focus could prove to contribute significantly.		Contribution of the research to their discipline is not clear.		
Comments:						

2c. Methodology & Data Presentation.

6 - Mastering	5 - Effective	4 - Competent	3 - Developing	2 - Emerging	1 - Minimal	N/A
<p>Approach and methodology are complete, appropriate and correct for the problem. Has knowledge of emerging methodologies in their discipline.</p> <p>Data collected and presented demonstrates a clear understanding of the info and its relationship with the problem.</p> <p>Data presented appropriately - graphs and/or tables are complete, accurate, relevant, and contain appropriate headings, descriptors, significant figures, etc. Use of statistics is appropriate and presented clearly and completely. Interpretations drawn from statistical presentations are accurate.</p>		<p>Approach and methodology are related to the problem but do not fully address the problems due to flaws or inappropriate approach. Has limited knowledge of emerging methodologies in their discipline.</p> <p>Data collected and presented adequately. Relationship of the data to the problem are not entirely clear.</p> <p>Data presented are generally appropriately - graphs and/or tables contain relevant headings, but some details may be missing or unclear, such as units, significant figures, etc. Statistical information is generally understood and interpreted correctly.</p>		<p>Poor/inappropriate methodology approaches demonstrated, or approach and methodology are unrelated to the problem. Has no knowledge of emerging methodologies in their discipline.</p> <p>Limited data collected or data/approach demonstrates little attention to or understanding of the problem</p> <p>Data presentation are incomplete, poorly labeled, confusing, or missing all together.</p>		Unable to rate based on this work
Comments:						

2d. Data Analysis and Interpretation.

6 - Mastering	5 - Effective	4 - Competent	3 - Developing	2 - Emerging	1 - Minimal	N/A
<p>Use and interpretation of info are accurate and thorough, including interpretation of data given in graphs and tables, as well as the overall results and conclusions given by each source.</p> <p>Logical and highly insightful inferences from the info presented. Excellent job in integrating literature and data in appropriate and creative ways. Analysis demonstrates firm understanding of data. Alternate interpretations of, or inferences from, data are discussed appropriately and in detail.</p>		<p>Accurately uses and correctly interprets most of the info obtained from sources, including data given in graphs and tables, as well as the overall results and conclusions given by each source. One or more minor points may be overlooked or misinterpreted.</p> <p>Generally makes logical inferences from the info presented, with only few or minor mistakes. Demonstrates a basic understanding of the data and some ability to connect literature and data to analyze evidence, but analysis is confusing in some spots or contains inaccuracies. Analysis generally reflects evidence reviewed, collected and presented. May provide brief, appropriate mention of alternative interpretations.</p>		<p>Little or no interpretation of data, instead is simply a restatement of facts and ideas found elsewhere. Misunderstands or misrepresents info given in their sources.</p> <p>Limited or no logical inferences from the info presented. Does not appear to understand the info.</p>		Unable to rate based on this work
Comments:						

2e. Conclusions and Recommendations.

6 - Mastering	5 - Effective	4 - Competent	3 - Developing	2 - Emerging	1 - Minimal	N/A
<p>Conclusions are accurate, appropriate, and clearly linked to problem and data presented.</p> <p>Conclusions and recommendations are balanced and qualified to account for uncertainties in the data or unpredictability of the system, and student's own biases.</p>		<p>Conclusions are reasonable but may not take into account all critical factors.</p> <p>In a limited way, students consider uncertainties or other limitations of the conclusions or evidence.</p>		<p>Conclusions are inaccurate and/or unreasonable, do not reflect the research and data presented, or are merely a simplistic summary not tied to the original problem.</p> <p>Conclusions and recommendations are biased and do not reflect the research and data, suggesting views were established before or in spite of the evidence.</p>		Unable to rate based on this work
Comments:						

3. COMMUNICATION. Communicates effectively to a diverse group of people using appropriate traditional and emerging technological media.

6 - Mastering	5 - Effective	4 - Competent	3 - Developing	2 - Emerging	1 - Minimal	N/A
Captures and communicates the intended idea(s) accurately and clearly.		Captures and communicates the intended idea(s) accurately but parts are not clear.		Inadequately/inaccurately captures and communicates the intended idea(s) due to gaps and digressions. Little attention is paid to accuracy.		Unable to rate based on this work
Main points connect with the audience and are smoothly tied together.		Generally easy to identify main points and transitions are usually smooth.		Difficult to identify main points. Transitions may be rough.		
Compellingly conveys why the issue matters.		Background and context sufficient to indicate the issue is important.		Limited background info and context so not at all clear why issue matters.		
Visuals (graphs, tables, diagrams, etc) are clear, concise, and relevant.		Visuals (graphs, tables, diagrams, etc) generally support the written component, but some may be overly complex, simplistic, or redundant.		Not clear how the visuals (graphs, tables, diagrams, etc) add credibility to the topic.		
Polished, error-free, and engaging. Professional.		Contains errors, but errors do not distract from or misrepresent content and ideas.		Multiple errors in grammar, syntax, punctuation, etc., that obscure and/or misrepresents the content.		
Comments:						

4. ORIGINAL CONTRIBUTION. Demonstrates potential for original contribution to their discipline.

6 - Mastering	5 - Effective	4 - Competent	3 - Developing	2 - Emerging	1 - Minimal	N/A
Research demonstrates excellent potential for original contribution to their discipline. Research is unique, well organized, complete, and statistically sound.		Research demonstrates some potential for original contribution to their discipline. Research is unique but contains flaws in interpretation, organization, completeness and/or statistics.		Research contains serious flaws that would make it unpublishable. Not unique.		Unable to rate based on this work
Research prepares student for further productive research beyond graduate school.		Research prepares student for limited research beyond graduate school		Limited or no potential for student to do further research in this area.		
Comments:						

Rubric for Assessing Graduate Work in the Department of Crop and Soil Sciences

August 2011

Student's name: _____; Date: _____; MS or PhD: _____

Title: _____

Check one: Proposal seminar _____; Prelim exam: _____; Final Seminar _____; Defense _____

Check one: Faculty _____; Graduate student: _____; Staff: _____; Professional in the field: _____

For each of the learning outcomes below, please choose the score which best corresponds to the overall level demonstrated in the student work using the attached rubric for guidance. (6/5 = *Mastering*; 4/3 = *Developing*; 2/1 = *Minimal*; N/A = *Unable to rate*). Please use whole numbers or increments of 0.5.

Learning Outcome	Score
1. Knowledge of Field. Demonstrates adequate breadth and depth of knowledge of the field in their area of research.	
2. Scientific Reasoning. Appropriately designs, conducts, analyzes, and interprets research effectively on important problems in their discipline.	
a. Literature: Search, Selection, and Review. Reviews the literature in a manner that demonstrates comprehensive knowledge of previous and current research in the field of study.	
b. Defining the Problem. Identifies a viable question within the field of study and effectively documents the contribution of the research to the area of study.	
c. Methodology and Data Collection. Designs and implements appropriate research experiments to test the hypothesis or the solve problem.	
d. Data Analysis and Interpretation. Analyzes and interprets research data appropriately. Demonstrates sufficient knowledge of appropriate concepts, theories, and emerging methodologies in their area of research.	
e. Conclusions and Recommendations. Presents conclusions and recommendations that are accurate, clearly linked to data presented, and take into account all critical factors.	
3. Communication. Communicates effectively to a diverse group of people using appropriate traditional and emerging technological media.	
4. Original Contribution. Demonstrates potential for original contribution to their discipline.	

Comments:

TO: Department of Crop and Soil Sciences, WSU
FROM: Student's Name
DATE: Type date here
RE: Intent to Graduate Notice

This memo serves as formal notification of my intent to graduate with a MS or PhD in Crop Science or Soil Science. My thesis/dissertation title and chapters are:

Title
Chapter 1
Status/estimated completion date
Chapter 2
Status/estimated completion date
Etc

My proposed timeline for graduation is:

Final draft of thesis/dissertation to committee: Type date here
Scheduling form due to the Graduate School: Type date here
Thesis or dissertation seminar: Type date here
Thesis or dissertation exam/defense date: Type date here

Note: An electronic 'display' copy of your thesis/dissertation must be submitted to marshdj@wsu.edu before the Department Chair will sign the final exam scheduling form. It will be posted to the CSS faculty Sharepoint site.

Submitted by:

Your Name X _____
Name of Committee Chair X _____
Name of Committee Member X _____
Name of Committee Member X _____