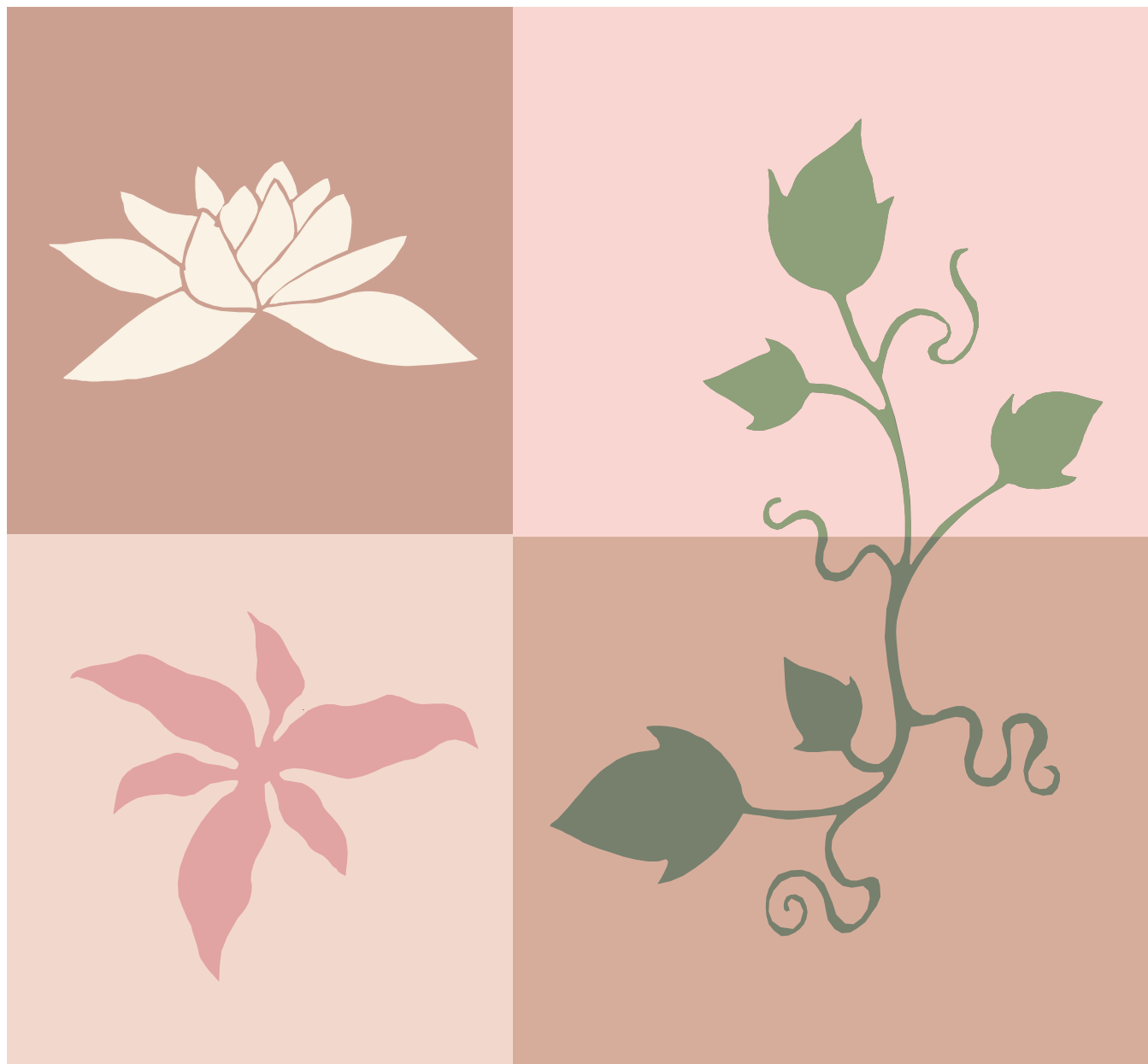


Handbook for Horticulture Graduate Students

Academic Year 2014-2015



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PREFACE

We welcome you to Washington State University and the Department of Horticulture, a unit of the College of Agricultural, Human, and Natural Resource Sciences.

While at WSU we encourage you to take advantage of the great horticultural experience that can be yours in the Pacific Northwest. The required graduate student tour will provide an introduction to the diversity of horticulture in the region; the areas and industries of the state are yours to explore. The growers and people of related enterprises of horticulture will be pleased to visit with you and help you to learn about Washington horticulture. Make good use of opportunities to accompany faculty members into the state for extension or research meetings; we assure you that they will be glad to have you accompany them. Once your program and research project are in progress, you may be asked to present your findings to the industry. Such presentations will benefit both you and our industry.

As you start Graduate School here, we welcome you as members of our teaching and research faculty. You are now an integral part of what we do and what we stand for. Your success will enhance our department, and as a result, provide you with an even better education. Each of you will have the chance to improve your skills in the classroom and the laboratory, and many of you will become skilled in field research as well. We encourage each of you to seek out opportunities to broaden your knowledge base to become more marketable upon completion of your degree.

We have an outstanding faculty and you should visit with them frequently, for much can be gained from interaction with those that you will encounter in and out of the classroom. We welcome every opportunity to visit with graduate students and to share your successes as well as your problems. We are proud of our department and our state and want you to experience this pride.

We congratulate each of you on your achievements to this point in your education and trust that when you finish your work at WSU you will be glad you made the choice to study with us. We wish you the best in your classes and your research. You will be as successful as the effort you expend in each. We hope that your experiences at WSU in the next few years will exceed your expectations, personally and professionally.

The information that follows is intended to acquaint you with the department and to inform you of policies and procedures that must be followed to obtain your graduate degree. Please keep this information handy and refer to it to help guide you through your graduate education in Horticulture.

INTRODUCTION

It is well accepted that the most important aspect of a university's research effort is its graduate program. The Department of Horticulture aims to ensure the best graduate education possible—not only in the classroom and in your research, but also in the many informal experiences involved during your tenure as a graduate student.

Policies and procedures regarding graduate education are set at three levels, namely university, college and department. Thus, at times, it may be difficult or confusing to find the official policy. The WSU [Graduate Catalog](#) and the Graduate School's [Policies and Procedures Manual](#) contain most of the general policies on admission, courses, policies and procedures. Individual departments often maintain more specific requirements. This handbook is intended to inform you of departmental policies and procedures that you need to follow in obtaining your graduate degree in Horticulture at WSU.

PROFESSIONAL AND ACADEMIC INTEGRITY

The Department of Horticulture is committed to the creation and promotion of an atmosphere of free inquiry and freedom of expression by all members of our community. The department recognizes and

adheres to the tenet that integrity in scientific research and academic programs is vital to the advancement of knowledge within the scientific and public community. Integrity in scientific research and academic matters is first a very important matter for individual conscience and commitment, but also is a collective commitment of the university as set forth in various documents ([Faculty Manual](#), [Standards of Conduct for Students](#), the [Graduate Student Code of Rights and Responsibilities](#), and [Responsible Conduct of Research](#)). Cases of scientific fraud, plagiarism, falsification of data, failure to comply with federal, state or university requirements, inappropriate use of research funds and facilities, and incorrect authorship are examples that can damage the credibility of research and must be avoided.

WSU has established an executive policy on consensual relationships between faculty and students and between supervisors and subordinates, which states that “faculty or anyone in a supervisory role is prohibited from having supervisory responsibility over a student or subordinate with whom he or she is currently having a romantic and/or sexual relationship.” If a consensual relationship occurs, the faculty member or supervisory must disclose the relationship to their supervisor, with students disclosing the relationship to the their department chair or program director. Sanctions will not ordinarily be imposed when developing romantic and sexual relationships are promptly self-reported and measures are taken to remove the conflict of interest, so long as the relationship is not alleged by one of the parties to be nonconsensual or discriminatory. The complete executive policy document can be downloaded at <http://oeo.wsu.edu/media/1123/ep28.pdf>.

GRADUATE PROGRAM ADMINISTRATION

Horticulture Graduate Program Bylaws

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

The Horticulture Graduate Program is administered by the Horticulture Graduate Program Director, who is also the Department Chair [[Dr. B.W. \(Joe\) Poovaiah](#), 509-335-2487], and the Executive Committee, which coordinates and advises the Program Director on the Horticulture Graduate Program. At the discretion of the Program Director, a graduate student representative will be appointed to the Executive Committee and other ad hoc committees. However, Horticulture graduate students may not serve on other graduate students' Faculty Advisory Committees.

Horticulture Graduate Executive Committee

It is the goal of the Executive Committee to maintain high standards of graduate education in Horticulture at WSU. The Executive Committee consists of five to six active Horticulture Graduate Faculty and one graduate student representative, elected by the Horticulture graduate students. The Program Director appoints the Chair of the Executive Committee, and the Horticulture Graduate Faculty nominate and elect members to the Executive Committee. The current Executive Committee members are:

[Preston Andrews](#), Chair 509-335-3603
[John Fellman](#) 509-335-3454
[Kate Evans](#) 509-663-8181
[Dorrie Main](#) 509-335-2774
[Matthew Whiting](#) 509-786-9260
[Sushan Ru](#), Graduate Student Representative

The Executive Committee recommends Horticulture graduate policies and curriculum to the Horticulture Graduate Faculty and Program Director, who ensures adherence to them. The Committee reviews the

progress of all Horticulture graduate students to attempt to avert disruptions in their progress toward the degree. The Executive Committee or its Chair is available to meet with graduate students, either as a group or individually, to discuss graduate education. Committee members are available to discuss any problems that might affect your program. A student may discuss problems either with individual members of the Executive Committee, the entire Committee, or file a written report with the Program Director. If you have questions regarding policies or problems that you wish to discuss with someone other than your advisor, PLEASE feel free to contact the Chair of the Executive Committee or any other member of the Committee.

Other duties/responsibilities of the Executive Committee include: a) screening applications and making recommendations to the Horticulture Graduate Faculty for admission of applicants to the Graduate Program in Horticulture; b) arranging for major advisors for each incoming graduate student and for on-campus advisors when needed; c) making recommendations to the Program Director for the assignment of Graduate Research Assistants and Teaching Assistants; d) evaluating the progress of each graduate student annually and making recommendations to the Program Director for orderly progress of students in the graduate program; and e) serving as a recognized grievance committee to mediate problems that arise in the normal graduate student/major advisor relationship when requested by either party. Implementation of recommendations would proceed after consultation and approval by the Program Director.

Horticulture Graduate Coordinator and Chair of the Executive Committee

The Horticulture Graduate Coordinator ([Dr. Preston K. Andrews](#), 509-335-3603, Johnson Hall 155E) is also the Chair of the Executive Committee, with responsibilities to: a) direct the Executive Committee in carrying out its functions, b) serve as a contact person with the Graduate School regarding policies and activities, c) be responsible for an initial orientation meeting with new graduate students to explain the policies and procedures of the Graduate School and the Horticulture Graduate Program, and d) actively recruit prospective students and arrange for initial contacts with Horticulture Graduate Faculty.

Graduate Center and Academic Coordinator

The Johnson Hall Graduate Center administers the Horticulture Graduate Program and is located in Johnson Hall 131. The Academic Coordinators ([Deb Marsh](#) 509-335-2615 and [Lisa Lujan](#), 509-335-9542) are responsible for handling graduate student records and scheduling and administering certain aspects of the Horticulture Graduate Program, as detailed herein. The Academic Coordinators are available to answer many of your questions regarding the implementation of Graduate School and program policies and procedures.

Student's Major Advisor(s)

Each graduate student is assigned a Major Advisor before being accepted into the Horticulture Graduate Program. Except by written exemption from the Horticulture Graduate Program Director, all accepted graduate students must also have a funding package that includes either a department or grant-funded assistantship. The Major Advisor is the student's main contact for information regarding graduate education. The Major Advisor, in consultation with the graduate student, will determine and direct the student's activities while enrolled at WSU. The Major Advisor will serve as the chair of the graduate student's Faculty Advisory Committee.

Students may have an advisor who is located at a facility other than the WSU main campus in Pullman. It is encouraged that students working with an off-campus advisor have an on-campus advisor located in Pullman to help with the student's program when/if the student is in Pullman. In most cases, the on-campus advisor will serve as a member of the student's Faculty Advisory Committee.

Some students may have two Horticulture Graduate Faculty members jointly serve as co-Major Advisors and co-chairs of the student's Faculty Advisory Committee. Only tenured or tenure-track Horticulture Graduate Faculty may serve as a sole Major Advisor, whereas non-tenure track WSU research, clinical,

affiliate, emeritus, or adjunct (non-WSU) faculty, or USDA-ARS researchers, that are appointed to the Horticulture Graduate Faculty, as noted in the Horticulture Graduate Program Bylaws, may co-chair a student's Faculty Advisory Committee along with a tenured or tenure-track Horticulture Graduate Faculty member.

Occasionally, a student may wish to change Major Advisors. It is the student's responsibility to find a new Horticulture Graduate Faculty member willing to take over the role of Major Advisor and to request a change after consulting with the Program Director. When a student needs to change a Major Advisor because the faculty member is leaving WSU, the Executive Committee will work with the student and other faculty to find the best alternative Major Advisor.

Student's Faculty Advisory Committee

The graduate student's Faculty Advisory Committee will be responsible for setting, assessing, and maintaining standards for each student. Requirements set by the Faculty Advisory Committee may be in whatever form they feel is most appropriate and will include courses and independent research. This will allow each student's program to be individualized for that student's particular needs and interests. It is the ultimate responsibility of the Major Advisor and the student to form the Faculty Advisory Committee.

Members of the student's Faculty Advisory Committee are selected by the Major Advisor in consultation with the graduate student, although committee membership is regulated by the Horticulture Graduate Program Bylaws (Appendix A) and Graduate School policy. (See chapters 7.C. and 8.C. of the Graduate School's Policies and Procedures Manual for policy on Master's and Doctoral committees, respectively.) Committee members must be approved by the Program Director, as well as the Graduate School, as shown on the [Program of Study](#). Committee members should be selected for their abilities and qualifications to assist the student in completing a graduate program and preparing for a professional post-graduate career. A student's Faculty Advisory Committee can be changed at any time by completing a [Committee Change](#) form that is approved by the new Faculty Advisory Committee and the Program.

M.S. Student's Faculty Advisory Committee shall consist of a minimum of three members, including the Major Advisor as Chair. The student's Major Advisor must be tenured or tenure-track Horticulture Graduate Faculty, however, a non-tenure track WSU research, clinical, or affiliate faculty, or USDA-ARS researcher, who are appointed to the Horticulture Graduate Faculty, may co-chair the committee. The Faculty Advisory Committee shall consist of at least half the members who are Horticulture Graduate Faculty (i.e. tenured or tenure track, affiliate or adjunct, and non-tenure track, including USDA-ARS), but at least one committee member shall be from outside the department (i.e., not tenured, tenure-track, non-tenured, or emeritus Horticulture Graduate Faculty). Other committee members may be Graduate Faculty in other WSU graduate programs, or be nominated and approved by the Graduate School if they are non-WSU faculty or professionals.

Ph.D. Student's Faculty Advisory Committee shall consist of a minimum of four members including the Major Advisor as Chair. The student's Major Advisor must be tenured or tenure-track Horticulture Graduate Faculty, however, a non-tenure track WSU research, clinical, or affiliate faculty, or USDA-ARS researcher, who are appointed to the Horticulture Graduate Faculty, may co-chair the committee. The Faculty Advisory Committee shall consist of at least half the members who are tenure-track or research/clinical Horticulture Graduate Faculty (i.e., tenured or tenure track, affiliate or adjunct, and non-tenure track, including USDA-ARS), but at least one committee member shall be from outside the department (i.e., not tenured, tenure-track, non-tenured, or emeritus Horticulture Graduate Faculty). Other members may be Graduate Faculty in other WSU graduate programs or be nominated and approved by the Graduate School if they are non-WSU faculty or professionals.

The graduate student is advised to meet each semester, but not less than each year, with all Faculty Advisory Committee members, either individually or in a combined committee meeting (as appropriate), to appraise them of progress on degree-related activities and to receive advice regarding graduate work and input on student research progress.

PROGRAM REQUIREMENTS

Degree Options (General)

The Department offers two horticulture graduate degrees. The appropriate degree is determined by the student in consultation with the Major Advisor and Faculty Advisory Committee members, all of whom must approve the selection. These degree options are described briefly below. See the sections on "Graduate Program of Study" and "Thesis and Special Problems Research" for more information about each degree option.

A non-thesis M. S. degree is not offered in Horticulture. If you are interested in a non-thesis option with a horticulture emphasis, please consider the M.S. Agriculture degree, in which faculty in Horticulture can serve as major advisors. The [M.S. Agriculture degree](#) is offered through the CAHNRS, primarily as an [online](#) degree.

Master of Science (M.S.) Degree (Thesis) Option: The M.S. degree program is research-based, involving a formal, major research project, and completion of a thesis. The objectives of this option are to train students in the experimental scientific method and to prepare students for handling major projects after graduation or for entering a doctoral program.

Doctor of Philosophy (Ph.D.) Degree Option: All doctoral candidates must conduct independent research leading to a doctoral dissertation and publication of peer-reviewed research papers, with the objective of making a major contribution to the body of scientific knowledge in horticulture. Students in this degree option are expected to have completed a research-based master's degree or to have research experience prior to enrolling in the doctoral program.

Graduate Minor in Horticulture: Students in other doctoral programs at WSU may obtain a minor in Horticulture. Although not limited to, graduate students in Molecular Plant Sciences (MPS) with a Horticulture major advisor are encouraged to obtain a minor in Horticulture.

For all graduate students majoring in Horticulture, a Graduate Program [Learning Outcomes Assessment](#) (Appendix B) plan will be followed.

Departmental and Professional Stewardship

All graduate students are considered to be training for professional positions and are expected to take advantage of opportunities to prepare themselves for all aspects of professional life. In addition to learning about conducting research and taking courses to improve their individual knowledge, students are expected to:

- interact professionally with local and international members of the academic community, horticultural industries, and the public,
- promote the professional development and growth of other students,
- contribute to the academic functioning and governance of WSU and other appropriate professional bodies, for example, by providing exemplary service on committees.

Graduate students have a voice in university and department governance, and they are expected to exercise their opportunities to be represented. The Horticulture graduate student body is expected to select student representatives for the following: Horticulture Graduate Executive Committee, departmental Safety Committee, and representatives to departmental Faculty meetings and the WSU [Graduate and Professional Student Association](#) (GPSA). Other opportunities are also available for interested students.

Statewide Research and Extension Center Tour

To provide graduate students with an overview of the breadth of our departmental resources and the diverse horticultural 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 Research and Extension Center Tour at their earliest opportunity. The tour occurs sometime during the summer break, between the Spring and Fall semesters. Students should enroll for 1 credit of Hort 503, Advanced Topics in Horticulture, in the Fall semester following the summer in which they participate in the tour. Students who complete a M.S. degree in our department and enroll in our doctoral program may be invited (but not required) to attend the tour a second time.

Review of Graduate Student Progress

To assist the student in the timely completion of all major degree requirements, the Graduate Executive Committee and the Program Director will review the progress of all enrolled M.S. and Ph.D. graduate students at least once a year. This is also a requirement of the Graduate School. The graduate student should not rely upon this review to be reminded of all program and Graduate School requirements. IT IS THE STUDENT'S RESPONSIBILITY TO COMPLY WITH ALL REGULATIONS AND MEET ALL DEADLINES, AS SET FORTH IN THE WSU GRADUATE SCHOOL'S [POLICIES AND PROCEDURES MANUAL](#), AND HEREIN.

Once each year, usually in May-June, a review form (see Appendix C) will be sent to each graduate student by the Academic Coordinator to be completed with updated information regarding their progress. It is the responsibility of the student to see that the form is properly completed, with comments and signatures added by themselves and their Major Advisors. In addition to the completed review form, a curriculum vitae (CV) should also be submitted each year. The Executive Committee reviews each progress report and makes its recommendations to the Program Director regarding each student's progress. The Program Director notifies each student as to his/her progress, and makes recommendations to the student, Major Advisor, or the Graduate School to correct any deficiencies in the student's program to date. If a student's progress is determined to be unacceptable, a copy of the notification memorandum will be sent to the Graduate School. This may result in a follow-up progress review after the Fall semester. If two unacceptable evaluations are received, the student may be dismissed from the Horticulture Graduate Program. FAILURE TO MEET THESE REQUIREMENTS AFTER REVIEW BY THE GRADUATE EXECUTIVE COMMITTEE MAY RESULT IN RESTRICTIONS AGAINST STUDENT REGISTRATION THE FOLLOWING SEMESTER.

The Graduate School has established academic standards that must be met for continued enrollment in graduate programs at WSU. Among those standards is the requirement to maintain a minimum cumulative and program GPA of 3.0.

Teaching/Outreach Experience

All students for advanced degrees in horticulture are expected to participate in teaching, Extension, and research activities, while at WSU. This experience is intended to give you some knowledge of how to communicate horticultural information to students and/or stakeholder groups. M.S. and Ph.D. students are required to satisfy departmental teaching requirements for each degree separately, regardless of previous teaching experience. Realizing that each graduate student's experience will be different, this teaching/Extension experience requirement can be met by completing **one or a combination** of the following teaching/Extension duties at some time during the student's graduate program:

1. Prepare and present **lectures** in person or by distance delivery at the undergraduate or graduate level in courses offered at any WSU campus.
2. Conduct **tutorial sessions** for undergraduate students.
3. Assist with the preparation and conduct of **laboratory periods**.

4. Prepare and present **asynchronous presentations**, each equivalent a lecture period, for possible use later in departmental programs. Topics and presentation format must be approved by his/her advisor. For example, the student might arrange to have slide presentations electronically recorded or might prepare computer-assisted learning modules.
5. Perform required teaching duties on a **Teaching Assistantship**.
6. Prepare and present **Extension presentations** to stakeholder groups.
7. Prepare and present scientific presentations at professional meetings.
8. Other teaching opportunities as available and agreed upon by Major Advisor.

It is the responsibility of the student and the Major Advisor to arrange for the teaching experience to be completed and to assume the responsibility for certifying that this requirement has been met prior to setting the date for the student's final oral examination. It is the responsibility of the Major Advisor or the instructor of the course or supervisor of the event in which the teaching activities will occur to assist the graduate student with learning and applying appropriate educational techniques in fulfilling this requirement.

Continuous Enrollment Policy

All full-time graduate students must register for a minimum of 10 credit hours (Note: Credit hours for a course are generally the number of hours of lecture time a class meets per week, although three hours of laboratory-based activities in a course is equivalent to only one credit hour.) each Fall and Spring semester, with at least one (1) of those credits being Hort 700 (M.S. students) or Hort 800 (Ph.D. students) 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 credits each semester, excluding summer. Doctoral Students who have successfully completed their course work and preliminary exam, and who do not enroll for credit will automatically be placed into Continuous Doctoral Status for not more than three years, or until they register for 2 credits of Hort 800 in the semester they plan for their dissertation defense exam. Doctoral students in Continuous Doctoral Status will be charged a small administrative fee (\$50) 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 a \$25 fee. Reenrollment requires departmental approval and is not guaranteed.

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

Exit Survey and Interview

Each graduating student must complete an exit survey and provide a CV upon completion of the Horticulture graduate program. Additionally, graduate students are invited to meet with the Program Director for an exit interview at the completion of their graduate program. The exit survey can be obtained from the Academic Coordinator (Deb Marsh). The required exit survey and optional interview with the Program Director will allow the student an opportunity to reflect on their time at WSU and to provide formal feedback and recommendations to the Department regarding the graduate program.

GRADUATE COURSEWORK

A graduate degree in Horticulture requires a broad understanding of a large body of knowledge in horticulture, coupled with a specialization within that body of knowledge and specific knowledge in related fields. The following recommended courses are meant to reflect a balance between these two goals – assuring knowledge of horticulture and the Faculty Advisory Committee's discretion to design a program suited to each graduate student's area of specialization. Appropriate academic standards must be achieved in all coursework. Regulations as to minimum GPA in coursework and academic probation are found in the [Graduate School Policies and Procedures Manual](#) (pp. 53-54).

Recommended Courses

To assure a broad understanding of what constitutes the field of horticulture, it is recommended that all students complete some courses from each of the categories listed below. (Note: The listed courses are examples and do not include all courses that could possibly be taken within each of these categories. In addition, some courses may be considered to satisfy one of two possible categories, e.g. Hort 518.)

These recommendations can be fulfilled by similar courses taken in a prior B.S. or M.S. degree.

Applied Plant Sciences: Pomology (Hort 310), Viticulture (Hort 313), Olericulture (Hort 320), Landscape Plant Installation and Management (Hort 331), Greenhouse Management and Crop Production (Hort 357), Trends in Horticulture (Hort 425), Advanced Viticulture (Hort 513), Post-Harvest Biology and Technology (Hort 518), Fruit Crops Management (Hort 521), Potato Science (PISc 590 at Univ. Idaho), or Advanced Topics in Horticulture (Hort 503).

Basic Plant Sciences: Systematic Botany (Biol 332), Plant Physiology (Biol 420), Plant Genomics and Biotechnology (Hort 480), Anatomy and Physiology of Grapevines and Berries (Hort 488), Plant Anatomy (Biol 509), Viruses and Virus Diseases of Plants (PIP 511), Molecular Mechanisms of Plant Development (Biol 512), Plant Metabolism (Biol 513), Stress Physiology of Plants (Biol 517), Advanced Horticultural Crop Physiology (Hort 516), Post-Harvest Biology and Technology (Hort 518), Chemistry and Biochemistry of Fruit and Wine (Hort 535), Plant Cell Biology (Biol 537), Insect-Plant Interactions (Ent 549 at Univ. Idaho), Plant Ecophysiology (Biol 560), Diversity of Plants (Biol 570), or Advanced Topics in Horticulture (Hort 503).

Research Foundation These are courses that contribute to a research foundation (foundational, analytical, methodological, or techniques): General Genetics (MBioS 301), Statistical Methods in Research I (Stat 412), Environmental Biophysics (Soils 514-515), Soil Microbiology (Soil Sci 531), Molecular Biology I & II (MBioS 503 & 504), Experimental Methods in Plant Physiology (Biol 504), Statistical Methods in Research II (Stat 512), Soil-Plant-Microbial Interactions (Soil Sci 541), Field Analysis of Sustainable Food Systems (AFS 545), Special Projects in Electron Microscopy (EMic 586), General Biochemistry (MBioS 513 & 514), Introduction to Population Genetics (Biol 519), Plant Molecular Genetics (MPS 525), Plant Tissue Culture Techniques (PISc 533 at Univ. Idaho), Analyzing Microarray and Other Genomic Data (Stat 565), Biochemical Signaling in Plants, Animals and Microorganisms (MPS 571), or Advanced Topics in Horticulture (Hort 503).

Supporting Areas Courses that contribute to an understanding of the agricultural disciplines that directly support undergraduate horticulture degrees: Introductory Soil: A Living System (Soil Sci 201), Introduction to Agroecology (Soil Sci 302), Diseases of Fruit Crops (PIP 300), Ecology and Management of Weeds (Crop Sci 305), Agricultural Entomology (Entom 340), Pest Management in Organic Agriculture Production Systems (Entom 350), Honey Bee Biology (Entom 361), General Plant Pathology (PIP 429), Soil Fertility (Soil Sci 441), Systems of Integrated Pest Management (IPM 462), Pesticides and the Environment (IPM 552), Current Research in Organic and Sustainable Agriculture (AFS 501), Advanced Cropping Systems (Crop Sci 503), Soil Fertility Management (Soil Sci 547).

Fulfilling some or all of these recommended categories of coursework may occur before admission into the Horticulture Graduate Program, such as, in an undergraduate program or previous M.S. program. However, prior completion of any of these courses does not preclude the required coursework listed in

the student's Graduate Program of Study (see next section). The graduate student's Faculty Advisory Committee will advise the student regarding possible ways to fulfill this coursework. Regardless of which of the above recommended courses are taken, **all full-time Horticulture graduate students should enroll in the Horticulture Graduate Seminar (Hort 509 or 510) and at least one credit of Hort 700 (M.S. students) or Hort 800 (Ph.D. students) every semester (except summers).**

Graduate Program of Study

The Graduate Program of Study is the official Graduate School document that lists the student's research topic, the members of the Faculty Advisory Committee, and all of the classes that will apply towards the graduate degree. The Program of Study may include selected courses from the list of recommended courses above, or other courses that the Major Advisor and Faculty Advisory Committee deem essential. Once approved, it becomes the basis for the requirements of the degree. Soon after arriving at WSU, students should consult with their Major Advisor about a Program of Study and possible committee members. The graduate student, the Major Advisor, and the Faculty Advisory Committee will develop the graduate program to be submitted to the Graduate School. Preparation of the specific Program of Study form for either the M.S. or Ph.D. degree is the responsibility of the student, and the Graduate School's Deadlines and Procedures for Graduation Deadlines and Procedures for Graduation for [M.S.](#) or [Ph.D.](#) should be strictly followed. The completed form, with signatures from the entire Advisory Committee and Horticulture Program Director, is then submitted to the Graduate School for approval, and a copy is placed on file with the Academic Coordinator.

M.S. Program, Thesis Option: Students should submit a [Master's Degree Program of Study](#) to the Graduate School by the end of the first semester of graduate work, but no later than the semester before their Final Defense Exam. Students must complete a minimum of 30 hours of credit, including 21 hours of graded coursework, with at least 15 hours at the 500-level including 2 hours of Hort 510, and 4 hours of Hort 700, with at least 2 hours of Hort 700 taken in the semester that the thesis is completed and defended in a final examination. Up to 6 hours of graded, non-graduate coursework at the 300- or 400-level may be included. Courses taken on a pass/fail basis may not be applied to fulfill program requirements. Except for approved extensions, the Graduate School policy is that the maximum time allowed for completion of an M.S. degree is 6 years from the beginning date of the earliest course applied toward the degree.

Ph.D. Program: Students should submit a [Doctoral Degree Program of Study](#) to the Graduate School by the end of the second semester of graduate work, but no later than the semester before their Preliminary Exam. Students must complete a minimum of 72 hours of credit, including 23 hours of graded coursework, with at least 15 hours at the 500-level including 2 hours of Hort 510, and 20 hours of Hort 800, with at least 2 hours of Hort 800 taken in the semester that the dissertation is completed and defended in a final examination. Up to 9 hours of graded, non-graduate coursework at the 300- or 400-level may be included. Courses taken on a pass/fail basis may not be applied to fulfill program requirements. Except for approved extensions, the Graduate School policy is that the maximum time allowed for completion of an doctoral degree is 10 years from the beginning date of the earliest course applied toward the degree, with a 3-year time limit from the semester of completion of the preliminary exam until degree completion.

Graduate Minor in Horticulture

The Minor in Horticulture for doctoral students in other graduate programs at WSU requires that at least one member of the student's Faculty Advisory Committee be a member of the Horticulture Graduate Faculty. The Program of Study must include 12 hours of graded graduate credits earned at WSU, with 6 hours of those credits being Hort 500-level, in addition to one credit of Hort 510, Graduate Seminar, presented near the conclusion of the student's graduate program. The graduate student must also attend at least one semester of Hort 509, Seminar, per academic year, and is strongly encouraged to participate in the statewide tour for Horticulture graduate students. The Program of Study, indicating the Minor in Horticulture, must be approved by the Horticulture Program Director. The Horticulture Graduate Faculty member on the student's Advisory Committee will determine if there are horticultural research

components that are required to fulfill the Graduate Minor in Horticulture and if oral and/or written examination questions, as outlined by the Graduate School, are applicable. A written statement outlining these requirements, signed by the graduate student, the Horticulture Faculty member, and the Program Director will be filed with the Academic Coordinator.

For additional information on approved coursework for either M.S. or Ph.D. degrees, see the current [Graduate School Policies and Procedures Manual](#). Every effort should be made to prepare the Graduate Program of Study so that they can be carried to completion as initially submitted; however, because situations, interests, and/or courses change, provisions have been made to allow for amending Programs of Study, subject to the approval of the student's Faculty Advisory Committee and the Program Director. See this Graduate School [website](#) for Change of Program, Committee Change, and Committee Substitution forms. All changes are subject to review and approval by the Graduate School.

Transfer Credits

With the approval of a graduate student's Faculty Advisory Committee and the Graduate School, graded graduate-level coursework taken toward a Master's degree at other accredited institutions of higher education, with a grade of B or higher, may be applied to the Doctoral Program of Study in Horticulture at WSU. However, graded graduate-level coursework taken toward a completed Master's degree at other accredited institutions may NOT be used toward a M.S. Horticulture degree at WSU. Graded graduate-level course work (with a grade of B or higher) taken as a graduate student, but not taken towards a completed graduate degree, may be used toward a M.S. degree or a Ph.D. degree at WSU with the approval of the student's Faculty Advisory Committee and Program Director. Students intending to list transfer credits on their Program of Study will need to submit to the Graduate School all official transcripts from colleges or universities showing such credits. In all transfer cases, the number of credit hours that can be transferred and listed on the Program of Study is limited to no more than half of the total graded course credits, excluding the required 2 credit hours of Hort 510 (Graduate Seminar). Transfer credits are subject to the usual time restrictions for M.S. or Ph.D. degrees, that is, credits cannot be more than 6-years-old for a M.S. and 10-years-old for a Ph.D. at the time of graduation. For further details on transfer credits, see the Graduate School's Policies and Procedures Manual (Chapter 6, Section G.2.e.)

Seminar

All graduate students are expected to **attend all Horticulture Seminars**, including those scheduled outside of the regular seminar series, whenever they have no class conflicts. Students residing at off-campus locations are expected to participate in the Horticulture seminars via distance delivery technology and to attend seminars given at their respective stations whenever possible. While working toward a graduate degree in Horticulture, full-time students are required to register for Hort 509 or Hort 510 every Fall and Spring semester that they don't have a course conflict. Most often students will register for Hort 509, graded P/F. During the semesters in which a graduate student will be presenting a seminar, they should register for Hort 510 (Graduate Seminar), which is graded, instead of Hort 509. The schedule of graduate seminars can be found at this [website](#).

Both M.S. and Ph.D. candidates are required to **present two seminars** in Hort 510 during their Horticulture graduate program. The intent of this requirement is to: 1) provide experience in presenting research seminars in particular and in public speaking generally, 2) encourage prompt consideration and development of a research topic, and 3) provide opportunities to inform Horticulture faculty, staff, and graduate students of their research activities. These Hort 510 seminars are evaluated by all attending faculty, staff, and graduate students (Appendix D).

The first seminar presentation, which will be graded and presented as part of Hort 510, will provide an overview of the student's proposed research project. Normally, this first seminar includes a problem statement and research justification, a review of related scientific work, and a summary of proposed research or project methodology. If the student's research emphasis changes from the topic presented, the student will not be required to present a new seminar.

M.S. Students: present first seminar before the end of their second semester at WSU.

Ph.D. Students: present first seminar before the end of their third semester at WSU.

The second seminar presentation, which will be graded and presented as part of Hort 510, will summarize their research project's results and implications. It should be presented near the time of their final thesis/dissertation defense, including on the same day but just prior to their final defense exam, during the regularly scheduled seminar time, or at an appropriate time before the final exam. Students must schedule this final Hort 510 seminar through the Academic Coordinator. No more than two final defense seminars will be scheduled on the same day, and none may be scheduled concurrently.

Students normally register for their second credit of Hort 510 during the final semester of their graduate program in Horticulture. If they are unable to complete the thesis during the semester in which they have registered for Hort 510, they should still present their seminar as scheduled. Students should not request a grade of Incomplete (I) unless circumstances beyond their control, such as illness, occur. If a student presents a seminar more than a month before their final defense, the student's Major Advisor and Faculty Advisory Committee will determine whether the student should present an additional seminar at the beginning of the defense exam.

THESIS AND SPECIAL PROBLEMS RESEARCH

Degree Options

All candidates for a graduate degree in Horticulture shall include some type of research in their graduate program. The nature of the research is typically individualized, based on the needs of the student and the Major Advisor, and will be performed as part of one of the following degree options:

M.S. Thesis Option: Students register for a minimum of 1 credit hour of Hort 700 (Master's Research) during each semester of enrollment. Hort 700 requires that a thesis be submitted to the student's Major Advisor, Faculty Advisory Committee, the Department, and the Graduate School.

Ph.D. Dissertation Research: Students sign up for a minimum of 1 credit hour of Hort 800 (Doctoral Research) each semester of enrollment. Hort 800 requires that a dissertation be submitted to the student's Major Advisor, Faculty Advisory Committee, the Department, and the Graduate School.

Research Proposals

In addition to the Graduate Program of Study, all Horticulture graduate students are required to complete a written research proposal that is thoroughly reviewed by their Faculty Advisory Committee, **prior to the end of their first year of study**. The rationale for writing a research proposal, besides giving students the opportunity to think in depth about their specific research project, is to gain experience in an essential activity of a professional academic or industry career, that is, requesting grant or industry funding for your research ideas, or writing an academic paper that concisely describes your research. Generally, research proposals should be **8-12 pages in length** and contain: 1) a clear justification for the research project, along with potential short- and long-term impacts, 2) a literature review of background publications that are relevant to the research project, 3) a clear statement of the project's objectives and hypothesis(es) that will be tested, 4) the experimental design that is intended to accomplish the objectives and test those hypothesis(es), and 5) the materials and methods that will be used. The latter should include a discussion of procedures to be followed, an estimate of facilities and equipment that will be needed, and if so required by the Faculty Advisory Committee, an estimate of the time and costs necessary to conduct the research.

The research proposal aids the student in clarifying specific goals of his/her research, serves as a focus for advice and suggestions from their Faculty Advisory Committee members, and helps prepare the student for presenting an oral "research proposal" in Hort 510 (Graduate Seminar). Every effort should be

made to prepare the research proposal so that it can be carried to completion as initially written; however, this document should be viewed as a guide, not a contract, and should be placed within the context of the program's research priorities. Research results and opportunities cannot always be predicted, and students must be prepared to be flexible in terms of committee expectations to get the most from their graduate education. If the research proposal cannot be followed as written, the student's Faculty Advisory Committee may require that the student revise the proposal, but the Department does not require that a new proposal be written.

Journal Articles *in Lieu* of Thesis

It is increasingly common that students publish articles in refereed journals prior to or just as they are finishing their thesis. Reprints of publications cannot be compiled and submitted to the Graduate School in lieu of a thesis, but depending on a student's Faculty Advisory Committee, typed manuscripts, in the style of the journal to which the paper was submitted for publication, can be compiled and submitted as a part of the thesis. Each manuscript contained in the thesis must be internally consistent in form, and the overall format must still comply with the Graduate School's required [Dissertation and Thesis Guidelines \(format\)](#), title page, signature, etc. Final decisions on the format and content of a student's thesis must be approved by your Faculty Advisory Committee. Students are urged to consult their Faculty Advisory Committee members early in their program to discuss thesis options.

Expenses

Expenses involved in the conduct of research and availability of equipment should be decided upon at the time of approval of the thesis problem. The Department may pay for certain costs incurred during the course of the research with prior arrangements, submitted in writing and approved by the Department Chair.

All drawings, graphs, lettering, and other artwork in the thesis or dissertation are the responsibility of the student. Students are also responsible for costs involved in typing all thesis materials and other graphic help needed in the development of their thesis, and the binding of copies for their Major Advisor, themselves, and friends and families.

Research Involving Animal or Human Subjects, Certain Biological Materials, or Radioactive Materials or Machines

All projects involving animal or human subjects, certain biological materials, of radioactive sources must be reviewed and approved by WSU's [Institutional Animal Care and Use Committee](#) (IACUC), [Institutional Review Board](#) (IRB), [Institutional Biosafety Committee](#) (IBC), and [Radiation Safety Committee](#) (RSC), respectively, before the research is conducted. For example, if people will taste samples of a product or if people will be asked to fill out a questionnaire or survey, then the project must be reviewed and approved by the IRB before any data are collected. Or, if any recombinant DNA, human fluids or tissues, or other infectious agents related research involving biohazardous materials is anticipated, the prior approved from the IBC is required. For use of radioactive materials and radiation-producing machines, then prior approval by RSC is necessary. The approval process may require a few weeks to a few months, depending on the complexity of the project and the invasiveness of the activities, so plan ahead. For more information on these approval processes, contact the [Office of Research Assurances](#) or the [Radiation Safety Office](#).

MAJOR EXAMS

Ph.D. Preliminary Examination

A preliminary examination is required of each doctoral student for advancement to candidacy for the doctoral degree. The preliminary examination is designed to determine the fitness of the student for pursuing a doctoral program in the field in which a degree is desired. The examination is intended to

cover both major and minor disciplines (if a minor is declared). For doctoral students in other graduate programs (e.g. MPS) who are pursuing a Minor in Horticulture, a portion of the preliminary exam will cover horticultural topics.

Before the end of the second year of graduate work after admission into the Horticulture doctoral program or soon after the majority of course requirements have been fulfilled, students should complete the preliminary examination. In Horticulture, this examination involves both a program-required written examination and a Graduate School-required oral examination, which follows guidelines established by the Graduate School in the [Graduate School Policies and Procedures Manual](#). The written examination, administered by the student's Major Advisor, generally consists of separate examinations from each member of the student's Advisory Committee, including the Major Advisor. The conditions for each set of written exams (i.e., what external resources are permitted, the length of the exam, etc.) are determined by the individual Advisory Committee member and may differ among the committee members (see below). The oral examination follows the written portion of the preliminary exam. "There is no time limit for either the written or oral portions of the examination, but all aspects of the examination must be completed within 30 days from the beginning." (WSU Graduate School Policies & Procedures Manual 2014-2015, p. 76). The examining committee for the oral examination is made up of the student's Faculty Advisory Committee and may include other Graduate Faculty in Horticulture.

The student is responsible for scheduling both the written and oral parts of the preliminary examination. The oral exam should be scheduled through the Graduate School using the [Preliminary Examination Scheduling Form](#) [\(or Interim Examination Scheduling Form for Preliminary Exams—for extenuating circumstances only\)](#), but only: 1) after the Program of Study has been approved, 2) after all or a substantial portion of the required coursework has been completed, and 3) when the student and their Major Advisor think the student is prepared for the exam. The student must be registered for a minimum of 2 hours of Hort 800 as a regular graduate student at the beginning of the semester or summer session in which the exam is to be taken, and have at least a cumulative 3.0 GPA and a 3.0 GPA or higher on the program courses already taken before the exam may be scheduled. Students will be allowed up to 30 calendar days from the end of the written examination until the completion of the oral examination. Students should work with their Major Advisor to determine the complete schedule for both the written and oral portions of the exam before beginning any portion of the exam.

Examination questions include, but are not limited to, topics covered in the coursework outlined in the student's Program of Study and coursework prerequisites to the required coursework. Successful completion of the coursework outlined in the Program of Study does not guarantee successful passage of the written or oral examinations. Unsatisfactory performance by a student on the written portion of the preliminary exam may result in postponement of the oral exam and/or affect the decision of individual Faculty Advisory Committee members regarding satisfactory or unsatisfactory completion of the entire preliminary exam.

Procedures for Preliminary Examinations

1. **Student** consults with their Major Advisor and members of their Faculty Advisory Committee to determine dates and times for both the written and oral exams. (Note: Preliminary exams are normally not allowed between semesters or during final exam weeks, except under extenuating circumstances - see next procedure.)
2. **Student** obtains and completes [Preliminary Examination Scheduling Form](#) [\(or Interim Examination Scheduling Form for Preliminary Exams—for extenuating circumstances only\)](#) from the Graduate School, obtaining signatures from all members of their Faculty Advisory Committee. The student then submits the completed form to the Academic Coordinator at WSU-Pullman (Deb Marsh, Johnson Hall 131, marshdj@wsu.edu). (**Note: The Program of Study must be on file prior to scheduling the preliminary exam.**)
3. The **Academic Coordinator** obtains the signature of the Department Chair on the scheduling form, places a copy in the student's file, and sends the completed form to the Graduate School. (**Note: The**

Preliminary Examination Scheduling Form must be returned to the Graduate School at least 10 working days before the exam begins.) The Academic Coordinator will also post an electronic copy of the official Announcement of Preliminary Examination (oral exam information only) to all Horticulture faculty via email.

4. The **Major Advisor** requests written questions from each member of the student's Faculty Advisory Committee, indicating the date questions are due back to him/her. **(Note: Allow at least one week for questions to be provided by the Faculty Advisory Committee members.)**
5. **Faculty Advisory Committee** members submit questions with complete examination instructions (see Written Preliminary Exam Options below) to the Major Advisor. The Major Advisor reviews and may discuss the questions with each member of the Faculty Advisory Committee to assure their appropriateness and that there is no duplication.
6. **Major Advisor**, or any designated staff that the Major Advisor wishes to appoint in their place, coordinates scheduling of the written exam with the student, including the venue for the exam.
7. **Major Advisor**, or designated staff member, administers the written questions, one set at a time from each Faculty Advisory Committee member, according to the exam option instructions provided with the questions. The answers to the questions are due back to the Major Advisor or designated staff at the time designated. **(Note: The designated staff member proctoring the exam should return the answers to the Major Advisor.)**
8. **Major Advisor** provides a copy of the questions and answers to the student and routes the answers to the appropriate Faculty Advisory Committee member after each set of questions is completed. The Major Advisor should provide an electronic copy of the questions and answers to the Academic Coordinator, who will place them in the student's file.
9. **Faculty Advisory Committee** members, after grading the answers to their questions as Satisfactory (S) or Unsatisfactory (U), return a copy of their evaluation of the answers to the Major Advisor and to the Academic Coordinator, who files them in the student's file. Each committee member should grade the answers to their questions in a timely manner, but in not more than 5 working days.
10. **Major Advisor** discusses the results of the written exam with the student prior to the scheduled oral exam. If the student satisfactorily passes the questions on the written exam from all Faculty Advisory Committee members, he/she may then proceed to the scheduled oral exam. However, if the student is judged to have performed unsatisfactorily overall on a set of questions from one or more members of the Advisory Committee, the student must cancel their oral preliminary exam and prepare for a reexamination. In the case of an unsatisfactory written exam, the student will be given sufficient time, but not more than 90 calendar days, to prepare for reexamination on that (those) portion(s) of the written exam in which he/she performed unsatisfactorily. The reexamination must be completed within the 90-day period. For the reexamination, the questions upon which the student is being reexamined should not be identical to the questions that the student performed unsatisfactorily on during the first exam. If the student performs satisfactory on the reexamination, then he/she should re-schedule their oral preliminary exam. If the student performs unsatisfactorily on the second written exam, he/she will be either dropped from the PhD program or given the option to continue for an MS degree instead. (Note: If the initial unsatisfactory written exam and the repeat exam span two semesters, the Major Advisor will give the student an "X" grade for HORT 800 (per WSU Academic Regulation 90j), rather than an "S" grade, in the semester in which the unsatisfactory written exam occurred. Upon successful completion of the repeated written exam, the Major Advisor will convert the "X" grade for HORT 800 to an "S" grade.)

Written Preliminary Examination: Options

Each Faculty Advisory Committee member submitting questions for a written preliminary exam will also submit instructions specifying, within each of the following sets of options, the conditions under which the

exam should be administered. The number of questions in each set is unspecified as long as the complete set submitted by each committee member can reasonably be answered in the specified time. The details of the specific selected options (such as which computer may be used) should be discussed with the Major Advisor.

1. Exam Length Options:

- a. Up to 4 hours, to begin at the beginning of the work day and end by noon or to begin after lunch and end by the end of the work day,
- b. Up to 8 hours, to begin at the beginning of the workday and end by the end of the work day.

2. Exam Proctoring Options:

The exam may be proctored by the Major Advisor, a designated staff member, or the member of the Faculty Advisory Committee under the following conditions:

- a. The student may bring something to drink and eat to the exam.
- b. If the student needs to leave the room during the exam, all items brought into the room must be left there during the break, and no additional materials may be brought back into the room.
- c. The proctor will notify the student 15 minutes before the end of the exam period. If the student completes the exam before the exam period is over, the student should return the answers immediately to the exam monitor.
- d. No electronic communications devices (i.e. cell phone, tablet or computer with Internet access) should be available to the student, unless designated by the examining faculty member.

3. Exam Recording Options:

- a. Student brings nothing to the exam; the exam proctor provides paper, pencils, pens, and erasers, or
- b. Examiner-approved computer, data storage device, and/or printer.

4. Exam Resources Options:

- a. No resources other than the student's own knowledge (i.e. closed book exam),
- b. Resources, such as books or articles, specifically listed and provided by the examining faculty member,
- c. Unlimited non-human resources (this might mean going to the library), or
- d. Unlimited human and non-human resources (this might include discussing the questions with other people).

Oral Preliminary Examination

The content and conduct of the oral preliminary examination is the responsibility of the Horticulture Graduate Faculty and should be administered by the student's Major Advisor. The Major Advisor is responsible for conducting a fair and thorough oral exam and for affording a reasonable opportunity for all members of the student's Faculty Advisory Committee to question the student. The oral preliminary examination must be completed within 30 days from the beginning of the written examinations.

All members of the student's Faculty Advisory Committee must be present at the oral examination, which must be held during regular working hours either on the Pullman or branch campuses, Research and Extension Centers, or by videoconference, if not all members of the Faculty Advisory Committee can be physically present. If held over videoconference, at least two Faculty Advisory Committee members must be physically present with the student. At the conclusion of the oral exam, the student's total performance on the exam should be discussed by the attending Graduate Faculty using the rubric in the [Preliminary Examination Assessment](#) form, in which the candidate is evaluated for:

1. Demonstrates comprehensive understanding of the primary literature relevant to the discipline,
2. Demonstrates ability to synthesize knowledge from courses and primary literature, and apply this knowledge to a novel problem or question,
3. Demonstrates ability to apply the principles and technical knowledge of horticultural science and related disciplines to a novel problem or question,

4. Demonstrates a broad understanding of the scientific principles of related disciplines relevant to horticulture, and
5. Demonstrates comprehensive understanding of the scientific problems, principles, and methodologies related horticultural science.

All members of the student's Faculty Advisory Committee must vote to pass or fail. Ballots must be cast on the basis of the entire exam, including both written and oral. Any other members of the Horticulture Graduate Faculty or minor program may be present, ask questions, but may not vote, except with prior permission of the Program Director of the Horticulture Graduate Program. **In any case, faculty wishing to vote must be in attendance during all of the examination and must have participated in the assessment of the student's examination work.** If a faculty member who wishes to vote must leave the room or the online session during the examination or balloting discussion, the examination or discussion is to be recessed until said member returns. The student shall pass if a minimum of three-fourths of those voting so indicate (if only 3 voting examiners, 3 passing votes are required to pass). In situations in which faculty participate over videoconference, **actual signed ballots** must be sent to the Major Advisor immediately following the exam via confidential fax or via email as a PDF file. No other format is acceptable to the Graduate School. The Major Advisor should include these ballots in the packet sent to the Graduate School.

In accordance with Graduate School policy, in the event of a failed oral preliminary examination, the student can be re-examined only one more time. At least 3 months must elapse between a failed oral exam and re-examination. A minimum of 4 months must elapse between the successful completion of the prelim exam and scheduling of a final, thesis defense exam. A member of the Graduate Mentor Academy will be appointed by the Graduate School and must be present for a re-examination. The entire committee must be present and vote. A student who has failed two preliminary examinations may not become a candidate for the doctorate and the student's enrollment in the Graduate School will be terminated. The only exception to this re-examination policy is if a member of the Graduate Mentor Academy (appointed by the Graduate School) presided over the student's first exam and agrees that a re-examination is not an appropriate disposition of the case.

Upon successful completion of the preliminary exam, the candidate should apply for the ["All But Dissertation" \(ABD\) Waiver](#) offered by the Graduate School. This program offers numerous benefits for faculty and students, but most specifically, it encourages the use of extramural grants in support of students seeking their doctoral degrees. Students will be reminded of this opportunity by the Academic Coordinator.

Thesis Defense: Final Oral Examination for M.S. and Ph.D. Students

When approaching the completion of the Horticulture graduate degree program, students should consult the Graduate School's current academic year Deadlines and Procedures for Graduation for [M.S.](#) or [Ph.D.](#) notice to be certain that they are aware of the dates of four critical deadlines. These deadlines are set for every semester and include:

1. Last date to submit an [Application for Degree](#) (All fees, including the graduation fee, the publishing/microfilming fee, and the optional copyright fee, must be paid before online submission of the *Application for Degree* and prior to the final defense.),
2. Last date to submit a [Dissertation/Thesis Acceptance/Final Examination Scheduling Form](#) (or [Interim Examination Scheduling Form for Final Exams](#)—for extenuating circumstances only) (no less than 10 working days prior to the final exam),
3. Last possible date to conduct a final thesis defense exam, and
4. Last date to submit the final thesis or dissertation (within 5 working days after a successful final defense exam).

These deadlines are the student's responsibility and prior approval must be obtained for any extenuating circumstances. Extensions will NOT be given due to poor planning or oversight on the part of the student, i.e., if you miss a deadline it may delay your graduation and increase your expenses.

All M.S. and Ph.D. candidates must defend their thesis or dissertation. This defense consists of a seminar and an oral thesis defense to be scheduled immediately following or soon after the seminar. The seminar is open to the public and questions to the candidate are encouraged. The thesis defense oral exam is restricted to the Faculty Advisory Committee and any other WSU Graduate Faculty, regardless of discipline. All members of the candidate's Faculty Advisory Committee must vote to pass or fail, and any other member the Graduate Faculty in attendance for the entire exam may also vote. The exam should not exceed two and one-half hours, excluding any seminar or presentation by the student. The thesis defense will be evaluated and discussed by the attending Graduate Faculty using the rubric in the [Thesis/Dissertation Defense Examination Assessment form](#), in which the candidate is evaluated for:

1. Review the literature in a manner that demonstrates comprehensive knowledge of previous and current research in the field of study,
2. Identification of a viable question within the field of study and posing a worthwhile hypothesis or problem related to the question,
3. Discussion of support for hypothesis or solution to the problem in a manner that effectively documents the contribution of research to the area of study,
4. Design and implementation of appropriate research experiments to test the hypothesis or solve the problem,
5. Appropriate analysis and interpretation of research data,
6. Demonstration of sufficient knowledge of appropriate concepts, theories, and emerging methodologies in horticultural science,
7. Demonstration of qualities for independent, self-motivated research with the ability to recognize problems in the field of study and formulate solution to those problems, and
8. Demonstration of ability to effectively communicate at different levels the results of the research in written, graphic, and verbal modes.

The examining committee shall include the doctoral committee and any other members of the faculty in attendance. The chair of the student's committee will chair the final examination and be responsible for its conduct. A member of the student's committee (generally the committee chair) will be appointed by the Graduate School to serve as the Graduate School liaison regarding the examination process (balloting, etc.).

The exam must be held in an academic setting during regular academic sessions (i.e. Fall or Spring semesters, or Summer Session) and working hours either on the Pullman or branch campuses, or Research and Extension Centers. The exam should be transmitted by videoconference to all requesting sites. When scheduling from off-campus sites, the student needs to schedule with IT staff at the off-campus site. Students in Pullman scheduling videoconference to off-campus sites need do so at the Academic Media Services scheduling [website](#). If the exam is held by videoconference, at least two Faculty Advisory Committee members must be physically present with the student. The final examination must not exceed 2.5 hours (not including the student's seminar presentation).

All final examinations are public, and any faculty member may attend those of interest to them. Although members of the public may attend final examinations, only faculty members may ask questions and vote, assuming that they have participated in the assessment of the student's work.

All members of the committee must be in attendance during all of the examination and vote. If a faculty member wishes to leave the room or the online session during the examination or balloting discussion, the examination or discussion is to be recessed until said member returns.

The balloting discussion should include the student's accomplishment of learning outcomes, as stated in the [Thesis/Dissertation Defense Examination Assessment form](#), which should be completed by each member of the Faculty Advisory Committee. The student shall pass if a minimum of three-fourths of those voting so indicate (if only 3 voting examiners, 3 passing votes are required to pass). In situations in which faculty participate over videoconference, **actual signed ballots** must be sent to the Major Advisor immediately following the exam via confidential fax or via email as a PDF file. No other format is acceptable to the Graduate School. The Major Advisor should include these ballots in the packet sent to

the Graduate School.

More than 20 working days (i.e., 4 weeks), minimum, prior to the thesis defense:

The student must present a **complete** draft of the thesis that has been approved by the Major Advisor to all Faculty Advisory Committee members for review. The student should consult with each committee member to determine how much review time they require and their availability to review the draft at the time the student intends to submit it to them. The student may not be able to complete the next step (i.e. exam scheduling) as planned if Faculty Advisory Committee members have had insufficient time to review and suggest changes to the thesis, and to approve those changes.

The student should also see the Academic Coordinator (Johnson Hall 125) to schedule a date, time and exam location, all of which must be stated on the approved scheduling form. No final seminars and exams may be scheduled concurrently in the Department and no more than two may be scheduled on the same day. Priority will be given to the first scheduled requests.

At least 10 working days (i.e., 2 weeks) prior to the dissertation/thesis defense:

A signed copy of the [*Dissertation/Thesis Acceptance/Final Examination Scheduling Form*](#), signed by each of the student's Faculty Advisory Committee members and the Department Chair, must be returned to the Academic Coordinator who obtains the Department Chair's signature and submits the completed form to the Graduate School.

NB: By signing the *Dissertation/Thesis Acceptance/Final Examination Scheduling Form* each Faculty Advisory Committee member agrees that a "dissertation/thesis, suitable in format for submission to the library, has been given preliminary approval." This means that each committee member has reviewed an essentially complete draft of the student's dissertation or thesis, and that it requires only minor revisions that could be made within a five-day period.

Students should consult with their Major Advisor and Faculty Advisory Committee to determine the specific style acceptable for their dissertation/thesis. A standard style for the body of the dissertation/thesis has not been agreed upon by faculty across academic disciplines, and therefore, the Graduate School does not have an established style requirement. Therefore, use the particular style manual preferred by your Faculty Advisory Committee. Since many formats are in use, one should be chosen and followed consistently.

A copy (digital is acceptable) of the dissertation/thesis must accompany the *Final Exam Scheduling Form* for preliminary approval of format only, not content. This copy is immediately returned to the student. See the Graduate School's detailed [*Dissertation and Thesis Guidelines*](#) for formatting requirements. Formatting requirements pertain to preliminary pages (title, signature, abstract, acknowledgments, table of contents, lists of tables and figures, etc.), margins, and page numbering. Verification that the student has received approval for use of animal or human subjects in research is required **before** scheduling the final examination. Attach a copy of the approval form to the *Final Exam Scheduling Form*.

All fees must be paid [i.e., graduation fee (all students), microfilming fee (all doctoral candidates), and copyright fee (available for doctoral candidates only)] before submitting the [*Application for Degree*](#), which must be on file before scheduling the final exam.

At least 5 working days prior to the dissertation/thesis defense:

Copies of the dissertation/thesis must be presented to each member of the student's Faculty Advisory Committee. Additionally, provide a digital copy to the Academic Coordinator which will be shared via Sharepoint and serve as a public copy for review by the Horticulture Graduate Faculty, and other department students and staff upon request.

NB: Failure to comply with these deadlines will require re-scheduling the exam, and possibly extra expenses.

(Note: The department maintains a library housing all Horticulture theses and dissertations, which can be checked out for student use by the Horticulture office staff.)

Within 5 working days following completion of the dissertation/thesis defense:

A signed dissertation/thesis must be submitted in digital format within five working days of the final oral examination to the Graduate School. The title page, signature page signed in black ink, and the abstract page must be submitted to the Graduate School on 100% cotton paper. One signed, unbound paper copy (100% cotton paper not necessary) must be submitted to the Academic Coordinator for the Department archives.

All students must submit a completed [Hold Harmless Agreement/Copyright Acknowledgement](#) form with the dissertation/thesis. In addition, all doctoral candidates must submit a completed and signed [Dissertation Agreement](#) form and should submit a completed and signed [Survey of Earned Doctorates](#).

GRADUATE ASSISTANTSHIPS

Assignment of Graduate Assistantship Appointments

All state-funded, departmental Graduate Research Assistant and Teaching Assistant appointments shall be made by the Program Director on the basis of student qualifications and recommendations made by the Horticulture Graduate Executive Committee. Current students, with the support of their Major Advisors, may request that changes in their assistantship status be considered by writing to the Program Director or Graduate Coordinator. For example, a student with no assistantship appointment may request consideration for a future semester, or a student with a Teaching Assistant appointment may request reassignment to a Research Assistant appointment. Such requests will be considered along with requests from incoming students and will be assigned on the basis of merit and departmental research and teaching priorities and commitments. Departmental Research Assistant appointments are usually reserved only for Ph.D. students. Foreign students may be eligible for departmental (not grant funded) Research Assistant and Teaching Assistant appointment after at least one year's enrollment at WSU. All students supported on departmental assistantships must reside in Washington State.

Reappointment or Termination of Graduate Assistantships

For most students, the length of the appointment to a graduate assistantship is determined at the time of their initial appointment in the letter of offer of admission. Students with graduate assistantships are expected to perform their assistantship duties in a professional manner, while at the same time maintaining acceptable progress toward their graduate degrees. Unusual circumstances, including lack of performance or severe budget constraints, could result in termination of appointment to a graduate assistantship.

M.S. students: The maximum time period students can be supported with state-funded assistantships is usually restricted to two years.

Ph.D. students: The maximum time period students can be supported with state-funded assistantships is usually restricted to four years.

Graduate Assistantship Duties

Assignment of **assistantship duties** will be made by the Program Director each semester on the basis of student qualifications and performance, department priorities, and recommendations by the Graduate Executive Committee. In most cases, the faculty member with whom the student will be working as a Research Assistant will also be the student's Major Advisor and will determine the appropriate duties. In some cases, the student will be assigned activities that may also relate to their graduate research project, while in other cases, the student may also work on projects that are unrelated to their graduate work.

Tentative Teaching Assistant assignments are determined after course enrollments are available, and are considered on the basis of course and faculty needs, and graduate students' schedules, skills and interests. In some cases, these tentative assignments must be changed due to scheduling conflicts, unexpected changes in class enrollments, or other unanticipated factors.

Credit Loads for Graduate Teaching and Research Assistants

The Graduate School requires students on graduate assistantship appointments to enroll for a minimum of 10 credit hours every fall and spring semester, one hour of which must be either Hort 700 (M.S. students) or Hort 800 (Ph.D. students) to track Major Advisor effort. A normal credit load is 10-12 hours, supplemented with Hort 700 or Hort 800 research credits.

Establishing Residency

Students on graduate assistantships, except foreign students, are expected to apply for residency in the State of Washington. This helps to defray the high costs and limited number of non-resident tuition waivers. While residency cannot be established until the end of your first full year in Washington State, students must begin compiling their documentation, such as, copies of housing lease and rent receipts, utility bills, etc., **as soon as they arrive at WSU. If the student owns a car, a Washington driver's license and vehicle registration must be obtained immediately upon arrival.** If you live out of state for the summer, you will not be able to establish residency. See the [Residency Information](#) requirements at the Office of the Registrar.

Payroll Deduction of Tuition and Mandatory Fees

For details on how to arrange for automatic deduction of tuition and fees from your paychecks, see the Academic Coordinator (Johnson Hall 131) for current information.

Certification of Assistantship Duties

Tuition waivers associated with an assistantship appointment are contingent upon the following factors: 1) remaining enrolled full-time during the period of appointment; 2) maintaining a 3.0 cumulative GPA during the appointment (or approved exception to policy), and 3) meeting the service requirement of an average of 20 hours per week for a 0.5 FTE appointment as scheduled by your department/supervisor (based on hours required for partial FTE appointment). This certification is completed annually by way of the Graduate Student Annual Review form. For graduating students, this may alternatively be done by way of the Post-Graduate Information form (*in lieu* of the Annual Review form).

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 [Environmental 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](#).

There is a Department Safety Committee in Pullman [chaired by [Scott Mattinson](#) (509-335-7108)] and at each off-campus site. Students located at branch campuses or Research and Extension Centers should consult their site's safety committee and the specific safety requirements at those locations. These safety committees serve as resources for all safety-related issues, except radioisotope use, which is handled by the WSU [Radiation Safety Office](#). Students are required to attend an informational safety meeting in their first year, and if 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](#) (509-335-5824). 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 administrative office at your location and complete an electronic accident/illness [Incident Report Form](#).

SERVICES

Graduate and Professional Student Association

The [Graduate and Professional Student Association](#) (GPSA) is the representative body for graduate and professional students at WSU. Their offices are in CUB 308 and can be contacted at 509-335-9545. GPSA operates a number of programs that serve graduate and professional students. This includes the GPSC Study Center, which is a cost free service to graduate and professional students and features state of the art machines and printing services. GPSA also offers Travel and Registration Grants to aid in travel and registration costs associated with attending conferences and meetings. Students may also find use of GPSA Interlibrary Book Loan Program, free of cost.

Graduate Writing and Professional Center

The [Graduate and Professional Writing Center](#) (GPWC) is located in Smith CUE 403 (509-335-3413, gpwc@wsu.edu). GPWC assists graduate and professional students from all disciplines with all types of written communications from papers and publications that must be written as researchers, to syllabi and assignments students must prepare as teachers. The GPWC **does not offer proofreading or counseling services**.

Office of International Students and Scholars

The [WSU International Programs, Global Services](#) office, located in Bryan Hall 108 (509-335-4508, ip.admin@wsu.edu) assists incoming and current international students with information on their immigration status and visa matters, as well as non-academic matters such as understanding US culture and the academic system.

Campus Safety

Washington State University is committed to maintaining a safe environment for its faculty, staff, and students. Safety is the responsibility of every member of the campus community and individuals should know the appropriate actions to take when an emergency arises. Please go to for more information:

WSU Emergency Management web site: <http://oem.wsu.edu>

WSU Pullman Campus Safety Plan at: <http://safetyplan.wsu.edu>

WSU Tri-Cities Campus Safety Plan at: <http://www.tricity.wsu.edu/safetyplan/>

WSU Spokane Campus Safety Plan at: <http://spokane.wsu.edu/services2/facility-services/safety-security/safety-plan/>

FACILITIES

Note: Most of the information contained in this section applies to graduate students while at the main campus in Pullman. Those students located at any of the branch campuses ([Spokane](#), [Tri-Cities](#), or [Vancouver](#)), the [Irrigated Agriculture Research and Extension Center](#) (IAREC) in Prosser, the [Tree Fruit Research and Extension Center](#) (TFREC) in Wenatchee, the [Puyallup Research and Extension Center](#) (PREC), or the [Mount Vernon Research Center](#) (MVRC) should consult with administrative staff at those locations regarding available facilities.

Office Space

The Department will assign all graduate students a desk and office space (usually shared) at WSU-Pullman, with priority in the following order: 1) Teaching Assistants, 2) Research Assistants, and 3) all other graduate students. See the Administrative Assistant (Ade Snider, 509-335-9502, Johnson Hall 149) regarding any questions about desk or office assignments. Any changes in desk or office assignments must have prior approval of the Administrative Assistant.

Computing Facilities

A computer and printer are available for graduate student use in Johnson Hall 29. A computer lab is also available within CAHNRS in Hulbert Hall 5, but classes have first priority on its use. Information Technology Service [Help Desk](#) also maintains a computer lab on the third floor of the Center for Undergraduate Education. Wireless access is available at most locations on the Pullman campus. Students at Research and Extension Centers and branch campuses should see the computer resource personnel at these locations for computing services.

Audio/Visual Presentation Equipment

Media presentation equipment, e.g., laptop computers and projectors, are available for student use. Consult with staff at each site for available equipment there. The student must pay for any consumable materials, unless their Major Advisor authorizes payment from their own project funds. Media equipment for loan or rental and a media lab is available at [Academic Media Services](#) in Holland 150.

Laboratory Facilities

The individual faculty member assigned to each lab supervises their own facilities within federal, state and university guidelines and requirements. Check with the appropriate faculty member or lab supervisor before commencing work in or removing any items from any laboratory.

Cold Storage Rooms

A complex of cold storage rooms is located on the ground floor at the west end of Johnson Hall and on the first floor of Vogel Plant Bioscience building. A range of temperatures is available for research and teaching purposes. Check in the Main Office (Johnson Hall 149) to determine who supervises each cold storage room before placing materials in them. All materials must be labeled with the student's name, and dated. Periodically, these rooms are cleaned and organized, and all unlabeled materials are discarded.

Greenhouses, Growth Rooms, and Growth Chambers

Greenhouses and growth chambers are available in the [Plant Growth Facility](#) administered by the Agriculture Research Center in the College of Agricultural, Human, and Natural Resource Sciences, and also in the basement of Vogel Plant Biosciences. Before using the Plant Growth Facility, an orientation and Worker Protection Training is required. All requests for space and use of materials at the Plant

Growth Facility must be preceded by an approved [Space Request Form](#) submitted to the Plant Growth Facilities Manager ([Dan Dreesmann](#), 509-335-5824) through your Major Advisor.

Field Research Facilities

Land and orchards are available for field research on the [R.B. Tukey Horticulture Orchard](#) located east of campus on Airport Road. This farm is also used for teaching purposes. The farm is administered by the department's Farm Committee, with direct supervision by the Farm Manager ([Deb Pehrson](#), 509-335-6700). Graduate students should discuss field research plans with their Major Advisor and then must request land and/or orchard needs through the Farm Manager and the Farm Committee before March 1 each year by completing a [Farm Use Request Form](#).

The farm crew at the R.B. Tukey Horticulture Orchard usually performs general land preparation and routine maintenance operations. However, prior arrangement must be made, generally at the time the request for land space is made, for the actual care of the experimental area. The researcher must perform all practices directly involving the assigned experimental area, including treatment application and sample collection. Departmental tools and equipment are available for use by all members of the Department; however, they must be checked by the Farm Manager. All tools must be cleaned and returned in good working order to their proper place as soon as you have finished using them. If your research project calls for prolonged use of a particular tool, consult your Major Advisor regarding its possible purchase.

Land and perennial plantings of orchards, vineyards, and berry crops are available and administered at specific WSU Research Centers, including IAREC-Prosser, TFREC-Wenatchee, PREC-Puyallup, and NWREC-Mount Vernon. Graduate students expecting to conduct any of their research at these research centers should discuss plans with their Major Advisor and follow the established procedures at the respective center.

Additional land is available at the Central Ferry Station administered by the USDA-ARS Plant Introduction Station and at the Othello Research Unit for potato research. Land requests for the Othello Research Unit must be approved by the on-site farm manager as early as possible, preferably during the fall before planting. Land requests may also be made through the Prosser Farm Manager.

POLICIES

Keys

All offices and labs **must be kept locked** when unoccupied, because theft is a recurring problem on campus. The submaster key issued to graduate students allows access to the outside doors of Johnson Hall, individual offices, and some Department labs. Access to the Vogel Plant Biosciences building requires access with your [Cougar Card](#), and is given for graduate students on assistantships or upon request from the student's Major Advisor or the research project's Principal Investigator. In the Main Department Office (Johnson Hall 149) in Pullman you can acquire building and lab keys and have your Cougar Card programmed for access to the Vogel Plant Biosciences building. Keys to farm gates, cold rooms, etc. must be obtained separately. Farm gate keys require the Farm Manager's approval. There is an administrative charge for lost keys of any type. For access at off-campus sites, see their Administrative Office staff.

Email

Students must obtain a WSU network ID and email address through [myNetwork Profile](#). Inform the Academic Coordinator of any change to your WSU email address, so that you can be notified. The Department maintains an electronic listserv of faculty, staff, and graduate students for circulating important notices. All graduate students will be placed on this distribution listserv.

Every WSU employee or student has an official WSU e-mail address (firstname.lastname@wsu.edu) that is available to them and is listed in the WSU Directory. People at WSU will use this official WSU e-mail address to correspond with you. For students who are not also an employee, the @wsu.edu e-mail address is automatically forwarded to their Microsoft Office 365 e-mail.wsu.edu address.

Mail

Students in Pullman will be assigned a mailbox in Johnson Hall 152. 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 Department Office (Johnson Hall 149) for mailing. Letters and packages should not be stamped, and must have the correct departmental return address; for Pullman, that is: Department of Horticulture, Washington State University, Pullman, WA 99164-6414. Shipping via UPS or FedEx also requires budget coding to cover shipping costs.

Telephones

WSU telephones are available for local calls. There is a phone in almost every graduate student office or nearby. An authorization code is required to make long distance calls. Students should consult their Major Advisor and the Administrative Assistant ([Ade Snider](#), 509-335-9502, Johnson Hall 149) regarding approval for this authorization code.

Photocopying

A black & white/color photocopy machine is located in the Main Department Office (Johnson Hall 149) for official copying. Each student will be assigned his/her own authorization code for the copy machine. Each student is allowed 100 copies per month, except Teaching Assistants, who will be given a separate authorization code for the classes they are assigned. Dissertations/theses should not be copied on the Department's photocopy machine. Photocopy machines are available at WSU libraries on campus. [Cougar Copies](#), a full service copy center, is located in the [Compton Union Building](#) (CUB).

Purchasing

All materials and supplies needed for a student's research project must be approved by the student's Major Advisor. [Central Stores](#) in Pullman has an inventory of office, laboratory, and chemical supplies. Other items may be ordered from outside vendors through the [Johnson Hall Business Center](#) (Johnson Hall 201-207) in Pullman or from the administrative offices at off-campus sites. Requisition forms are available from the [Johnson Hall Business Center](#). The form should be completed, including budget coding, approved by the student's Major Advisor, and submitted to [Johnson Hall Business Center](#) for processing. At off-campus sites, refer to the purchasing procedures at your location. Special procedures must be used for acquiring radioactive materials. **All requisitions for and receipt of radioactive materials must be made by the [Radiation Safety Office](#), and not by personnel in individual labs.**

Typing

Except for official business (purchasing, travel, personnel), which is handled by the Johnson Hall Business Center at administrative support at your location, graduate students are expected to type all materials related to their graduate studies.

Travel

Students must file Travel Authority forms before making any official trip away from the local area. At Pullman, Travel Authority forms are available from the [Johnson Hall Business Center](#). They should be completed, along with budget coding, and submitted to the [Johnson Hall Business Center](#) at least 5-7 days ahead of the proposed travel. At off-campus locations, obtain forms and submit them to the administrative office at your site. When motels are authorized, the motel receipt must be submitted along

with a Travel Expense Voucher to be reimbursed. For travel expenses that are to be paid by the university, a monetary advance may be arranged, as long as the Travel Authority is submitted well in advance of the travel.

A variety of vehicles is available from the university [Motor Pool](#) in Pullman or your location for use on official university business. Charges associated with using Motor Pool vehicles must be borne by the respective research project. Therefore, check with your Major Advisor before reserving or using any university vehicle. In Pullman, a Vehicle Release Form must be completed, along with budget coding, and submitted to the [Johnson Hall Business Center](#) in advance of the trip. The approved Vehicle Release Form must be taken to the Motor Pool when a car is picked up.

Check-out

When students have completed their graduate work at WSU, they must consult with the Main Department Office in Pullman on all necessary checkout procedures. Off-campus students should consult with the administrative office at their location. An exit survey and optional interview with the Program Director should be scheduled. Any research facility used by the student must be completely cleared of chemicals, solutions, plant materials or samples no longer needed by the research program. The following items must be returned or provided before departing WSU:

- keys
- desk assignment
- theses/dissertation
- forwarding address
- electronic copies of any manuscripts in preparation

IMPORTANT WEBSITES

Department of Horticulture

Horticulture Graduate Program Bylaws
Horticulture Learning Outcomes Assessment Plan
Horticulture Thesis Defense Assessment form

<http://horticulture.wsu.edu/graduate-programs/current-students/>

Horticulture Graduate Seminar schedule <http://horticulture.wsu.edu/hort-509510-seminar-series/>

Graduate School

Forms:

Application for Degree
Committee Change form
Deadlines and Procedures for Graduation (M.S.) and (Ph.D.)
Dissertation Agreement form
Dissertation and Thesis Guidelines
Dissertation/Thesis Acceptance Final Examination Scheduling form
Hold Harmless Agreement/Copyright Acknowledgement form
Preliminary Examination Scheduling form
Program of Study (M.S.) form
Program of Study (Ph.D.) form
Survey of Earned Doctorates
<http://gradschool.wsu.edu/Forms/index.html>

Graduate Catalog <http://gradschool.wsu.edu/Common/GraduateCatalog.html>

Graduate School Policies and Procedures Manual
<http://gradschool.wsu.edu/CurrentStudents/PoliciesAndProcedures/>

Graduate Student Code of Rights and Responsibilities
<http://gradschool.wsu.edu/CurrentStudents/Navigating/>

Safety

Accident/Illness Incident Report Form (EH&S) <http://ehs.wsu.edu/>

Environmental Health and Safety <http://ehs.wsu.edu/>

Institutional Animal Care and Use Committee <http://www.iacuc.wsu.edu/>

Institutional Biosafety Committee <http://www.bio-safety.wsu.edu/default.asp>

Institutional Review Board <http://www.irb.wsu.edu/>

Materials Safety Data Sheets (MSDS) <http://ehs.wsu.edu/ohs/MaterialSafety.html>

Radiation Safety Committee
<http://president.wsu.edu/office/presidential-committees/radiation-safety.html>

Radiation Safety Office (Pullman) <http://www.rso.wsu.edu/>

Radiation Safety Training <http://www.rso.wsu.edu/training/training.html>

Safety Policies and Procedures Manual (SPPM) <http://public.wsu.edu/~forms/manuals.html>

University Recreation First Aid Training <http://urec.wsu.edu/training-certification/first-aidcpraed.aspx>

U.S. Occupational Safety and Health Administration (OSHA) <http://www.osha.gov/>

Washington State Department of Labor and Industries <http://www.lni.wa.gov/>

Other

Academic Media Services (Pullman) <http://www.ams.wsu.edu/Index.aspx>

Central Stores (Pullman) http://facops.wsu.edu/CentralStores/cs_about.asp

Compton Union Building (Pullman) <http://cub.wsu.edu/default.aspx>

CougarCard Center (Pullman) <http://cougarcard.wsu.edu/>

Cougar Copies (Pullman) <http://publishing.wsu.edu/cougarcopies/>

Faculty Manual http://facsen.wsu.edu/faculty_manual/

Farm Use Request Form (Pullman)
<http://horticulture.wsu.edu/wp-content/uploads/2012/04/Farm-Use-Request-Form-20091.pdf?7e8e38>

Graduate and Professional Student Association (GPSA) <http://www.gpsa.wsu.edu/>

Graduate and Professional Writing Center (Pullman)
<http://universitycollege.wsu.edu/units/writingprogram/units/writingcenter/grad&prof/>

International Programs, Global Services <http://ip.wsu.edu/global-services>

Irrigated Agriculture Research and Extension Center, Prosser <http://www.prosser.wsu.edu/>

Johnson Hall Business Office <http://cahnrs-cms.wsu.edu/bc/johnson/Pages/default.aspx>

Motor Pool (Pullman) <http://facops.wsu.edu/motorpool.asp>

Mount Vernon Research Center <http://mtvernon.wsu.edu/>

M.S. Agriculture degree <http://www.msag.wsu.edu>
myNetwork Profile <https://webutil.wsu.edu/apps/myNetworkProfileHelp/aboutUserIDs.aspx>
Office of Procedures, Records and Forms <http://www.wsu.edu/~forms/manuals.html>
Office of Research Assurances <http://www.ora.wsu.edu/>
Plant Growth Facility (Pullman) <http://pgf.arc.wsu.edu/index.html>
Puyallup Research and Extension Center <http://www.puyallup.wsu.edu/>
R.B. Tukey Horticulture Orchard (Pullman) <http://horticulture.wsu.edu/orchard/>
Residency Information <http://www.registrar.wsu.edu/Registrar/Apps/Residency.ASPX>
Space Request Form, Plant Growth Facility <http://pgf.arc.wsu.edu/services/images/SpaceRequest.pdf>
Standards of Conduct for Students <http://conduct.wsu.edu>
Student Computing Services Help Desk (Pullman) <http://infotech.wsu.edu/login/askIT.aspx>
Tree Fruit Research and Extension Center, Wenatchee <http://www.tfrec.wsu.edu/>
WSU Organic Farm (Pullman) <http://css.wsu.edu/organicfarm/>
WSU Spokane <http://spokane.wsu.edu/>
WSU Tri-Cities <http://www.tricity.wsu.edu/>
WSU Vancouver <http://www.vancouver.wsu.edu/>

APPENDICES

APPENDIX A: Horticulture Graduate Program Bylaws

Horticulture Graduate Program Bylaws
Washington State University
Administrative Home: Department of Horticulture
Last Revised – by Faculty: May 7, 2014
Initial Faculty Senate Approval Date: February 11, 2010

I. Objectives

- A. Degrees offered: Ph.D., M.S.
- B. Discipline: Horticulture (HORT) is a general reference to the field of Horticulture.
- C. Mission of the Program: To provide HORT graduate students with an innovative education focused on their area of interests in horticulture, within which they will be prepared to achieve their professional goals as horticultural researchers, teachers, extension educators, and/or as industry, government, or other professionals.

II. Membership

- A. Graduate Faculty within the HORT program may be WSU tenured and tenure track faculty, WSU non-tenure track faculty, or WSU adjunct faculty, subject to the limitations and definitions in this document. All Graduate Faculty must be “Initial Program Faculty” (listed in Section XI of this document) or subsequently approved as Graduate Faculty through the process outlined in section B below.
 - 1. WSU Campus Participation
 - a. The doctoral and master of science degrees in HORT are offered through the Pullman campus of Washington State University as approved and authorized by the Higher Education Coordinating Board (HECB) of Washington State. The campus at Tri-Cities supports this program but is not approved to directly advertise and offer the degree.
 - b. Approved tenured and tenure track HORT Graduate Faculty at all regional campuses, research and extension centers, agricultural extension sites, and other affiliated university sites may participate equally in the HORT program as supporting site faculty with full program rights and responsibilities. As such they are entitled to act as chair, co-chair, or member of graduate student committees; teach graduate courses; supervise research; and act as a program committee member.
 - 2. Graduate Faculty Participation
 - a. Graduate Faculty participation in HORT is independent and separate from academic department, school, or college affiliations.

- b. All active members of the Graduate Faculty of HORT are eligible to vote on program issues, but only tenured and tenure-track HORT Graduate Faculty can vote on membership as outlined in section B below.

3. Disciplinary Expertise

Graduate Faculty within HORT are expected to have a PhD or equivalent doctoral-level degree in a field related to HORT. In addition, they must have demonstrated disciplinary expertise in a field related to HORT, interest and/or experience in mentoring and teaching of graduate students in this field, and relevant professional accomplishments.

4. Active Research and/or Teaching Appropriate to HORT

HORT Graduate Faculty must be actively involved in research and/or graduate level teaching related to HORT as evidenced within the past five years by either external grant or contract support, related peer-reviewed publications, graduate student mentoring, teaching of relevant graduate-level courses, or other relevant professional accomplishments.

5. Non-Tenure Track Graduate Faculty

a. Internal to WSU

Non-tenure track Graduate Faculty internal to WSU include research, clinical, and affiliate faculty, but not post-doctoral researchers. This category of Graduate Faculty also includes affiliated USDA-ARS researchers, who are classified as WSU adjunct faculty and are listed in Section XI of this document. USDA-ARS faculty are entitled to act as co-chair or member of graduate student committees, teach graduate courses, supervise research, and act as a HORT program committee member. Other non-tenure track faculty internal to WSU (research, clinical, affiliate faculty) may be active HORT Graduate Faculty and are entitled to act as co-chair or member of graduate student committees, teach graduate courses, and supervise research. When serving as co-chair of a graduate student committee, all non-tenure track HORT faculty internal to WSU must work with a tenured or tenure-track faculty member who is also an active member of the HORT Graduate Faculty.

b. External to WSU

Professionals who are not WSU faculty may be granted Graduate Faculty participation within HORT if they are first officially approved as adjunct faculty for WSU. Adjunct faculty who are approved as active HORT Graduate Faculty are entitled to act as a member of graduate student committees, teach graduate courses, and supervise

research. They may not serve as student committee chair or co-chair, or as a HORT program committee member.

6. Individual Non-Graduate Faculty Committee Members

a. Individual Committee Members Internal to WSU

Individuals not officially participating as Graduate Faculty within the HORT Program (for example, a faculty member from another WSU department or program) may serve on graduate committees as long as they are a member of the Graduate Faculty in their own program or discipline and their committee appointment is approved by the Program Director of the HORT Program.

b. External Individual Committee Members

Individuals not officially participating as Graduate Faculty within any graduate program at WSU (for example, a faculty member from another university or research entity) may be approved to serve as a thesis/dissertation committee member for an individual student on a case-by-case basis. The committee chair for that student should forward the name and a curriculum vitae of the desired committee member to the HORT Program Director. With approval of the Program Director, the nomination (with accompanying CV or other documentation of expertise) is forwarded to the Dean of the Graduate School for final approval.

B. Application for Membership

A. Initial Graduate Faculty within HORT are listed in Section XI of this document and have been approved by the existing tenured and tenure-track HORT Graduate Faculty, HORT Program Director, and Dean of the Graduate School.

B. Candidates for Graduate Faculty participation within HORT should be nominated by an existing HORT Graduate Faculty member or they may self-nominate. The nomination should include a letter of nomination, and a curriculum vitae for the nominee. The Program Director will circulate application materials to all active HORT tenured and tenure-track Graduate Faculty prior to voting. Acceptance as Graduate Faculty requires a positive vote from a majority of faculty who respond to the vote.

C. In addition to a commitment to maintain the highest standards of mentoring for graduate students, anticipated contributions or qualifications for all successful Graduate Faculty applicants include one or more of the following:

a. History or reasonable expectation of an active, funded research program that can plausibly be relied upon as the source of continuing support of HORT graduate students.

- b. History of or willingness to participate as appropriate in administrative, teaching, and other functions of the HORT Graduate Program. This may include serving on graduate program administrative committees, serving as a thesis or dissertation committee chair or member, or providing graduate level instruction.
- c. History of publication of peer-reviewed manuscripts in a discipline related to HORT

C. Continuation of Active Membership

1. Graduate Faculty appointments to HORT will be reviewed for continuation of active membership by the Program Director every three years with one-third of the membership reviewed each year. They will be evaluated for contributions to graduate mentoring, research, and teaching. Contributions to the HORT Graduate Program shall be a requirement for continued active membership. Contribution may take the form of:
 - a. Committee chair, co-chair or member for graduate students in HORT, or
 - b. Teaching or co-teaching a graduate course in HORT, or
 - c. Supervising research for graduate students in HORT, or
 - d. Serving in the administrative and committee structure of HORT.
2. Faculty who do not make any of the contributions as stated in C.1 above to the HORT Graduate Program for three consecutive years will be designated as inactive Graduate Faculty. Inactive Graduate Faculty do not have voting rights. Initiation of any of the contributions described in section C.1 above will result in restoration of active Graduate Faculty designation.

D. Discontinuation of Membership

Upon request of an active or inactive Graduate Faculty member, that individual membership will be discontinued as HORT Graduate Faculty. If that individual's contributions to the HORT Graduate Program should change as described in section C.1 above, they may reapply for HORT Graduate Faculty participation at any time.

E. Membership Appeal Process

Faculty appeal of any membership decision in HORT must be made in writing to the Program Director of HORT within 30 calendar days of the decision. The appeal is determined by a majority vote of all tenured and tenure-track HORT Graduate Faculty (see Section IX for definition of quorum). Final written appeal may be made to the Dean of the Graduate School within 30 calendar days of the HORT Graduate Faculty vote.

III. Administration

Administration of the program and its activities is vested in the HORT Program Director with advice from the Executive Committee.

IV. Graduate Program Director

- A. The HORT Graduate Program Director will be the Chair of the Department of Horticulture and Landscape Architecture. Final approval of the Program Director resides with the Dean of the College of Agricultural, Human, and Natural Resource Sciences and the Dean of the Graduate School.
- B. Duties of the Program Director
 1. Provide overall academic leadership for HORT.
 2. Develop and implement policies for HORT.
 3. Represent the interests of HORT to the campus and University administrators.
 4. Convene meetings of the Executive Committee.
 5. Call and preside at meetings of the Graduate Faculty of HORT.
 6. Be responsible for coordinating all HORT administrative matters within the Graduate School.
 7. Manage the budgets of HORT.
 8. Submit course or curriculum change or approval forms.
 9. Submit bylaws change or approval forms.
 10. Be responsible for the accuracy of all publications related to HORT, including web pages and catalog copy.
 11. Coordinate HORT graduate course teaching assignments.
 12. Supervise the activities of the HORT Academic Coordinator as they relate to the program.

V. Committees

- A. Executive Committee

Coordinates and advises the Director in administering HORT. The Academic Coordinator shall record and distribute minutes of each meeting to the faculty and maintain one copy in Program Records.

 1. The Executive Committee shall be composed of five to six active Graduate Faculty members of HORT.
 2. The Committee Chair will be appointed by the HORT Program Director. The HORT Graduate Faculty may nominate individuals for committee membership. Final membership will be determined by a majority vote of the voting HORT Graduate Faculty in a confidential ballot.
 3. Members of the Executive Committee will serve three-year terms with approximately one-third of the membership changing each year.

4. Areas in which the Executive Committee shall assist and advise the Director include:
 - a. Review, develop and update long-range goals for HORT and plans for their attainment. These ideas shall be presented at least once annually to a meeting of all faculty.
 - b. Serve as a sounding board for new ideas, changes, etc., in academic or administrative issues.
 - c. Provide guidance on administration of the Program.
 - d. Coordinate recruitment of HORT graduate students, including:
 - 1) Work with the Academic Coordinator to develop and maintain recruiting materials as required.
 - 2) Coordinate all recruitment efforts with the HORT Graduate Faculty
 - 3) Organize annual recruiting.
 - 4) Review all student applications and in conjunction with the Program Director and the Academic Coordinator, after consultation with appropriate HORT Graduate Faculty, decide the disposition of applications as to acceptance or rejection in a timely manner.
 - 5) Make recommendations to the Program Director regarding the financial support of graduate students for their first year.
 - e. Coordinate review and revision of the HORT curriculum, including:
 - 1) Regular (at least annual) review of the HORT curriculum.
 - 2) Make recommendations to HORT Graduate Faculty regarding curricular revision. Such recommendations are forwarded to the Program Director of HORT to be presented to the Graduate Faculty for approval by majority vote.
 - 3) Prepare drafts of course or curricular change forms for revision and submission by the HORT Program Director.
 - f. Nominate members for service on ad hoc committees.
 - g. Assist with the HORT program assessment process.

B. Other Committees

Other ad hoc committees may be appointed by the Executive Committee and Program Director as needed. Addition of new, or changes to the existing, standing committees must be approved by amendment of bylaws.

VI. Graduate Student Committees

- A. The initial selection, or subsequent changes, of a graduate student's committee shall be determined jointly by the student and the student's advisor. In accordance with the Policies and Procedures of the Graduate School at WSU, graduate students are not permitted to serve on the committees of other graduate students.

- B. The graduate committee of each student shall have a minimum of three members for MS and four members for Ph.D. At least half of the committee members shall be active HORT Graduate Faculty members (i.e. tenured or tenure track, affiliate or adjunct, and non-tenure track, including USDA-ARS), but at least one committee member shall be from outside the department (i.e. not HORT tenured, tenure-track, non-tenured, or emeritus Graduate Faculty).
- C. As specified in the Graduate School's Policies and Procedures, the performance of each graduate student shall be reviewed annually.

VII. Student Representatives

At the discretion of the HORT Program Director and Faculty, graduate student representation will be made to all committee structures. In accordance with the Policies and Procedures of the Graduate School at WSU, graduate students are not permitted to serve on the committees of other graduate students.

VIII. Graduate Faculty Meetings

- A. The HORT Program Director shall call HORT Graduate Faculty meetings as needed, but at least once per academic year. All attempts will be made to provide a written agenda in advance.
- B. Other meetings may be called at the discretion of the Program Director or the Executive Committee.
- C. A special meeting of HORT Graduate Faculty may be called by petition of five or more Graduate Faculty members.
- D. Efforts will be made to communicate items of interest, including notification of a faculty meeting, to the faculty via e-mail. General HORT Graduate Faculty meetings shall be called with a minimum of one week's notice.
- E. Faculty not present on the Pullman campus at the time of a general HORT Graduate Faculty Meeting may participate by telephone conference call or other electronic means.

IX. Quorum

- A. For all general HORT Graduate Faculty meetings and votes unless otherwise indicated, a quorum shall be defined as a minimum of 50 percent of the eligible HORT Program membership.

- B. For programmatic committees to conduct a meeting, a quorum shall be defined as a minimum of 50 percent of the committee membership.
- C. Unless otherwise indicated, a simple majority of the total number of ballots cast are required to pass a motion.
- D. In the event of a tie vote in which the entire Graduate Faculty is eligible to vote, the Program Director will decide the outcome of the vote. For tie votes that occur within programmatic committees, the committee chair will decide the outcome of the vote.

X. Amendments to Program Bylaws

- A. The Program Bylaws document shall be reviewed every fifth year by the Executive committee and annually by the Director.
- B. Amendments to the Bylaws may originate from any eligible HORT Graduate Faculty member. Proposed amendments must be forwarded to the HORT Executive Committee and Program Director. After discussion, amendments shall be forwarded to the HORT Graduate Faculty electronically at least 2 weeks prior to the faculty meeting at which the amendments will be discussed. After discussion, a minimum 2 week period will follow the faculty meeting prior to vote. Votes on amendments may occur at a faculty meeting or electronically. Amendments to the HORT Bylaws require a positive vote from the majority of all active HORT Graduate Faculty.
- C. All amendments and revisions must be submitted to the Graduate Studies Committee and Faculty Senate for review and final approval.

XI. List of Initial Graduate Faculty Participants

- A. List of initial HORT Graduate Faculty Participants:

Tenured and Tenure Track: Andrews, PK; Bondada, BR; Chalker-Scott, LK; DeVetter, LW; Dhingra, A; Evans, KM; Fellman, JK; Hummel, RL; Kalcsits, L; Keller, M; Knowles, NR; Layne, DR; Lohr, VI; Main, DS; Miles, CA; Moore, PP; Moyer, MM; Musacchi, S; Oraguzie, N; Pavek, MJ; Peace, CP; Poovaiah, BW; Whiting, MD

Non-Tenure Track: Du, L; Jung, S; Knowles, LO; Kumar, GNM; Koenig, TC

USDA-ARS: Brown, CR (IAREC-Prosser); Coyne, CJ (WRPIS-Pullman); Curry, E (TFRL-Wenatchee); Mattheis, JP (TFRL -Wenatchee); McGee, R (WRPIS-

Pullman); Rudell, D (TFRL-Wenatchee); Tarara, JM (IAREC-Prosser); Zhu, Y (TFRL-Wenatchee)

Affiliate (WSU): Benedict, C (Extension); Cowan, JS (Extension); Davenport, JR (Crop & Soil Sciences); Edwards, GE (Biological Sciences); Hadwiger, LE (Plant Pathology); Jacoby, PW (Crop & Soil Sciences); McMoran, D (Extension); Patten, KD (Extension); Waters, T (Extension); Wohleb, C (Extension)

Emeritus Professor (WSU): Elfving, DC; Schrader, LE; Thornton, RE; others upon request from the Department

Adjunct (external): Hanrahan, I; Iyer, SP; McFerson, J; Mullinix, KM; Thornton, RK; Willett, MJ; Wolfe, WH; others upon request from the Department

- B. The Director of the HORT Graduate Program is responsible for submitting an updated list of active and inactive HORT Graduate Faculty participants to the Dean of the Graduate School for approval annually.

APPENDIX B: Graduate Program Learning Outcomes Assessment

Department of Horticulture Graduate Program Learning Outcomes Assessment M.S. and Ph.D. in Horticulture

July 2014

Mission Statement

The mission of the graduate degree programs in Horticulture is to provide students with an innovative education focused on their area of interests in horticulture within which they may be prepared to achieve their professional goals as horticultural researchers, teachers, Extension educators, and/or as industry, government, or other professionals.

Objectives

1. To prepare students to enter successfully into the many and varied professions of horticulture and/or its related fields.
2. To prepare students to be successful researchers in horticultural science and/or related fields.

Learning outcomes for each of the program's objectives are:

1. To prepare students to enter the many and varied professions of horticulture and/or its related fields, the program provides students with:
 - a. Advanced knowledge and skills necessary to function as a creative and professional practitioner, communicator, educator, or investigator in the field of horticulture.
 - b. Intellectual means of identifying and assessing the interactions among the many issues associated with horticulture and society at large.
 - c. Skills and intellectual means of contributing new knowledge to the profession of horticulture.
2. To prepare students to be successful researchers in horticultural science and/or related fields, the program provides students with:
 - a. Ability to design, conduct, analyze, and communicate a research plan and results.
 - b. Critical thinking skills and ability to question or re-evaluate current thinking and standards related to horticultural science.
 - c. Skills to identify, locate, and apply knowledge discovered from horticultural science and related fields of study.
 - d. Opportunities to develop and communicate scientific hypotheses and problem solving.

Outcomes Assessment Plan

<i>Learning outcome</i>	<i>Data source</i>	<i>Assessment method</i>	<i>Expectations</i>
1. To prepare students to enter the many and varied professions of horticulture and/or its related fields, the program provides students with:			
Advanced knowledge and skills necessary to function as a creative and professional practitioner, communicator, educator, or investigator in the field of horticulture (1a)	Performance in courses on Program of Study Final thesis/dissertation exam Annual progress evaluations Exit survey	GPA in courses on Program of Study Exam rubric by advisory committee Major advisor Academic Coordinator	GPA ≥ 3.0 (B) Minimum PhD 4.0, MS 3.0 Satisfactory progress Self-evaluation
Intellectual means of identifying and assessing the interactions among the many issues associated with horticulture and society at large (1b)	Performance in seminar (Hort 510) PhD preliminary exam Final thesis/dissertation exam Exit survey	Grades in initial & final Hort 510 Exam rubric by advisory committee Exam rubric by advisory committee Academic Coordinator	Average grade ≥ 3.0 (B) Minimum PhD 4.0, MS 3.0 Minimum PhD 4.0, MS 3.0 Self-evaluation
Skills and intellectual means of contributing new knowledge to the profession of horticulture (1c)	Performance in seminar (Hort 510) PhD preliminary exam Final thesis/dissertation exam Publications, posters, presentations Exit survey	Grades in initial & final Hort 510 Exam rubric by advisory committee Exam rubric by advisory committee Self-reported on exit survey Academic Coordinator	Average grade ≥ 3.0 (B) Minimum PhD 4.0, MS 3.0 Minimum PhD 4.0, MS 3.0 Minimum PhD 4, MS 2 Self-evaluation
2. To prepare students to be successful researchers in horticultural science and/or related fields, the program provides students with:			
Ability to design, conduct, analyze, and communicate a research plan and results (2a)	Performance in seminar (Hort 510) Research proposal PhD preliminary exam Final thesis/dissertation exam Publications, posters, presentations Exit survey	Grades in initial & final Hort 510 Advisory committee review Exam rubric by advisory committee Exam rubric by advisory committee Self-reported on exit survey Academic Coordinator	Average grade ≥ 3.0 (B) Satisfactory Minimum PhD 4.0, MS 3.0 Minimum PhD 4.0, MS 3.0 Minimum PhD 4.0, MS 2.0 Self-evaluation
Critical thinking skills and ability to question or re-evaluate current thinking and standards related to horticultural science (2b)	Performance in seminar (Hort 510) PhD preliminary exam Final thesis/dissertation exam Exit survey	Grades in initial & final Hort 510 Exam rubric by advisory committee Exam rubric by advisory committee Academic Coordinator	Average grade ≥ 3.0 (B) Minimum PhD 4.0, MS 3.0 Minimum PhD 4.0, MS 3.0 Self-evaluation

<i>Learning outcome</i>	<i>Data source</i>	<i>Assessment method</i>	<i>Expectations</i>
Skills to identify, locate, and apply knowledge discovered from horticultural science and related fields of study (2c)	Performance in seminar (Hort 510) PhD preliminary exam Final thesis/dissertation exam Exit survey	Grades in initial & final Hort 510 Exam rubric by advisory committee Exam rubric by advisory committee Academic Coordinator	Average grade \geq 3.0 (B) Minimum PhD 4.0, MS 3.0 Minimum PhD 4.0, MS 3.0 Self-evaluation
Opportunities to develop and communicate scientific hypotheses and problem solving (2d)	Performance in seminar (Hort 510) PhD preliminary exam Final thesis/dissertation exam Publications, posters, presentations Exit survey	Grades in initial & final Hort 510 Exam rubric by advisory committee Exam rubric by advisory committee Self-reported on exit survey Academic Coordinator	Average grade \geq 3.0 (B) Minimum PhD 4.0, MS 3.0 Minimum PhD 4.0, MS 3.0 Minimum PhD 4.0, MS 2.0 Self-evaluation

Summary: Data to be collected and when

Required data to be collected

<i>Term and/or cumulative GPA for students enrolled in the Horticulture Graduate program</i>	<i>When collected</i>
Annual progress evaluations (from Major advisor)	Annually
Performance in seminar (Grades in initial & final Hort 510)	Annually
PhD preliminary exam (Exam rubric by advisory committee)	After exam
Final thesis/dissertation exam (Exam rubric by advisory committee)	After exam
Exit survey (from Academic Coordinator)	Completion of program
Professional publications, posters & presentations (Exit survey)	Completion of program

Complementary measures and related activities that align with program goals:

- Professional development workshops attended by graduate students
- Grants received by graduate students
- Graduate student awards, fellowships, and scholarships
- Professional career placement following graduation

Summary: Responsibility for data collection, analysis, and reporting

The Johnson Hall Graduate Center Academic Coordinator will provide data to the Horticulture Graduate Coordinator, who in consultation with the Program Director and Graduate Executive Committee will evaluate and prepare the necessary reports as required.

**Thesis/Dissertation Defense Examination Assessment Rubric
Master of Science or Doctor of Philosophy in Horticulture**

Candidate: _____ MS _____ PhD _____ Date: _____

Title of thesis: _____

Evaluator: _____

For each learning outcome below, choose the score, based on **whole number ratings from 5 to 1, with 5 = Mastery (excellent), 3 = Developing (competent), and 1 = Minimal (poor)**, which best represents the overall level demonstrated by the student in their final thesis/dissertation and defense examination.

	<i>Rating</i>
1. Reviews the literature in a manner that demonstrates comprehensive knowledge of previous and current research in the field of study.	
2. Identifies a viable question within the field of study and poses a worthwhile hypothesis or problem related to the question.	
3. Discusses support for hypothesis or solution to problem in a manner that effectively documents the contribution of research to area of study.	
4. Designs and implements appropriate research experiments to test hypothesis or solve problem.	
5. Analyzes and interprets research data appropriately.	
6. Demonstrates sufficient knowledge of appropriate concepts, theories, and emerging methodologies in horticultural science.	
7. Demonstrates qualities of independent, self-motivated research with the ability to recognize problems in the field of study and formulate solution to those problems.	
8. Demonstrates the ability to effectively communicate at different levels results of research in written, graphic, and verbal modes.	

Comments:

Scan and return the completed assessment form to: Deb Marsh <marshdj@wsu.edu>, Academic Coordinator, Johnson Hall Graduate Center, Johnson Hall 125. Phone: 509- 335-2615.

**Preliminary Examination Assessment Rubric
Doctor of Philosophy in Horticulture**

Candidate: _____ Date: _____

Title of thesis: _____

Evaluator: _____

For each learning outcome below, choose the score, based on **whole number ratings from 5 to 1, with 5 = Mastery (excellent), 3 = Developing (competent), and 1 = Minimal (poor)**, which best represents the overall level demonstrated by the student in their written and oral preliminary examination.

	<i>Rating</i>
1. Demonstrates comprehensive understanding of the primary literature relevant to the discipline.	
2. Demonstrates ability to synthesize knowledge from courses and primary literature, and apply this knowledge to a novel problem or question.	
3. Demonstrates ability to apply the principles and technical knowledge of horticultural science and related disciplines to a novel problem or question.	
4. Demonstrates a broad understanding of the scientific principles of related disciplines relevant to horticulture.	
5. Demonstrates comprehensive understanding of the scientific problems, principles, and methodologies related horticultural science.	

Comments:

Scan and return the completed assessment form to: Deb Marsh <marshdj@wsu.edu>, Academic Coordinator, Johnson Hall Graduate Center, Johnson Hall 125. Phone: 509-335-2615.

Graduation Exit Survey
College of Agricultural, Human, and Natural Resource Sciences, WSU
Graduate Program in Horticulture

YOUR ACADEMIC EXPERIENCE IN THE PROGRAM.

1. When did you first enroll in your graduate program at WSU?

___ Fall ___ 2008 or earlier ___ 2011
 ___ Spring ___ 2009 ___ 2012
 ___ Summer ___ 2010 ___ 2013

2. When will you receive your MS ___ or PhD ___ degree?

___ Fall ___ 2014 ___ 2017
 ___ Spring ___ 2015 ___ 2018
 ___ Summer ___ 2016 ___ 2019

3. Listed below are various aspects of your graduate experience. For each of the items below, please indicate your level of satisfaction as it pertains to your experience in the Horticulture program.

INSTRUCTION	Very satisfied	Satisfied	Neutral	Dissatisfied	Very dissatisfied	Unable to rate
Quality of instruction						
Knowledge and experience of faculty instructors in course topics						
Personal contact with and availability of faculty						
Your treatment as a teaching assistant						
Your treatment as a research (or Extension) assistant						
Overall experience with videoconference or online course availability and delivery						
Overall experience with educational quality of videoconference or online courses						

THESIS/DISSERTATION ADVISOR	Very satisfied	Satisfied	Neutral	Dissatisfied	Very dissatisfied	Unable to rate
Knowledge and experience of your advisor in mentoring grad students						
Relationship between you and your advisor						
Assistance in securing financial support for your research						
Assistance/feedback on writing your proposal and thesis/dissertation (including constructive comments in a timely manner)						
CURRICULUM	Very satisfied	Satisfied	Neutral	Dissatisfied	Very dissatisfied	Unable to rate
Availability and relevance of courses						
Quality of courses						
Quality of seminar (HORT 509/510)						
Intellectual challenge in the courses						
Integration of current/up-to-date developments into the course content						
FACILITIES AND SUPPORT	Very satisfied	Satisfied	Neutral	Dissatisfied	Very dissatisfied	Unable to rate
Size of your classes						
Laboratory facilities and equipment available to you for your research						
Computer facilities available to you						
Availability and quality of grad student office space						
Quality of University library collections and services						
Support for international student issues (visas, language, etc.)						
Amount of financial support (i.e. stipend, research, project expenses)						
Support for travel to professional meetings/activities						

OVERALL EXPERIENCE	Very satisfied	Satisfied	Neutral	Dissatisfied	Very dissatisfied	Unable to rate
Opportunity to engage in interdisciplinary work						
Overall quality of the Horticulture program						
Overall experience with your advisor						
Overall experience in your program						
Overall experience at the research center (if you were located off campus)						
Overall experience at WSU						

PROFESSIONAL ACTIVITIES

1. Please indicate the **number of each** professional activity that you participated in or achieved.

	Number as WSU student
Course or workshop on teaching	
Course or workshop on writing grants or manuscripts	
Course or workshop on English as a second language	
Authored or coauthored a peer-reviewed research, teaching or Extension publication (accepted, in press, or published, in print or online)	
Authored or coauthored an industry/popular press article or Extension newsletter/handout	
Co-authored a research, teaching or Extension grant	
Presented at a professional meeting	
Presented at a field day or commodity group meeting	
Poster at a professional meeting	
Teaching assistant	
Received a student research award	
Received a student teaching award	
Awarded a scholarship	

STUDENT LEARNING GOALS

How would you evaluate your abilities (skills and knowledge) in the following areas as a result of your graduate work at WSU? In your view, how important are each of these learning goals? (Each row has two portions, i.e. "My ability" and "Importance to me", requesting feedback.)

	My ability				Importance to me		
	Strong	Competent	Developing	Not important	Very important	Somewhat important	Not important
I have the advanced knowledge and skills necessary to function as a creative and professional practitioner, communicator, educator, or investigator in the field of horticulture.							
I have the intellectual means of identifying and assessing the interactions among the many issues associated with horticulture and society at large.							
I have the skills and intellectual means of contributing new knowledge to the profession of horticulture.							
I have the ability to design, conduct, analyze, and communicate a research plan and results.							
I have the critical thinking skills and ability to question or re-evaluate current thinking and standards related to horticultural science.							
I have the skills to identify, locate, and apply knowledge discovered from horticultural science and related fields of study.							
I had opportunities to develop and communicate scientific hypotheses and problem solving.							

OVERALL SUGGESTIONS

1. Which of your courses, either in the Horticulture program or other programs, did you find particularly useful?
2. Which of your courses, either in the Horticulture program or other programs, did not seem useful?
3. In your view, what are the strengths of the Horticulture program?
4. What changes, if any, would you like to see in the Horticulture program to improve the experience and education of its students?
- 5a. Would you suggest the Horticulture program to other students who are interested in your field of study?
___ yes
___ no
- 5b. Please explain why you would or would not recommend the Horticulture program to other students.

FUTURE PLANS

1. Have you secured a job after graduation?
___ yes
___ no
2. Which of the following best describes your plans for the next six months?
___ Postdoctoral researcher
___ Tenure track faculty position
___ Non-tenure track faculty position
___ Researcher (nonacademic setting)
___ Teaching at a community or junior college
___ Working for a nonprofit organization or foundation
___ State or local government position
___ Working for industry
___ Pursuing another degree. Please specify discipline: _____
___ Undecided
___ Other: (please specify) _____
3. If you have secured a job, what will your yearly salary be?
___ <\$20,000
___ \$21,000 - 40,000
___ \$41,000 - 60,000
___ \$61,000 - 80,000
___ \$81,000 - 100,000
___ Over \$100,000

STUDENT PROFILE

1. Where did you do most of your graduate research?
___ Pullman
___ Mt. Vernon
___ Prosser
___ Puyallup
___ Wenatchee
___ Other: Please specify _____

2. To which racial or ethnic group do you belong? (Please mark all that apply)
- ☐ American Indian or Alaska Native
 - ☐ Asian or Asian American
 - ☐ Black or African American
 - ☐ Hispanic or Latino
 - ☐ Native Hawaiian or Other Pacific Islander
 - ☐ White
 - ☐ Other: Please specify _____
3. Are you a domestic student (U.S. citizen or permanent resident)? _____ or are you an international student? _____
4. What year did you receive your undergraduate degree?
- ☐ 2011
 - ☐ 2012
 - ☐ 2013
 - ☐ Other: Please specify _____
5. What is your gender?
- ☐ Male
 - ☐ Female
7. What is your final overall grade point average (GPA)? _____
8. Please enter your Hort 510 course grades:
- 1) first seminar grade: _____
 - 2) second seminar grade: _____

Thank you for completing this survey. We value your thoughtful input.

The combined survey data from all respondents will be shared confidentially with departmental faculty (your name will not be associated) to improve the experience and education of future students in your program.

APPENDIX C: Graduate Student Annual Review Form

Graduate Student Annual Review for 2014-2015

Crop and Soil Sciences, Horticulture, Plant Pathology

The evaluation period for the annual review is May (or starting date) to May. Each student is responsible for completing Sections A and B, and then forwarding it **electronically** with a [curriculum vita \(CV\)](#) to their advisor in advance of the review meeting. **The student is responsible for arranging the annual review meeting.** The student's advisor will complete Sections C and D and review them with the student at the annual review meeting. Both parties will complete Section E (if applicable). Annual reviews must be completed and submitted (including CV) to Debra Marsh, Academic Coordinator, by **Friday, May 15, 2015**.

This form must be typed

Section A

Name:			
Year Entered:			
Degree Objective (MS or PhD):			
Degree Program:			
Advisor:			
Co-Advisor:			
Campus Advisor (if applicable):			
Other Committee Members:			
Number of committee meetings since last review:			
Date of most recent committee meeting:			
Program of Study approval date:		<i>Or anticipated filing date:</i>	
Thesis/Dissertation subject title:			
Cumulative GPA:			
Seminar Date(s):			
Thesis/Dissertation proposal approval date:		<i>Or anticipated filing date:</i>	
PhD Preliminary exam completion date:		<i>Or anticipated prelim date:</i>	
What term do you anticipate finishing your degree requirements:			

Section B. Self-Evaluation

Summarize your academic and research progress and plans. Please address the following items:

1. What academic/research goals did you propose to accomplish in your last review (*not applicable for first year students*)?
2. What have you accomplished since your last review?
 - a. Discuss your academic and research progress
 - b. Describe your publications to date. Please list published manuscripts and book chapters, manuscripts in preparation (and expected date of submission), abstracts (professional papers and posters presented).
 - c. List professional activities such as awards/scholarships, meetings attended, abstracts/papers published, presentations given, and teaching experience.
 - d. Discuss your departmental and professional stewardship.
3. What are your greatest challenges and how will you overcome them?

Discuss your future directions and goals as follows:

1. Overall.
2. For the next review period.

Section C. Advisor Assessment

Note to Advisor—be sure to also review the CV your student is required to prepare and provide with this review.

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						

Please provide an assessment of your student's research progress and accomplishments for the current review period (or research potential for a first year student). Comment on the student's strengths and weaknesses and provide specific recommendations or requirements on areas that need improvement. Consider the student's understanding of the scientific literature, recent proposal defense (PhD), seminar performance, and other research benchmarks.

Outline specific conditions or expectations that must be fulfilled prior to the next review and discuss the student's probable success in completing their degree requirements in a timely manner. If the probability is not good, please indicate why.

Section D. Recommendations

Overall Evaluation is ____ satisfactory or ____ unsatisfactory*

If the evaluation is **unsatisfactory, enrollment should be ____ continued or ____ discontinued
Conditions or recommendations for continued enrollment if evaluation is **unsatisfactory**:*

Signature of Advisor: _____ Date: _____

Signature of Student: _____ Date: _____

My handwritten signature above acknowledges this evaluation has been discussed with me.

Section E. Certification of Assistantship Duties (if applicable):

Student: The graduate assistantship position that you have held during this past year and the related tuition waivers were contingent upon factors as outlined in your offer letter. By signing below you certify you have met the following contingent factors for the preceding semester(s) during which you held an assistantship

(check all that apply: ____ Summer 2014 / ____ Fall 2014 / ____ Spring 2015)

- I remained enrolled full time (at least 10 [3 cr in summer] credits as defined in Graduate School policy manual, chapter 9) during the period of the appointment.
- I maintained a 3.0 cumulative GPA during the period of the appointment (or approved exception to policy)
- I met the service requirement of an average of 20 hours per week for 0.5 FTE as scheduled by my department/supervisor (or based on hours required for partial FTE appointment).

Student Sign Date

Faculty Advisor/Supervisor Sign Date

Each of you should retain a fully signed copy of the annual review prior to submitting the signed originals and CV to Deb Marsh by the May 15, 2015 deadline.

Comments on review by student (optional):

APPENDIX D: Graduate Student Seminar Evaluation Form**Hort 510 Graduate Student Seminar Evaluation**Name of the evaluator (optional): _____
Faculty____Staff____Student_____

Presenting student's name: _____

Please provide constructive praise or criticism by commenting on the following aspects of the student's presentation and return the form to Amit Dhingra (adhingra@wsu.edu). Please provide a score from 1 to 5 (1=Unacceptable, 2=Poor, 3=Fair, 4=Good and 5=Very good).

Organization and Content:	Score	Comments
Abstract (Self-explanatory, intelligible, cohesive)		
Appropriate Introduction / Background Information		
Clear Thesis / Objectives / Hypotheses		
Organization of Presentation / Logical Flow of Information		
Appropriate Presentation of Data – legible charts, tables, figures. (Preliminary data for first/proposal presentation)		
Appropriate Interpretation of Data and Support for Conclusions (Preliminary conclusions for hypothesis development for first/proposal presentation)		
Question & Answer Session - Knowledge of Topic		
Use of Allotted Time		

Delivery and Grammar:

Enthusiasm and Vocal Variation (freedom from monotone)		
Effectiveness of Delivery Method		
Vocabulary and Use of Appropriate Words		
Freedom from Distracting "Uh"s & "Like"s, etc.		
Grammar		

Presence:**Y/N**

Professional Appearance		
Posture, Gestures, Eye Contact and Movement		