

## Graduate Student Handbook, Timetables, and Expectations

The Applied Plant Sciences faculty welcome you to our graduate program at the University of Minnesota and congratulate you on your selection of our graduate program to help fulfill your career goals. Our program is a flexible, interdepartmental graduate program intended to meet your needs by allowing you to choose among four specialized "tracks": Applied Plant Sciences, which allows you to develop an individualized course program; Agroecology/Agronomy; Horticulture; or Plant Breeding/Plant Molecular Genetics. The program offers the opportunity for graduate students to be exposed to a broad range of basic to applied research by participating in numerous activities including course work, seminars, and informal discussions. We anticipate you will take advantage of the numerous opportunities available in the Applied Plant Sciences graduate program and will enjoy your graduate career at the University of Minnesota. We sincerely look forward to your participation in the program.

The following information is designed to help facilitate your graduate educational experiences. In addition to this information, students should be aware of the official degree requirements of the University of Minnesota Graduate School and make timely progress towards meeting the formal academic requirements and thesis research expectations of your program. The Applied Plant Sciences graduate program embraces the "*Mutual Responsibilities in Graduate Education at the University of Minnesota*" ([http://www.grad.umn.edu/faculty-staff/governance/Policies/mutual\\_responsibilities.html](http://www.grad.umn.edu/faculty-staff/governance/Policies/mutual_responsibilities.html)) which outlines the principles of what students should expect from their graduate program and what programs should expect from their students to achieve excellence in academics, research, and scholarship. All graduate students in the Applied Plant Sciences graduate program must participate in educational opportunities offered on ethics and the responsible conduct of research in the form of seminars, symposiums, workshops, and/or class work annually.

### Research Assistant/Fellowship Holders:

The majority of the graduate students in the Applied Plant Sciences graduate program hold research assistantships and/or fellowships. The following guidelines apply to the research assistants and fellows in our graduate program.

Graduate Research Assistants and Fellowship holders must meet the registration requirements for the appointment they hold. Information about registration and residency requirements can be obtained from the current *University Class Schedule*, the *Graduate School Catalog*, or the Graduate School web site: <http://www.grad.umn.edu/gsss/registration.html>.

Students who accept half-time Research Assistantships or Fellowships in the Applied Plant Sciences graduate program are in effect making a commitment to full-time graduate study and research project work. Students should not accept other employment while holding either a half-time Research Assistantship or Fellowship.

**Research Assistantships:** Students appointed to Research Assistantships hold annual, renewable appointments (usually beginning July 1). Reappointment to a Research Assistantship is contingent upon making satisfactory academic progress towards your degree, timely progress on your thesis research, and satisfactory performance of your assistantship duties as evaluated by your advisor. Any exceptions to this policy will be outlined in the initial letter of offer for your Research Assistantship. The program uses the minimum GPA requirements of the Graduate School for graduation but expects students to maintain a cumulative GPA=3.0.

**Fellowships:** Fellowship holders within the Applied Plant Sciences graduate program will be expected to meet the performance requirements of the Applied Plant Sciences graduate program and the Fellowship conditions. Students holding fellowships awarded through the Applied Plant Sciences program will be expected to maintain high academic standards and make adequate progress in research as determined by your advisor and advisory committee. Fellows are expected to maintain a minimum cumulative GPA=3.5. The terms of the Fellowship (time of award, performance standards, length of award, etc.) will be stated in your letter of offer.

**Annual Performance Evaluations:** Graduate Research Assistants and Fellows will be formally evaluated by their advisor(s) at least once per year prior to reappointment on July 1. **The annual review should be conducted during Spring semester prior to April 30 and should be conducted by the advisor(s) and the student's advisory committee.** The evaluation should include a review of academic performance, timeliness in meeting departmental and Graduate School guidelines for submitting course programs, thesis proposals, etc., satisfactory progress on thesis research, professional development, and adequate performance of assistantship activities (Applied Plant Sciences Graduate Student Annual Evaluation Form). Students will receive notice in February to arrange an annual review with their advisor(s) and advisory committee prior to April 30. Applied Plant Sciences faculty members will be notified at the same time of the pending annual review process so they can anticipate and deal appropriately with scheduling and review issues. Students will need to have the **Applied Plant Sciences Annual Graduate Student Evaluation Form** completed, signed and given to their Department Head by April 30 in order to be reappointed to their Graduate Research Assistantship or Fellowship. Students will receive an annual appointment letter from the Department based on satisfactory progress. Failure to be annually reviewed may result in a termination of employment on June 30.

Graduate students that are not making adequate progress will be notified in writing of their deficiencies and the specific actions and/or performance objectives for completion by the student within a specified time period. Responsibilities of both the student and the advisor(s) to meet the expectations of the Applied Plant Sciences graduate program will be contained in the deficiency letter. Failure to correct these deficiencies may result in the revocation of your Research Assistantship/Fellowship. Graduate students that will not be reappointed the following academic year will be notified at least one month prior to reappointment.

## DEGREE TIMETABLES

### Master of Science (Plan A and Plan B) Degree Timetable:

- 1. Advisory Committee:** Within three months of arrival, the advisor(s) and student in consultation with the Director of Graduate Studies (DGS) and/or the Track Coordinator will appoint an advisory committee consisting of the advisor(s) and two additional faculty members from the Applied Plant Sciences graduate program. The advisory committee assists the student in many ways, but specifically the advisory committee helps to:
  1. Develop an appropriate course program
  2. Prepare and review a thesis (Plan A) or project (Plan B) proposal
  3. Assist in the evaluations of student progress
  4. Support and facilitate the overall graduate education experience
- 2. Course Program:** By the end of the first semester of course work, the student should have filed a course program with the graduate school. The advisory committee should review the student's previous academic credentials and assist the student and advisor in developing an appropriate course program. The composition of the Final Examining Committee is determined when the student files the Course Program Form and must consist of a minimum of two faculty from the Applied Plant Sciences graduate faculty and one member from either the minor field or outside of the Applied Plant Sciences graduate program. Applied Plant Sciences Graduate Faculty holding appointments in more than one graduate faculty can serve as outside members for the Examining Committee. Faculty members from the Applied Plant Sciences graduate chosen to serve as an outside member on the examining committee must reflect different departmental affiliations and areas of specialization. Course program forms (GS 89a,b) can be obtained from Lynne (302 Hayes Hall), Evonne (305 Alderman Hall), 130 Coffey Hall (St. Paul Campus), or the Graduate School (third floor hallway of Johnston Hall or <http://www.grad.umn.edu/gsss/master.html>).
- 3. Thesis Proposal:** By the middle of the second semester of course work, the student should have completed a thesis (Plan A) or project (Plan B) proposal. The proposal should be developed in conjunction with the advisor and advisory committee and should include the following:
  1. Literature review
  2. Statement of objectives
  3. Proposed materials and methods
  4. Outline of experimental approach and proposed analysis of the dataThe student's advisory committee in conjunction with the advisor will review the proposal for scientific merit and feasibility. The student should register for Applied Plant Sciences Graduate Seminar Series (AGRO/HORT 8270) and schedule a Thesis Proposal seminar in the during their second semester or early in their third semester in residence. **A copy of the thesis proposal with the signatures of the advisor(s) and advisory committee members should be given to Lynne Medgaarden (302 Hayes Hall) for placement in the student's file.**
- 4. Thesis credits:** Students completing a M.S. Plan A degree are required to have a **minimum** of 10 thesis credits (APSc 8777). Students with ½-time research assistantships or fellowships should register for the maximum number of credits covered by the tuition benefit (currently 14 credits per semester). Students should register for thesis credits (APSc 8777) to reach the maximum number of credits allowed. For example, a student registered for 9 credits of course work should register for 5 thesis credits to reach the 14 credit limit.
- 5. Teaching Requirements:** By completion of the M.S. degree, all students in the Applied Plant Sciences program are strongly encouraged to have actively participated in an educational activity such as being a teaching assistant or participating in outreach and extension programming. The teaching experience should

be a full semester length teaching assistant experience or a similar substantial extension experience involving program development and delivery.

6. **Time Requirements for Degree Completion:** Master of Science students are encouraged to make timely progress in their academic and research requirements. In most cases, full-time graduate students will complete an M.S. degree within 2 - 2 ½ years. Annual reviews of student progress will be conducted during spring semester **prior to April 30** by the advisor(s) and the advisory committee to assist the student in making timely progress toward degree completion.
7. **Final Examination:** Once the advisor(s) and the student agree the thesis is ready to be defended, the student must request a Graduation Packet from the Graduate School (316 Johnston Hall or <http://www.grad.umn.edu/gsss/master.html>). A Course Program approved by the Graduate School is necessary to obtain the Graduate Packet. The Graduation Packet contains the following:
  1. Thesis Reviewers Report Form
  2. Graduation Instructions
  3. Application for Degree
  4. Commencement Attendance Approval Form

The student should give their Examining Committee (as appointed on the Course Program Form) at least two weeks to review the thesis and sign the Thesis Reviewers Report Form. The signed Thesis Reviewers Report Form must be submitted to the Graduate School to receive the Final Examination Report Form. The student should schedule the final oral examination at the convenience of the Examining Committee. The examination is coordinated by the Chair of the Examining Committee (which may be the student's advisor). The composition of the Examining Committee is determined when the student files the Course Program Form and must consist of a minimum of two faculty from the Applied Plant Sciences graduate faculty and one member from either the minor field or outside of the APS graduate program. Applied Plant Sciences Graduate Faculty holding appointments in more than one graduate faculty can serve as outside members for the Examining Committee. Faculty members from the Applied Plant Sciences graduate chosen to serve as an outside member on the examining committee must reflect different departmental affiliations and areas of specialization. The majority of the M.S. students in the APS graduate program publicly present the results of their thesis research or project as an open seminar as part of the final examination. After the public presentation, the Examining Committee will privately continue the examination of the student. Students will need to return the Final Examination Report Form to the Graduate School in a timely manner.

8. **Graduation:** Graduate School degrees are awarded monthly. The Application for Degree form must be turned in to Student Relations (200 Fraser Hall, East Bank or 130 Coffey Hall, St. Paul Campus) on or before the **first** working day of the intended month of graduation. All other Graduate School requirements must be completed by the **last** working day of the intended month of graduation. Current Graduate School requirements are:
  1. Return of the Final Examination Report form
  2. Submission of two unbound copies of the thesis, both signed by your advisor(s)
8. **Letter of Resignation:** A letter of resignation from your Research Assistantship which includes the date you resign from your assistantship and the date you plan on leaving your office should be given to the appropriate Departmental Administrator (Jeanne Davy - Agronomy and Plant Genetics or Laura Kalisch - Horticultural Science) a minimum of two weeks prior to your resignation and departure.

## Doctoral Degree Timetable:

- 1. Advisory Committee:** Within three months of arrival, the advisor(s) and student in consultation with the Director of Graduate Studies (DGS) and/or the Track Coordinator will appoint an advisory committee consisting of the advisor(s) and two additional faculty members from the Applied Plant Sciences graduate program. The advisory committee assists the student in many ways, but specifically the advisory committee helps to:
  1. Develop an appropriate course program,
  2. Prepare and review your thesis proposal
  3. Assist in the evaluations of student progress
  4. Support and facilitate the overall graduate education experience
- 2. Course Program:** By the end of the first semester of course work, the student should have filed a course program with the graduate school. The advisory committee should review the student's previous academic credentials and assist the student and advisor in developing an appropriate course program and in identifying an Oral Preliminary Examination committee. The Oral Preliminary Examination committee must consist of a minimum of three faculty from the Applied Plant Sciences graduate faculty and two faculty from either the minor field or outside of the Applied Plant Sciences graduate program. Applied Plant Sciences Graduate Faculty holding appointments in more than one graduate faculty can serve as outside members for the Examining Committee. Course program forms (GS 89a,b) can be obtained from Lynne (302 Hayes Hall), Evonne (305 Alderman Hall), 130 Coffey Hall (St. Paul Campus) or from the Graduate School (the third floor hallway of Johnston Hall or at <http://www.grad.umn.edu/gsss/doctoral.html>).
- 3. Thesis Proposal:** By the end of the second semester of course work, the student should have completed a thesis proposal. The thesis proposal should be developed in conjunction with the advisor and advisory committee and should include the following:
  1. Literature review
  2. Statement of objectives
  3. Proposed materials and methods
  4. Outline of experimental approach and proposed analysis of the data

The students advisory committee in conjunction with the advisor will review the proposal for scientific merit and feasibility. The student should register for Applied Plant Sciences Graduate Seminar Series (AGRO/HORT 8270) and schedule a Thesis Proposal seminar in the during their second semester or early in their third semester in residence. **A copy of the thesis proposal with the signatures of the advisor(s) and advisory committee members should be given to Lynne Medgaarden (302 Hayes Hall) for placement in the student's file.**

- 4. Written Preliminary Examinations:** Ph.D. students will commence the written prelim exam after they have completed most of their coursework (per Graduate School guidelines), but no later than their fifth semester of enrollment. Students will be given three exams prepared by The written preliminary examination will be prepared and administered by a student's Oral Preliminary Examination Committee. Each exam will be prepared and graded by one member of the committee, other than the student's advisor. The committee member(s) preparing a specific written exam will specify the amount of time allotted for taking the exam and whether the student can avail of notes, journals, books, or Internet resources while taking the exam. To help prepare for the written prelim exam, the student should meet with individual committee members prior to the taking the exams. The committee member who wrote each exam will assign a grade of pass or fail for that exam. If the student fails one of the three written exams, the student passes the written preliminary examination with reservations. The professor who prepared the exam the student failed, following consultation with the examining committee, will then specify in writing what must be done to convert the pass

with reservations to a pass without reservations. If the student fails two or three of the written exams, he or she needs to take a new preliminary written examination consisting of three new written exams prepared and administered by the committee not earlier than the next semester or summer term, in the same manner as described above. The student then needs to pass at least two out of the three exams. A student can retake the written prelim exam only once: if a student retakes the exams and still fails two or three of the exams, the DGS will excuse the student from the APS program.

5. **Oral Preliminary Examination:** Shortly after successfully completing the Preliminary Written Examination, the student should schedule the Preliminary Oral Examination. The Preliminary Oral exam must be scheduled with the Graduate School at least one week prior to the examination (GS 12). The Graduate School is responsible for verifying that all doctoral students meet minimum requirements prior to sitting for their preliminary oral examination. The Graduate School will verify three things:
  - a. An approved doctoral Degree Program Form on file
  - b. Maintained your active status in the Graduate School through appropriate registrations
  - c. A signed Preliminary Written Examination Form, verifying that you have successfully completed your Preliminary Written Examination requirement.

Scheduling your oral exam with the Graduate School at least one week in advance allows for verification that you have met the minimum requirements to sit for the exam and allows time for the Preliminary Oral Examination Report Form to be sent to the chairperson of your committee (through campus mail) in a timely manner. The Oral Exam is administered by the committee appointed by the Dean of the Graduate School on recommendation of the advisor(s), advisory committee and DGS when the official Doctoral Degree Program is approved. The examining committee is comprised of a minimum of five faculty members, three faculty members [including the advisor(s)] from the Applied Plant Sciences Graduate Program and two faculty members from the minor field or supporting program. Applied Plant Sciences Graduate Faculty holding appointments in more than one graduate faculty can serve as outside members for the Examining Committee. Faculty members from the Applied Plant Sciences graduate chosen to serve as an outside member on the examining committee must reflect different departmental affiliations and areas of specialization. The advisor can serve as chair of the Oral Preliminary Examination committee.

The Doctoral Preliminary Oral Examination Scheduling Form is available at 130 Coffey Hall (St. Paul) or from the Graduate School (3rd floor hallway Johnston Hall or at <http://www.grad.umn.edu/gsss/doctoral.html>).

6. **Thesis Proposal Form:** The Thesis Proposal Form (GS 63a,b,c) is a critical milestone form, as it is the official record of who your adviser is; what your proposed research topic is, and the method(s) you will employ in carrying out your research; and who will serve on your final oral defense examination, specifically, who will serve as your chairperson, designated thesis reviewers, and examiners. The Final Oral Defense Examination committee must consist of a minimum of three faculty from the Applied Plant Sciences graduate faculty and two faculty from either the minor field or outside of the Applied Plant Sciences graduate program. Your advisor, one faculty member from the Applied Plant Sciences graduate program and one of the “outside” faculty members must serve as thesis reviewers. Applied Plant Sciences Graduate Faculty holding appointments in more than one graduate faculty can serve as outside members for the Examining Committee. Faculty members from the Applied Plant Sciences graduate chosen to serve as an outside member on the examining committee must reflect different departmental affiliations and areas of specialization. Your advisor can not chair the final examining committee. The Thesis Proposal Form, like the Degree Program Form, is used as an advising tool by your adviser and DGS and as a reference for you as you proceed with your thesis research. The Graduate School also uses this form for reference, especially when we are clearing you to take your final oral examination.

The Thesis Proposal Form must be filed with the Graduate School during the semester after you pass your

preliminary oral examination. The Thesis Proposal Form is available from Lynne (302 Hayes Hall), Evonne (305 Alderman Hall), 130 Coffey Hall (St. Paul Campus) or the Graduate School (the third floor hallway of Johnston Hall or at <http://www.grad.umn.edu/gsss/doctoral.html>).

- 7. Thesis credits:** Students completing a Ph.D degree are required to have a **minimum** of 24 Doctoral thesis credits (APSc 8888) and may only register for Doctoral thesis credits after completing the written and oral preliminary examinations. Students with half-time research assistantships or fellowships should register for the maximum number of credits covered by the tuition benefit (currently 14 credits per semester). Students should register for Doctoral Pre-Thesis credits (APSc 8666 ) prior to completing the written and oral preliminary examinations to reach the maximum number of credits allowed per semester covered by the tuition remission benefit. For example, a student registered for 9 credits of course work should register for 5 thesis credits to reach the 14 credit limit. After completing the written and oral preliminary examinations, all course work from the course program, and the 24 Doctoral thesis credits (APSc 8888), students generally become Ph.D. Candidate Research Assistants which require the student to register for only one doctoral thesis credit but are considered full-time students.
- 8. Time Requirements for Degree Completion:** Doctoral students are encouraged to make timely progress in their academic and research requirements. In most cases, full-time graduate students will complete both M.S. and Ph.D. program within 4 ½ to 5 years. Students entering with an M.S. degree from another institution or program should complete the Ph.D. degree in 3 to 3 ½ years. Annual reviews of student progress will be conducted during spring semester **prior to April 30** by the advisor(s) and the advisory committee to assist the student in making timely progress toward degree completion.
- 9. Teaching Requirements:** By completion of the Ph.D. degree, all students in the Applied Plant Sciences program are required to have taken GRAD 8101-Teaching in Higher Education and have actively participated in an educational activity such as being a teaching assistant or participating in outreach and extension programming. The teaching experience should be a full semester length teaching assistant experience or a similar substantial extension experience involving program development and delivery.
- 10. Thesis defense:** Any time after an approved Thesis Proposal form is on file and when advisor(s) and the student agree the thesis is ready to be defended, the student must request a Graduation Packet from the Graduate School (316 Johnston Hall or at <http://www.grad.umn.edu/gsss/doctoral.html>). The Graduation Packet contains the following:
  1. Thesis Reviewers Report Form
  2. Graduation Instructions
  3. Application for Degree
  4. Commencement Attendance Approval Form
  5. Microfilm Agreement
  6. Survey of Earned Doctorates

The student should give their Examining Committee (as appointed on the Thesis Proposal Form) two weeks to review the thesis and sign the Thesis Reviewers Report Form. The signed Thesis Reviewers Report Form must be submitted to the Graduate School to receive the Final Examination Report Form which is sent to the chair of the Examining Committee. The student should schedule the final oral examination at the convenience of the Examining Committee. The Final Oral Examination consists of a public seminar in which the candidate presents the thesis and to which the scholarly community is invited followed by a closed meeting between the candidate and the appointed Examining Committee. Students will need to return the Final Examination Report Form to the Graduate School within one working day following completion of the oral defense.

- 11. Graduation:** Graduate School degrees are awarded monthly. The Application for Degree form must be

turned in to Student Relations (200 Fraser Hall, East Bank or 130 Coffey Hall, St. Paul Campus) on or before the **first** working day of the intended month of graduation. All other Graduate School requirements must be completed by the **last** working day of the intended month of graduation. Current Graduate School requirements are:

1. Return of the Final Examination Report form
2. Submission of a copy of the thesis abstract and a copy of the thesis, both signed by your advisor(s)
3. Signed Microfilm Agreement Form
4. Completed Survey of Earned Doctorates

12. **Letter of Resignation:** A letter of resignation from your Research Assistantship which includes the date you resign from your assistantship and the date you plan on leaving your office should be given to the appropriate Departmental Administrator (Jeanne Davy - Agronomy and Plant Genetics or Laura Kalisch - Horticultural Science) a minimum of two weeks prior to your resignation and departure.

### Abbreviated Timetable

	<b>M.S. Degree Timetable</b>	<b>Date:</b>
Course Program	Filed with Graduate School by the end of the first semester in residence.	_____
Thesis Proposal	Completed and approved by Advisory Committee by the middle of the second semester in residence.	_____
Thesis Defense	Request a Graduation Packet from the Graduate School to obtain Thesis Reviewers Report Form and instructions.	_____
Final Oral Examination	The signed Thesis Reviewers Report Form needs to be returned to the Graduate School to receive the Final Examination Report Form.	_____
	<b>Doctoral Degree Timetable</b>	_____
Course Program	Filed with Graduate School by the middle of the second semester in residence.	_____
Thesis Proposal	Completed and approved by Advisory Committee by the end of the second semester in residence. Thesis proposal seminar scheduled in AGRO/HORT 8270.	_____
Written Preliminary Examination	After passing Written Prelim, file the Preliminary Written Examination Report form with the Graduate School.	_____
Oral Preliminary Examination	Schedule the Oral Prelim examination at least one week prior to the exam with the Graduate School.	_____
Thesis Proposal Form	File the Thesis Proposal Form with the Graduate School during the semester after passing the Oral Prelims.	_____
Thesis Defense	Request a Graduation Packet from the Graduate School to obtain Thesis Reviewers Report Form and instructions.	_____
Final Oral Examination	The signed Thesis Reviewers Report Form needs to be returned to the Graduate School to receive the Final Examination Report Form.	_____

## Preparation of a Thesis Proposal

A good research plan is essential to complete a successful thesis. Preparation of a thorough thesis proposal is a required first step in conducting thesis research. Most information included in a thesis proposal can be used in the writing of the thesis.

1. **Choosing a thesis subject:** Selecting a thesis topic is the responsibility of the student and is generally selected from a range of potential topics in concert with the goals of the student's advisor(s) research project and funding sources. Reading of the scientific literature is imperative for obtaining a broad overview and appreciation for the proposed research. Dialogue between the student and faculty, staff, and other students knowledgeable in the chosen area of research is highly recommended. During the selection of a thesis problem, learning the current state of knowledge, understanding the researchable objectives, and appreciating the experimental procedures and protocols is imperative to developing an excellent thesis proposal.
2. **Writing the Thesis Proposal:** A thesis proposal should include a literature review of the present state of knowledge, the relevance of the proposed research, the objectives of the thesis research, and how the objectives will be accomplished (materials and methods). The following format may be useful in the preparation of the thesis proposal.
  1. First paragraph should broadly identify the subject matter area and state the relevance or benefit of the proposed research
  2. In the following paragraphs, review the pertinent literature related to your thesis research. Emphasis should first be placed on the methods, results, and interpretations of the data in the literature citing the authors appropriately. The length and depth of the literature review will be dependent upon the extent of previously published results and the current state of knowledge.
  3. Following the literature review, set the appropriate stage for your proposed thesis research by indicating how it relates to what has been done previously (cited early in literature review) and what you intend to generally accomplish with your thesis research.
  4. State your research objectives explicitly and succinctly at the end of your literature review section.
  5. Approaches to writing the proposed Materials and Methods section of the thesis proposal will vary considerably based on the nature of the research. In general, a description of the overall research plan including the number of experiments and the individual objectives of each experiment is desirable.
  6. If possible, individual experiments should be described in detail. Information about the treatments, plant materials, genetic resources, experimental procedures, laboratory procedures, data collection, and methods of analysis are important. This section should be detailed enough to allow the advisory committee to make an appropriate evaluation of the proposed thesis research for scientific merit and feasibility.
  7. Some students may be asked by their advisor(s) and/or advisory committee to prepare a budget and research timetable for the thesis research.