



DEPARTMENT OF PLANT SCIENCE AND LANDSCAPE ARCHITECTURE

COLLEGE OF AGRICULTURE AND NATURAL RESOURCES

PLANT SCIENCE GRADUATE PROGRAM HANDBOOK

(Note: The Graduate School Policies supersede this policy
<https://academiccatalog.umd.edu/graduate/policies/>)

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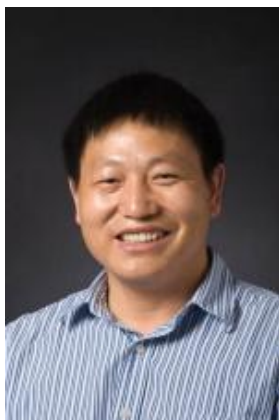
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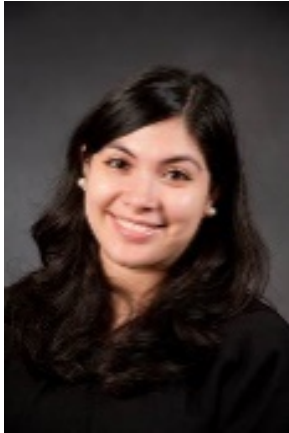
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Degree in Plant Science or closely Related Discipline

GRADUATE STUDIES IN PLANT SCIENCE University of Maryland

Plant Science Graduate Program Overview

The Department of Plant Science and Landscape Architecture (PSLA) directs the graduate program in Plant Science (**program code: PLSC**). The program's faculty members provide training in a wide variety of plant science related disciplines including plant functional genomics and molecular physiology, plant conservation biology and ecology, plant protection and management, and landscape resource management. The program offers graduate study leading to the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees.

The objectives of the Plant Science Graduate Program are as follows:

1. Assist students in developing scholarship of plant science sufficient to allow them to make professional contributions and to be leaders in plant sciences, management and in the plant based industries.
2. Advance knowledge in plant sciences critical to improving the efficiency, profitability and sustainability of global and national agricultural and natural resources.
3. Provide students with the skills in analyzing and interpreting quantitative and qualitative information; using inductive and deductive reasoning; and communicating verbally and in writing.

The Department's aspiration is to strengthen its position as a national leader in plant science graduate training. The Plant Science Graduate Program aims to establish a program focused on plant-based sciences and management along with application of research to help solve the pressing problems in agriculture, urban and natural ecosystems and plant conservation. The program advances graduate training and research at all levels of organization from the genomic and molecular level, to the whole organism, to agricultural systems and to natural and designed ecosystems.

Facilities and Special Resources

The majority of laboratory space and offices for faculty in the PSLA Department are located at the College Park Campus in the Plant Sciences Building and the Research Greenhouse Complex. Laboratories are equipped for chemical, biochemical, molecular, genomic, and physiological research in plant science. Extensive controlled-environment facilities, a state-of-the-art greenhouse, and a series of network of commodity-oriented field research farms (Western Maryland Research and Education Center, Keedysville MD; Central Maryland Research and Education Center, Beltsville MD, Clarksville MD, and Upper Marlboro MD; Turfgrass Research and Education Center, Beltsville MD; Wye Research and Education Center, Queenstown MD; Lower Eastern Shore Research and Education Center, Salisbury MD) provide a rich array of facilities and resources to the program.

Admission to the Plant Science Graduate Program

Admission to the Plant Science Graduate Program (program code: PLSC) requires a baccalaureate from an accredited college or university in the United States or the equivalent in a foreign country. Applicants are required to have a minimum B average (3.0 GPA on a 4.0 scale) for all undergraduate courses. Applicants shall have at least 16 credit hours of prior course work in science and mathematics that includes calculus, physics, organic chemistry, biochemistry, biology, and genetics or statistics. Promising students lacking this general preparation may be provisionally admitted to the program and are required to correct coursework deficiencies within one year of enrollment. All applicants to the PLSC Graduate Program must submit scores of Graduate Record Examination (GRE) General Test and a combined score of 300 on the Verbal Reasoning and Quantitative Reasoning portions of the GRE General Test is desirable.

International applicants must demonstrate proficiency in English. A minimum computer based TOEFL score of 100 (effective through summer 2020; 96 effective fall 2020) or IELTS (paper) score of 7 or Pearson (PTE) score of 68 is required for admission. International applicants who are awarded a degree from an accredited institution in the U.S., or a nationally recognized university in one of the following English speaking countries are not required to submit TOEFL or IELTS score for admission in the PLSC Graduate Program: Antigua, Australia, Barbados, Belize, Bermuda, Botswana, Canada (English-speaking, i.e. not Quebec), Cayman Islands, Dominica, Gambia, Ghana, Grand Turks & Caicos Islands, Grenada, Guyana, Ireland, Jamaica, Kenya, Lesotho, Liberia, Montserrat, Namibia, New Zealand, Nigeria, Sierra Leone, Singapore, South Africa (English-speaking, i.e. not Afrikaans), St. Lucia, St. Vincent, Swaziland, Tanzania, The Bahamas, The British Virgin Islands- St. Kitts-Nevis, Anguilla, Trinidad and Tobago, U.S. Virgin Islands- St. Thomas, St. Croix, St. John, Uganda, United Kingdom, Zambia, and Zimbabwe. Please refer to the Graduate School website regarding English proficiency requirements and exemptions:

<https://gradschool.umd.edu/admissions/english-language-proficiency-requirements>.

Responsibility for admitting applicants to graduate programs rests with the Dean of the Graduate School. Academic department and program offices review admissions applications and credentials and make admissions recommendations to the Graduate School Dean. In cases where credentials were earned abroad, the Office of International Student and Scholar Services is consulted. The Admissions and Examination Review Committee, chaired by the Committee Chair (equivalent to program's Director as stated in the Graduate School policies), reviews all applications to the Plant Science (PLSC) Graduate Program. The committee will assess the credentials (resume/CV, academic transcripts, GRE scores, English proficiency scores if applicable, letters of recommendation, statement of research goals and experience, and published work if applicable) of each applicant and determine if the applicant is acceptable for full admission, acceptable for provisional admission or unacceptable for admission. For applicants acceptable for provisional admission, the committee will determine the deficiencies or requirements that the student must meet upon subsequent enrollment. The Graduate Admissions and Examination Review Committee Chair will report to the faculty the recommendations of the

committee and identify potential faculty to serve as Major Professor (equivalent to Advisor as stated in the Graduate School policies). The Major Professor must be a member of the Graduate Faculty in or affiliated with the PSLA Department. Emeritus faculty may serve as a Major Professor with permission from the Department Chair. Admission is dependent on the availability of a faculty member in the proposed area of study who is willing to assume the responsibility of the Major Professor and availability of funding. Once a suitable Major Professor is identified, the Graduate Admissions and Examination Review Committee Chair notifies the Graduate School of the Department's recommendation on admission status. Only the Graduate School can extend an offer of admission.

Financial Aid

A limited number of graduate teaching assistantships and research assistantships are available in the PSLA Department or other academic units where our affiliated faculty members are located and are awarded to students on a competitive basis. Graduate assistants spend approximately 20 hours per week assisting with teaching or research activities. The remainder of their time is generally occupied by coursework and thesis/dissertation research. Appointments to research and teaching assistantships are for 12 and 10 months, respectively. The PSLA Department or other academic units where our affiliated faculty members are located, however, will cover summer salary of all teaching assistants.

Advisement and Appointment of Advisory Committee

As soon as possible after admission to the PLSC Graduate Program, the graduate student shall contact his or her Major Professor to begin discussions regarding the plan of study and research. The graduate student in consultation with his or her Major Professor is responsible for appointing an Advisory Committee.

Specific Responsibilities of the Major Professor and Advisory Committee

1. The enrolling graduate student in consultation with the Major Professor is responsible for appointing an Advisory Committee. For Master of Science candidates, this committee shall consist of at least three faculty members, at least 2 must be Full or Regular members of the Graduate Faculty. For Ph.D. students, the Advisory committee must consist of at least 5 faculty members: three must be Full or Regular members of the Graduate Faculty. In addition for Ph.D. students, the Major Professor must be a Full or Regular member of the Graduate Faculty. It is recommended that at least one member of the Advisory Committee would be qualified to serve as the Dean's Representative (see section 5 under the subhead of 'Doctoral Dissertation Examination' for definition of Dean's Representative) in the Doctoral Dissertation Examination. The names of the advisory committee must be submitted to the Graduate Admissions and Examination Review Committee Chair by the end of the first semester (for MS students) or the second semester (for PhD students) in the program. Upon approval by the Graduate Admissions and Examination Review Committee Chair, it is the responsibility of the advisory committee to guide the student through the remainder of the

graduate program. Appointments must comply with the Graduate School requirement for the composition of an examining committee.

2. Students must convene a meeting of the Advisory Committee at least once a year to report on their progress and accomplishments. The student shall prepare a report in writing and shall include any materials as requested by his/her Advisory Committee in a previous committee meeting and distribute this report to the Advisory Committee members at least five business days before the Advisory Committee Meeting. The chair of the committee must provide a written report of the committee's views and recommendations to the Graduate Admissions and Examination Review Committee Chair and to the Office of the Department Chair. If only one Advisory Committee Meeting is held in a year, this report can also serve as the annual progress and accomplishment report.
3. The student must submit a written research proposal to his/her Advisory Committee that shall include a statement of objectives, brief literature review and a description of the experimental approach. The research proposal shall be submitted to the Advisory Committee Chair by the end of the second semester of study for M.S. students and the end of the third semester of Ph.D. students. If the thesis or dissertation research involves the use of vertebrate animals, the campus Animal Care Use Committee must approve animal use protocols. If the research involves the use of human subjects, the campus Institutional Review Board must approve the research. Research that involves hazardous materials (biological and chemical) or recombinant RNA/DNA must be approved by the appropriate university committee. It is the responsibility of the student and their Major Professor to obtain the appropriate approvals.

Review of Student Progress and Accomplishments

Progress of every student will be evaluated at the end of each spring semester. The Major Professor, in consultation with the student and the Advisory Committee, is required to submit an Annual Progress and Accomplishment Evaluation to the Chair of the Graduate Admissions and Examination Review Committee. Both the Major Professor and Student must sign this evaluation. Each student's progress will be reviewed by the Graduate Admissions and Examination Review Committee Chair between the spring and fall semesters. Factors considered in the review include the Annual Progress Evaluation report, cumulative grade point average in graduate level courses, completion of deficiencies or remedial coursework, completion of requirements specified by the Major Professor or Advisory Committee, and progress towards appropriate program benchmarks (plan of study, research proposal, and candidacy examination). Upon completion of the review, the Graduate Admissions and Examination Review Committee Chair will consult with the Major Professor and may make the following recommendations to the Department Chair:

1. Retention—for students who are making satisfactory progress
2. Probation—for students who are not making satisfactory progress

3. Dismissal—for students who are not making satisfactory progress and have not fulfilled the Program requirements for retention.

The Graduate Admissions and Examination Review Committee Chair will notify the students in writing of their status. For students recommended for Probation, the Graduate Admissions and Examination Review Committee Chair, in conjunction with the Major Professor, will specify the conditions required for retention. Students will then have one year to satisfy these requirements. Students may appeal probation and dismissal recommendations in writing within 10 working days of receipt of the recommendation to the Chair of the Department.

Requirements for Degree of Master of Science

Coursework Requirements

The plan of study approved by the Advisory Committee and the Graduate Admissions and Examination Review Committee Chair must be completed prior to the second semester of enrollment. The PLSC Graduate Program requires a minimum of 30 semester hours of coursework beyond the B.S. degree, including 6 hours of Master's Thesis Research (PLSC799; credits greater than 6 of this course will not be counted for degree requirement). A minimum of 12 credits hours must be earned in coursework at the 600 level or higher. Students are required to complete 2 semester hours of PLSC608 (Research Methods; it shall be taken in the first available Fall Semester of enrollment) and 1 semester hour of PLSC618 (Advances in Research; Critiquing Primary Plant Science Literature; it shall be taken in the first available Spring Semester of enrollment) and 1 semester hour of PLSC619 (Seminars in Plant Science and Landscape Architecture; it shall be taken in the first available semester of enrollment). Students must also complete one semester each of 400-level or higher courses in biochemistry, plant physiology, and statistics, which may have already been completed as part of a B.S. or M.S. degree program. *Recommendation of coursework is included in Appendix III. Guidelines on coursework acceptable for graduate credit are provided at <https://academiccatalog.umd.edu/graduate/policies/academic-record/#text>. (Note: 100-300 level courses are not acceptable for graduate credit).*

With written consent from their advisory committees, students may take additional courses which are not included in their approved Plan of Study. Especially when the courses are part of the degree requirements for another graduate program on campus, prior authorizations for funds (internal and extramural) to be used to pay for the costs of these extra courses are required.

Thesis Requirement

A thesis must be submitted to the Graduate School. This thesis is approved by the Thesis Examining Committee appointed by the Dean of the Graduate School upon recommendation of the student's Major Professor. The Major Professor serves as the chairperson of the examining committee and the student's advisory committee typically serves as members of the examining committee. Committee membership must comply with Graduate School requirements. The submitted thesis must comply with the University of Maryland Thesis and Dissertation Style Guide. The current Thesis and Dissertation Style Guide can be found at the following website: https://gradschool.umd.edu/sites/gradschool.umd.edu/files/uploads/DissertationThesis/etd_style_guide_201708.pdf. Thesis Template in Microsoft Word is available at this website: <https://gradschool.umd.edu/students/academic-progress/thesis-and-dissertation-filing>.

Thesis Research

It is the responsibility of the Major Professor and Student to ensure that all University Research Assurances are followed. Research involving human subjects must be approved in advance by the Institutional Review Board (IRB). Research involving the use of vertebrate animals must be approved in advance by the Animal Care and Use Committee. Research using hazardous

materials (chemical or biological), recombinant RNA/DNA must be approved in advance by the appropriate University committee.

Master Thesis Examination

1. Eligibility. A student is eligible to be examined on a thesis if (a) the student has completed the thesis to the satisfaction of the Major Professor, (b) is in good standing with the University, (c) has met all program requirements for an examination, (d) is registered for at least one credit, (e) has at least a 3.0 grade point average, (f) has a valid Graduate School-approved Thesis Examining Committee, and (g) if this is the second defense, the defense has been approved by the Graduate School.

2. Thesis Examining Committee Membership. The committee must consist of at least three members of the Graduate Faculty, at least two of whom are Full Members. The Committee Chair normally will be the student's Major Professor who is a Full Member of the Graduate Faculty or, by special permission, has been otherwise appointed by the Dean of the Graduate School.

3. Nomination of Thesis Examining Committee. Membership of a Thesis examining committee requires nomination by the student's Major Professor and the Graduate Chair of the Program and approval of the Dean of the Graduate School. The Thesis Examining Committee must be nominated at least 6 weeks prior to the date of the expected thesis examination and before the established deadline dates set by the Graduate School. The thesis examination cannot be held until the Graduate School approves the composition of the examining committee. Furthermore, if the Graduate Faculty status of any member of an approved Thesis Examining Committee changes, the approval of the Thesis Examining Committee may be voided, and a new Committee nomination form may be required for approval by the Graduate School.

4. Chair. The Thesis Examining Committee will have as chair the student's Major Professor, who must be a Full or Adjunct Member of the Graduate Faculty or, by special permission, has been otherwise appointed by the Dean of the Graduate School. Thesis Examining Committees may have co-chairs upon the written recommendation of the Graduate Admissions and Examination Review Committee Chair and with the approval of the Dean of the Graduate School.

Procedures for the Oral Examination

Oral Examination Requirement. Each master's thesis student must defend orally his or her master's thesis as a requirement in partial fulfillment of the master's degree (an additional comprehensive written examination may be required at the option of the program.). Scheduling of the examination is made by the Major Professor and should not exceed one hour (the public

portion of the exam) in the PLSC Program. Scheduling must follow graduate school guidelines. (<https://academiccatalog.umd.edu/graduate/policies/masters-degrees-policies/#text>).

1. **Committee Preparation.** The members of the Thesis Examining Committee must receive the thesis at least seven working days before the scheduled examination. Should the Thesis Examining Committee deem it reasonable and appropriate, it may require submission of the thesis more than seven working days in advance of the examination.
2. **Attendance at the Examination.** Oral examinations must be attended by all members of the student's officially established Thesis Examining Committee as approved by the Dean of the Graduate School. All examinations must be open to members of University of Maryland Graduate Faculty. Programs may wish routinely to open thesis examinations to a broader audience. In such cases, program policies must be established, recorded, and made available to all master's students. Should a last-minute change in the constitution of the Thesis Examining Committee be required, the change must be approved by the Dean of the Graduate School in consultation with the program's Graduate Director and the chair of the student's Thesis Examining Committee.
3. **Remote Participation in Examinations.** The Graduate School policy is that all members of a Thesis Examining Committee must be physically present in the examination room during the entire defense and during the committee's private deliberations following the examination. Participation by telephone is not permitted under any circumstances. While reaffirming this policy, the Graduate Council approved a policy to permit remote participation by video teleconferencing under the following circumstances:
 - a. Permission to conduct a remote-participation defense must be obtained by the thesis chair from the Graduate School in advance. In making this request, the chair must indicate in writing that he or she has read the rules for a remote defense listed below.
 - b. Approved web-conferencing software must be used that allows all participants to see and hear each other during the entire defense.
 - c. Only one remote site may be used during the defense.
 - d. The candidate and the committee chair must both be present in the examination room. Neither may be at the remote site.
 - e. The program must pay for any costs associated with the remote participation. The remote participant must connect to the defense using hardware that will ensure that all participants are visible and audible and that the connection is stable and available throughout the scheduled time of the defense.
4. **Location of the Examination.** As per the UMD graduate school guidelines (<https://academiccatalog.umd.edu/graduate/policies/masters-degrees-policies/#text>), oral examinations of theses must be held in University facilities that are readily accessible to all members of the Thesis Examining Committee and others attending the examination. The chair of the Thesis Examining Committee selects the time and place for the examination and notifies the other members of the committee and the candidate.
5. **Emergency Substitutions.** As per the UMD Graduate School Catalog (<https://academiccatalog.umd.edu/graduate/policies/masters-degrees-policies/#text>), the Graduate School is aware that last-minute emergencies can prevent a committee member from attending a scheduled thesis examination. We are prepared to work with the thesis

supervisor and/or Graduate Director to make last-minute substitutions in committee membership to allow the defense to take place as scheduled. Please follow these steps to assure a smooth substitution.

- a. The request must be sent in writing. Fax or e-mail requests are acceptable. A telephone call to the Dean of the Graduate School to alert the Dean that the emergency request is coming will facilitate the process.
 - b. The proposed substitute must be a member of the Graduate Faculty consistent with the rules for committee membership. Thus, if a Full Member could not attend, the substitution of an Associate or Special Member of the Graduate Faculty would not be acceptable.
 - c. Once the written request has been received, the substitution will be made, usually within the hour, provided that the revised committee meets the requirements for committee membership.
 - d. When the substitution has been made, a written confirmation, in the same format as the request was received (fax or e-mail), will be sent out, along with a telephone confirmation. The substitution is not official, however, until the written confirmation has been received in the department or program.
 - e. A defense that is held with one or more substitute members on the committee, but without prior written confirmation from the Graduate School that the substitution(s) have been approved, will be voided and the defense will have to be repeated.
 - f. A copy of the written request and the written confirmation will be placed in the student's file for future reference.
6. **Invalidation of the Examination.** As per the UMD Graduate School guidelines, (<https://academiccatalog.umd.edu/graduate/policies/masters-degrees-policies/#text>), the Dean may void any examination not carried out in accordance with the procedures and policies of the Graduate School. In addition, upon the recommendation of the Thesis Examining Committee or any member thereof, the Dean of the Graduate School may rule an oral examination to be null and void.

Conclusion of the Examination. Per the UMD Graduate School guidelines (<https://academiccatalog.umd.edu/graduate/policies/masters-degrees-policies/#text>), after the oral examination, the student and any others who are not members of the Thesis Examining Committee will be asked to leave the room and the Thesis Examining Committee will discuss whether or not the thesis (including its examination) has been satisfactory.

The Committee has the following options:

- a. To accept the thesis without any recommended changes and sign the Report of Examining Committee.

- b. To accept the thesis with recommendations for changes and, except for the chair, sign the Report of Examining Committee. The chair will check the thesis and, upon his or her approval, sign the Report of Examining Committee.
 - c. To recommend revisions to the thesis and not sign the Report of Examining Committee until the student has made the changes and submitted the revised thesis for the Thesis Examining Committee's approval. The Thesis Examining Committee members sign the Report of Examining Committee when they approve the revised thesis.
 - d. To recommend revisions and convene a second meeting of the Thesis Examining Committee to review the thesis and complete the student's examination.
 - e. To rule the thesis (including its examination) unsatisfactory. In that circumstance, the student fails.
7. Following the examination, the chair must inform the student of the outcome of the examination. The chair signs the Report of the Examining Committee indicating which of the above alternatives has been adopted. A copy of this statement is to be included in the student's file at the graduate program office, and a copy is given to the student.
 8. **Passage or Failure.** The student passes if all members of the Thesis Examining Committee accept the thesis (including its examination) as satisfactory. One or more negative votes constitute a failure of the candidate to meet the thesis requirement. In cases of failure, the Thesis Examining Committee must specify in detail and in writing the nature of the deficiencies in the thesis and/or the oral performance that led to failure. This statement is to be submitted to the program's Graduate Director, the Dean of the Graduate School and the student. A second examination may be permitted if the student will be in good standing at the time of the proposed second examination. A second examination requires the approval of the program's Graduate Director and the Dean of the Graduate School. If the student fails this second examination, or if a second examination is not permitted, the student's admission to the graduate program is terminated.
 9. **The Decision to Accept the Examination as Satisfactory Must Be Unanimous.** Students may present themselves for examination only twice. The report of the committee, signed by each member, must be submitted to the Dean of the Graduate School no later than the appropriate date listed in the Schedule of Classes if the student is to receive a diploma at the Commencement ceremony for the semester in which the examination is held.

SUBMISSION AND PUBLICATION OF THE THESIS

Theses are to be submitted to the Graduate School in electronic format after final approval of the document by the Thesis Examining Committee. See the University of Maryland [Thesis and Dissertation Style Guide](#) for the details of this process.

Theses submitted to the University through the ETD process will also be deposited in the UM Library's online electronic archive, [DRUM \(Digital Repository at the University of Maryland\)](#). This is a free public archive of academic work by University faculty and graduate students. The submission of the thesis to the University in fulfillment of degree requirements grants the University the one-time, non-exclusive right to publish the document on DRUM.

Requirements for Degree of Doctor of Philosophy

Coursework Requirements for PhD students without a previous M.S. degree in Plant Science or closely related discipline

The plan of study approved by the Advisory Committee and the Graduate Admissions and Examination Review Committee Chair must be completed by the end of the third semester of enrollment. Students that lack the M.S. degree must complete a minimum of 36 semester hours of coursework beyond the B.S. degree. This coursework includes 12 semester hours of PLSC899 (Doctoral Dissertation Research), a minimum of 12 credits hours of courses at the 600 level or higher, PLSC608 (Research Methods; it shall be taken in the first available Fall Semester of enrollment) and 1 semester hour of PLSC618 (Advances in Research; Critiquing Primary plant Science Literature; it shall be taken in the first available Spring Semester of enrollment) and 1 semester hour of PLSC619 (Seminars in Plant Science and Landscape Architecture; it shall be taken by the end of the second year of enrollment). Students must also complete one semester each of 400-level or higher courses in biochemistry, plant physiology, and statistics, which may have already been completed as part of a B.S. degree program. Recommendation of coursework is included in Appendix III.

With written consent from their advisory committees, students may take additional courses which are not included in their approved Plan of Study. Especially when the courses are part of the degree requirements for another graduate program on campus, prior authorizations for funds (internal and extramural) to be used to pay for the costs of these extra courses are required.

Coursework Requirements for PhD students who possess a M.S. degree in Plant Science or closely related discipline

This coursework includes 12 semester hours of PLSC899 (Doctoral Dissertation Research), 2 semester hours of PLSC608 (Research Methods; it shall be taken in the first available Fall Semester of enrollment) and 1 semester hour of PLSC618 (Advances in Research; Critiquing Primary plant Science Literature; it shall be taken in the first available Spring Semester of enrollment) and 1 semester hour of PLSC619 (Seminars in Plant Science and Landscape Architecture; it shall be taken by the end of the second year of enrollment).

Admission to Candidacy

A qualifying examination (equivalent to preliminary examination as mentioned in the Graduate School Catalog) must be completed satisfactorily before a student is admitted to candidacy. The examination must be attempted at least by the end of the 5th semester of enrollment, and when all course requirements have been fulfilled. Under extenuating circumstances and with written permission of the PLSC Graduate Admissions and Examination Review Committee Chair, this timeframe may be extended. Students must advance to candidacy at least 6 months before the date on which the degree will be conferred. In special circumstances, a petition for time extension must be submitted to the Graduate School along with proper documentation.

i. Qualifying Examination Committee

The qualifying examination committee shall be nominated by the student in consultation with the Major Professor and approved by the PLSC Graduate Admissions and Examination Review Committee Chair. The qualifying examination committee consists of a minimum of five graduate faculty members including one member to serve as the PSLA Departmental Representative. The PSLA Departmental Representative shall be a regular graduate faculty member whose tenure home is PSLA and his/her research interests match well with those of the research proposed by the student. The PSLA Departmental Representative cannot be the major professor (committee chair) of the student. It is the responsibility of the PSLA Departmental Representative to assure the integrity of the process and to assure that Departmental and Graduate School policies are observed. The Major Professor is the chair of the qualifying examination committee.

ii. Objectives of the Qualifying Examination

The Qualifying Examination Committee has the primary charge of determining whether the candidate is competent to continue the PhD program. For this purpose, the qualifying examination is designed to allow the candidate to:

- demonstrate their ability to formulate hypotheses and to design experiments to test these hypotheses.
- demonstrate effective communication of scientific information.
- demonstrate mastery of their general area of scientific inquiry.
- Demonstrate ability to apply knowledge and think critically to solve problems pertaining to research field

iii. Requirements, Guidelines and Procedures of the Qualifying Examination 1) Requirements

The qualifying examination consists of two parts: a written research proposal and an oral presentation followed by a questioning session by the qualifying examination committee.

2) Research Proposal

- The research proposal can focus on the candidate's own research or any other topic that the candidate and the Qualifying Examination Committee Chair determine is appropriate.
- The format of the research proposal shall follow the most current version of the instructions for full proposals contained in Chapter II of the National Science Foundation Grant Proposal Guide available at www.nsf.gov. The proposal should include ONLY the following components: Project Summary, Project Description, Literature Cited, and Biosketch described in the Grant Proposal Guide. The 15-page limit to the project description can be waived at the discretion of the qualifying examination committee. A brief budget and budget justification are encouraged, but not required to allow the candidate to get familiar with budgeting. For research projects that are not covered by the NSF funding sources, the research proposal can use a format deemed appropriate by the Qualifying Examination Committee.

3) Guidelines and Procedures

- An advisory committee meeting must be held three months prior to the scheduled Qualifying Examination date, and the advisory committee must approve the readiness of the candidate for the Qualifying Examination.
- A Nomination of the Qualifying Examination Committee accompanied by the report of the most recent advisory committee meeting must be submitted to the PLSC Graduate Admissions and Examination Committee Chair at least four weeks before the scheduled Qualifying Examination date.
- A final version of the research proposal must be submitted at least three weeks before the scheduled Qualifying Examination date.
- The Qualifying Examination Committee shall review and assess the quality of the submitted research proposal. The committee chair shall send a summary of the assessment at least one week prior to the scheduled Qualifying Examination date to the candidate.
 - ✦ If the committee finds the research proposal is satisfactory, the examination resumes as scheduled.
 - ✦ If the committee finds the research proposal is unsatisfactory, the candidate must reschedule the examination.
- Members of the Qualifying Examination Committee can participate by teleconferencing. However, the Chair and the Departmental Representative must be on-site.
- The examination cannot begin until a minimum of five Qualifying Examination Committee members are present (in person or online).
- At the end of the examination, all members of the committee including the PSLA Departmental Representative vote on the student's performance. All members of the Qualifying Examination Committee must be available during the entire examination to be eligible to vote for the outcome of the Qualifying Examination. Two negative votes are sufficient to prevent a positive committee vote on advancement to candidacy.
- The outcome of the Committee vote is to be reported in writing to the PLSC Graduate Admissions and Examination Review Committee Chair within 72 hours of the completion of the examination.
- It is the responsibility of the student to submit an application for admission to candidacy when all the requirements for candidacy have been fulfilled.
- Applications for admission to candidacy are made in duplicate by the student and submitted to the PLSC Graduate Admissions and Examination Committee Chair for further action and transmission to the Office of the Registrar.
- Candidacy forms must be received by the Office of the Registrar prior to the 25th of the month in order for the advancement to become effective the first day of the following month.
- Candidacy letter will be emailed to the student and department at the beginning of each month.
- Doctoral candidates are automatically registered for six (6) credits of Doctoral Dissertation Research (PLSC899) in spring and fall semesters, for which they pay the flat candidacy tuition.

- Students that do not pass the qualifying examination may be re-examined one time. This second examination can occur at least 3 months after the first examination date, but must be completed within 12 months of first examination date. Failure to pass the qualifying examination a second time will result in termination of the student's program.

Benchmarks of the qualifying examination

Item	Deadlines
Advisory committee meeting	2-3 months prior to qualifying exam
Submit a final version of research proposal in NSF format	Three weeks prior to the scheduled qualifying exam date
Second qualifying exam (if failing the 1 st qualifying exam)	At least 3 months after the first qualifying exam date but within 12 months of the exam date

Dissertation Requirement

A dissertation based on independent and original research must be submitted to the Plant Science

Program and the Graduate School. This dissertation is approved by the Dissertation Examining Committee appointed by the Dean of the Graduate School upon the recommendation of the student's Major Professor. The Major Professor serves as the chairperson of the dissertation examining committee and the student's advisory committee typically serves as members of the examining committee. Committee membership must comply with Graduate School requirements for membership. The submitted dissertation must comply with the University of Maryland

Thesis and Dissertation Style Guide. The current Thesis and Dissertation Style Guide can be found at the following website:

https://gradschool.umd.edu/sites/gradschool.umd.edu/files/uploads/DissertationThesis/etd_style_guide_201708.pdf. Dissertation Template in Microsoft Word is available at this website:

<https://gradschool.umd.edu/.../DissertationThesis/templateinstructions.docx>.

Dissertation Research

It is the responsibility of the Major Professor and Student to ensure that all University Research assurances are followed. Research involving human subjects must be approved in advance by the Institutional Review Board (IRB). Research involving the use of vertebrate animals must be approved in advance by the Animal Care and Use Committee. Research using hazardous materials (chemical or biological), recombinant RNA/DNA must be approved in advance by the appropriate University committee.

Doctoral Dissertation Examination

1. **Eligibility.** A student is eligible to defend a dissertation if the student: (a) has advanced to candidacy, (b) has met all program requirements for a dissertation examination, (c) is in good standing as a graduate student at the University, (d) is registered for at least one credit, (e) has a valid Graduate School-approved Dissertation Examining Committee, and (f) if this is the second examination, the examination has been approved by the Graduate School.
2. **Dissertation Examining Committee Membership.** The Committee must include a minimum of five members of the Graduate Faculty, at least three of whom must be Full Members. The Chair of the Committee normally will be the student's Major Professor, who will be a Full Member of the Graduate Faculty, or who has been granted an exception to the policy by the Dean of the Graduate School. Each Committee will have appointed to it a representative of the Dean of the Graduate School.
3. **Nomination of Dissertation Examining Committee.** Membership on a Dissertation Examining Committee requires nomination by the student's Major Professor and the Graduate Chair, and approval by the Dean of the Graduate School. Nomination shall be provided to the Graduate School at least six weeks before the date of the expected dissertation examination and before the established deadline dates set by the Graduate School. The dissertation examination cannot be held until the Graduate School approves the composition of the Dissertation Examining Committee. Furthermore, if the Graduate Faculty status of any member of an approved Dissertation Examining Committee changes, the approval of the Dissertation Examining Committee may be void, and a new Dissertation Examining Committee nomination form may be required to be approved by the Graduate School.
4. **Chair.** The Chair of Dissertation Examining Committee must be a Full Member of the Graduate Faculty or, by special permission, have been otherwise appointed by the Dean of the Graduate School. Dissertation Examining Committees may be co-chaired upon written recommendation of the Graduate Admissions and Examination Review Committee Chair and with the approval of the Dean of the Graduate School; at least one of the co-chairs must be a Full Member of the University of Maryland Graduate Faculty.
5. **Representative of the Dean of the Graduate School.** Each Dissertation Examining Committee will have appointed to it a representative of the Dean of the Graduate School. The Dean's Representative shall have some background or interest related to the student's research. The Dean's Representative must be a tenured member of the Graduate Faculty at the University of Maryland and must be from a graduate program other than the home program of the chair and co-chair (if one exists) of the examination committee.
6. **Special Members.** Individuals from outside the University of Maryland who have been approved for Special Membership in the Graduate Faculty may serve on Dissertation Examining Committees. These Special Members must be in addition to the required three Full Members of the University of Maryland Graduate Faculty. The Special Membership in the Graduate Faculty is valid up to five years.

7. **Service of Former University of Maryland Faculty Members.** Graduate Faculty who terminate employment at University of Maryland (and who do not have emeritus status) retain their status as members of the Graduate Faculty for a twelve-month period following their termination. Thus, they may serve as members and chairs (but not as Dean's Representatives) of Dissertation Examining Committees during this twelve-month period if they are otherwise eligible. After that time, they may no longer serve as chairs of Dissertation Examining Committees, although, if granted the status of Special Members of the Graduate Faculty, they may serve as co-chairs.
8. **Service of Professors Emeriti and Associate Professors Emeriti.** Professors Emeriti and Associate Professors Emeriti may serve on Dissertation Examining Committees provided that they are members of the Graduate Faculty.

Procedures for the Oral Dissertation Examination

1. **Oral Examination Requirement.** Each doctoral candidate is required to defend orally his or her doctoral dissertation as a requirement in partial fulfillment of the doctoral degree.
2. **Committee Preparation.** The members of the Dissertation Examining Committee must receive the dissertation at least ten working days before the scheduled examination. Should the Dissertation Examining Committee deem it reasonable and appropriate, it may require submission of the dissertation more than ten working days in advance of the examination.
3. **Attendance at the Examination.** Oral examinations must be attended by all members of the student's officially established Dissertation Examining Committee as approved by the Dean of the Graduate School. All examinations must be open to all members of the University of Maryland Graduate Faculty. Programs may wish routinely to open dissertation examinations to a broader audience. In such cases, program policies must be established, recorded, and made available to all doctoral students. Should a last-minute change in the constitution of the Dissertation Examining Committee be required, the change must be approved by the Dean of the Graduate School in consultation with the Graduate Director of the student's graduate program and the chair of the student's Dissertation Examining Committee.
4. **Location of the Examination.** Oral examinations must be held in University facilities that are readily accessible to all members of the Dissertation Examining Committee and others attending the examination. The chair of the dissertation examining committee selects the time and place for the examination.
5. **The Dean's Representative.** The Dean's Representative must be identified at the beginning of the examination. The responsibilities of the Dean's Representative include the following: ensuring that the procedures of the oral examination comply with those of the Graduate School (as described herein) and reporting to the Dean of the Graduate School any unusual problems experienced in the conduct of the examination.
6. **Invalidation of the Examination.** The Dean of the Graduate School may void any examination not carried out in accordance with the procedures and policies of the Graduate School. In addition, upon recommendation of the Dean's Representative, the Dean may rule an oral examination to be null and void.
7. **Emergency Substitution Procedure.** The Graduate School is aware that last-minute emergencies can prevent a committee member from attending a scheduled dissertation

examination and will work with the chair of the examining committee and/or Graduate Director to make last-minute substitutions in committee membership to allow the examination to take place as scheduled.

- a) The request must be sent in writing to the Dean of the Graduate School. Fax or e-mail requests are acceptable. A telephone call to the Graduate School explaining that an emergency request is coming will facilitate the process.
 - b) The proposed substitute must be a member of the Graduate Faculty consistent with the rules for committee membership. Thus, if the Dean's Representative (who must be a tenured faculty member) could not attend, the substitution of an untenured member of the Graduate Faculty would not be acceptable.
 - c) Once the written request has been received, the substitution will be made, usually within the hour, provided that the revised committee meets the requirements for committee membership.
 - d) When the substitution has been made, a written confirmation, in the same format as the request was received (fax or e-mail) will be sent out, along with a telephone confirmation. The substitution is not official, however, until the written confirmation has been received in the graduate program.
 - e) An examination that is held with one or more substitute members on the committee, but without prior written confirmation from the Graduate School that the substitution(s) have been approved, will be voided and the examination will have to be repeated.
 - f) A copy of the written request and the written confirmation must be placed in the student's file for future reference.
8. **Remote Participation in a Dissertation Defense.** Under normal circumstances, all members of a Dissertation Examining Committee must be physically present in the examination room during the entire dissertation defense and during the committee's private deliberations following the examination. Participation by telephone is not permitted under any circumstances. Remote participation by video teleconferencing is permitted under the following circumstances:
- a) Permission to conduct a remote-participation defense must be obtained by the dissertation chair from the Graduate School in advance. In making this request, the chair must indicate in writing that he or she has read the rules for a remote defense listed below.
 - b) Approved web-conferencing software must be used that allows all participants to see and hear each other during the entire defense.
 - c) The candidate, the committee chair (or at least one of the co-chairs), and the Dean's Representative must all be present in the examination room; none may be at a remote site.
 - d) If necessary, other members of the committee may participate from one or more remote sites as long as the conferencing software supports the rules of the conduct of the defense. Permission for remote participation must be approved in advance by the Dean of the Graduate School. The request for remote participation must provide a compelling

reason and/or explanation as to why each remote committee member cannot be physically present.

- e) The program must pay for any costs associated with the remote participation. The remote participants must connect to the defense using hardware that will ensure that all participants are visible and audible and that the connection is stable and available throughout the scheduled time of the defense.
 - f) The Dean's Representative is responsible for ensuring that all requirements for remote participation are met, that the remote participation was uninterrupted, and if interrupted, that the defense was paused until all remote participations were fully restored.
9. **Student Presentation.** The student is permitted to present briefly a summary of the dissertation, emphasizing the important results and giving an explanation of the reasoning that led to the conclusions reached.
10. **Opportunity for Questioning by Members of the Dissertation Examining Committee.** The chair invites questions in turn from each member of the Dissertation Examining Committee. The questioning may continue as long as the Dissertation Examining Committee feels that it is necessary and reasonable for the proper examination of the student.
11. **Conclusion of the Examination.** After questioning has been completed, the student and any others who are not members of the Dissertation Examining Committee are asked to leave the room while the Dissertation Examining Committee discusses whether or not the dissertation and its defense are satisfactory. The Committee has the following options:
- a) To accept the dissertation without any recommended changes and sign the Report of Examining Committee.
 - b) To accept the dissertation with recommendations for changes and, except for the chair, sign the Report of the Examining Committee. The chair will check that the changes to the dissertation have been made, and, upon his or her approval, sign the Report of Examining Committee.
 - c) To recommend revisions to the dissertation and not sign the Report of Examining Committee until the student has made the changes and submitted the revised dissertation for the Dissertation Examining Committee's approval. The Dissertation Examining Committee members sign the Report of Examining Committee if they approve the revised dissertation.
 - d) To recommend revisions and convene a second meeting of the Dissertation Examining Committee to review the dissertation and complete the student's examination.
 - e) To rule the dissertation (including its examination) unsatisfactory. In that circumstance, the student fails. Following the examination, the chair, in the presence of the Dean's Representative, must inform the student of the outcome of the examination. The chair and the Dean's Representative both sign a Report of the Examining Committee indicating which of the above alternatives has been adopted. A copy of this statement is to be included in the student's file at the graduate program office, and a copy is given to the student.
12. **Passage or failure.** The student passes if one member refuses to sign the Report, but the other members of the Dissertation Examining Committee agree to sign, before or after the approval of recommended changes. Two or more negative votes constitute a failure of the

candidate to meet the dissertation requirement. In cases of failure, the Dissertation Examining Committee must specify in detail and in writing the nature of the deficiencies in the dissertation and/or the oral performance that led to failure. This statement is to be submitted to the program's Graduate Director, the Dean of the Graduate School, and the student. A second examination may be permitted if the student will be in good standing at the time of the proposed second examination. A second examination requires the approval of the program's Graduate Director and the Dean of the Graduate School. If the student fails this second examination, or if a second examination is not permitted, the student's admission to the graduate program is terminated.

Submission and Publication of the Dissertation

Dissertations are to be submitted to the Graduate School in electronic format after final approval of the dissertation by the Dissertation Examining Committee. See the [*University of Maryland Electronic Thesis and Dissertation \(ETD\) website*](#) or the University of Maryland [*Thesis and Dissertation Style Guide*](#) for the details of this process.

(<https://academiccatalog.umd.edu/graduate/policies/doctoral-degrees-policies/#text>)

Dissertations submitted to the University through the ETD process will also be deposited in the UM Library's online electronic archive, [*DRUM \(Digital Repository at the University of Maryland\)*](#). This is a free public archive of academic work by University faculty and graduate students. The submission of the thesis to the University in fulfillment of degree requirements grants the University the one-time, non-exclusive right to publish the document on DRUM. The students' and University's rights regarding dissertation and thesis submission and publication are outlined at the following website:

<https://academiccatalog.umd.edu/graduate/policies/doctoral-degrees-policies/#text>.

Student Benchmarks

The following table summarizes student benchmarks for both MS and Ph.D. students:

Benchmark	MS Degree	Ph.D. Degree
Selection of Advisory Committee	End of 1 st semester of study	End of 1 st year of study
Approved Plan of Study	End of 1 st semester	End of 1 st semester
Approved Research Proposal or Plan	End of 2 nd semester	End of 3 rd semester
Advisory Committee Meeting	At least once per year	At least once per year
Annual Progress & Accomplishment Report	Yearly due every spring semester	Yearly due every spring semester
Candidacy Examination	Not applicable	End of 5 th semester

Deadlines for Graduate Students

Deadlines for admissions, class registration, fellowship and award, thesis, dissertation, and graduation can be found on the Graduate School's website

(<http://www.gradschool.umd.edu/calendar/deadlines>). It is the responsibility of the student to comply with the various deadlines. In many cases, exceptions will not be granted.

Course Registration Policies

UMD registration policies

To be certified as full time, a graduate student must be officially registered for a combination of courses equivalent to 48 units per semester. All graduate students must register for courses and pay associated tuition and fees each semester, not including summer and winter sessions, until the degree is awarded. Graduate assistants holding regular appointments have full-time status if they are registered for at least 24 units in addition to the assistantship (that means that a full TA or RA raises 24 units); holders of half-time assistantships are considered full-time if registered for 36 units (that means that a half time TA or RA raises 12 units). Audited courses do not generate graduate units and cannot be used in calculating full-time or part-time status. The Graduate School uses a unit system in making calculations to determine full-time or part-time student status. Please note that graduate units are different from credit hours. The number of graduate units per credit hour is calculated in the following manner:

- Courses in the series: 000-399 carries 2 units per credit hour (courses may be taken [i.e., as pre-requisite] but will not be counted as graduate credit).
- Courses in the series: 400-499 carry 4 units per credit hour.
- Courses in the series: 500-599 carry 5 units per credit hour.
- Courses in the series: 600-897 carry 6 units per credit hour.
- Master's thesis Research: 799 carries 12 units per credit hour.
- Pre-candidacy Doctoral Research courses: 898 carry 18 units per credit hour.
- Doctoral Dissertation Research: 899 carries 18 units per credit hour. All doctoral candidates must pay candidacy tuition for which they will be registered for six (6) credit hours of 899; this defines all currently registered doctoral candidates as full-time.

Specific policies on Doctoral Dissertation Research: 899.

- Students who have advanced to candidacy are automatically registered prior to the start of the Fall and Spring semesters.
- Students are registered for sections based on previous registration.
- Students must be registered for 6 credits during the Fall and Spring semester, no more, no less.
- Requests to retro-register for 899 credits MUST be approved by the Graduate School by submitting a petition.

Additional information on registration policies can be found on the websites of the Graduate School (<http://www.gradschool.umd.edu/students#register-enroll>).

B. PLSC Policies

The PLSC program will use registration blocks to assure the graduate students are following UMD registration policies and meeting PLSC program policies. Registration blocks will be lifted by the Program when a student has completed the following:

- 1) Made satisfactory progress towards removal of admission provisions, if applicable;
- 2) Sent nomination of Advisory Committee form and had at least one Advisory Committee Meeting per year;
- 3) Sent a copy of approved Plan of Study (justification is required if the students is taking courses not listed in the Plan of Study).

PLSC Graduate Program Forms and General Forms from the Graduate School

The PLSC Graduate Program forms are included in Appendix I of this document (most of them are fillable). Reporting forms of thesis or dissertation defenses are generated by the Office of the Registrar and will be sent to the chair of the examination committee prior to scheduled dates of defenses.

General forms from the Graduate School (in most cases they are fillable) can be found on the Graduate School's website (<http://www.gradschool.umd.edu/forms>). Contents of these forms may be changed periodically. Special Note: 'Approved Program Form' is for M.S. students only.

Appendix I.
PLSC Graduate Program Forms

INITIAL PLAN OF STUDY

Plant Science (PLSC) Graduate Program

Student Name/UID: _____ Major Professor: _____

Degree Objective: _____ M.S. _____ Ph.D. Year/Semester Enrolled _____

I. Admission Provisions (if any):

II. Course Requirements:
Refer to the PLSC Graduate Program Handbook for details.

III. List by semester all coursework completed and planned for the M.S. or Ph.D. degree. Attach a separate sheet if more space is required.

<u>Year</u>	<u>Semester</u>	<u>Course No.</u>	<u>Title</u>	<u>Credit</u>

Total credits _____

Signature of Major Professor _____ Date _____

Signature of Chair of Admissions and Examination Committee _____
Date _____

Note: All future updates of your plan of study must be submitted online via uacheive.umd.edu

PLANT SCIENCE GRADUATE PROGRAM

APPOINTMENT OF RESEARCH ADVISORY/EXAMINATION COMMITTEE

Name of Student/UID _____

Degree Objective: _____MS _____Ph.D.

COMMITTEE MEMBERS:

	<u>Name and Title</u>	<u>Department Affiliation</u>
1.	(Chair)	
2.		
3.		
4.		
5.		
6.	(Dean's Rep)	

PLEASE NOTE:

1. MS student advisory/examination committee must include a minimum of three (3) members, at least two (2) of whom are Full Members of the Graduate Faculty. 2.
2. PhD student advisory/examination committee must include five (5) members of the Graduate Faculty, at least three (3) of whom must be Full Members.
3. A Tenured member of the UMCP Graduate Faculty from a program other than PLSC is required to serve as Dean's Representative on Ph.D. committees.

Approved: _____ Date: _____

Signature of Graduate Chair of Admissions and Examination Committee

PLANT SCIENCE GRADUATE PROGRAM

RESEARCH PROPOSAL/PLAN APPROVAL

Name of Student: _____ Name of Major Professor: _____

Degree Objective: _____ MS _____ PhD Year In Program _____

Title of Research Proposal/Plan (submit a copy of the research proposal with this form to the Graduate Director):

Date of Proposal Meeting: _____

Committee Members:

Name	Signature	Date
1.	_____	
2.	_____	
3.	_____	
4.	_____	
5.	_____	
6.	_____	

Conditions & Comments:

Academic Program Director (Name and Signature)

Date

Indicate if any of the following applies to this research:

Environmental Impact. Will this research pose a real or potential impact on the environment? Yes No

If yes and an exemption has been authorized by the granting agency, please explain or attach explanation.

If no exemption has been authorized by the granting agency, please explain the environmental impacts and assessment studies to be performed or attach explanation.

Human Subjects. Will this research include the use of Human Subjects? If yes, has an IRB application been submitted to the IRB office? Yes No

Please provide the title used on the IRB application and the IRB protocol approval number.

An IRB application has not been submitted for this project, but will be before this project is conducted. Submit one copy of the proposal protocol form to the IRB office. For more information, contact the IRB office at irb@umd.edu.

Animals. Will this research include using vertebrate animals? Yes No
If yes, has an IACUC protocol approval number been assigned?

Please provide the title used in the IACUC application and the IACUC protocol approval number.

An IACUC application has not yet been submitted for this project. For more information, contact the IACUC Coordinator at x55037 or iacuc-office@umd.edu

Radioactive Materials. Will radioactive materials or ionizing radiation producing devices be used in this research? Includes x-ray units, electron microscopes, and particle accelerators; non-ionizing radiation producing devices such as lasers, IR, UV, or other optical emitting devices; and/or microwaves, RF, or electromagnetic sources of radiation. Yes No

If yes, will these devices be ___ionizing and/or ___ non-ionizing radiation producing? Maryland Department of the Environment (MDE) requires radiation safety training and an approved authorization prior to the use of such devices. Call DES, x53960, for assistance.

Genetically engineered organisms: Will genetically engineered organisms be used or produced in this research? Yes No If yes please explain.

Biological materials: Will this research use biological materials? e.g. recombinant DNA or RNA, human pathogens, toxins, or blood, unfixed tissue, or primary cell culture derived from humans or

non-human primates. Call DES, x53960, for assistance. If recombinant experiments are already registered, provide approval number. Yes No

Select Agent Toxins: Will this research require the use of one or more of the following select agent toxins: e.g..Abrin, Botulinum neurotoxins, Clostridium perfringens epsilon toxin, Conotoxin, Diacetoxyscirpenol (DAS), Ricin, Saxitoxin, Shigatoxin, Shiga-like ribosome inactivating proteins, Staphylococcal enterotoxins, T-2 toxin, Tetrodotoxin? Call DES, X53960 for assistance. Yes No

Highly toxic gases: Will this research use highly toxic/reactive gases (e.g.. arsine, hydrogen cyanide, cyanogens, silane, fluorine, etc.. Call DES, X53960 for assistance)? Yes No

Scientific diving: Will this project require SCUBA diving? Call DES, X53960 for assistance. Yes No

Boats used in Research: Does project require use of boats? If boats are required for this research, checking yes to this box indicates that you are familiar with the Dive Safety and Boating

Manual. Call DES, x53960, for assistance. Yes No

Chemicals: Will this project require the use of chemicals? If this project includes the use of chemicals, OSHA requires a Chemical Hygiene Plan and training. Call DES, X53960 for assistance. Yes No

If you check yes to any of the above, proper assurances must be completed and obtain from Department of Environmental Safety.

Report of Annual Advisory Committee Meeting Plant Science Program

Student: _____ Date of meeting: _____ Major Professor _____

Degree objective: MS ____ Ph.D. ____ Year in program _____

Committee Report (use additional sheets as necessary):

Summary comments: The student has made satisfactory progress. ____ Yes ____ No

	Typed/printed name	Signature	Date
Major professor/Chair	_____	_____	_____
Member	_____	_____	_____
Member	_____	_____	_____
Member	_____	_____	_____
Member	_____	_____	_____
Member	_____	_____	_____

Student acknowledges and agrees to this committee: _____
Signature Date

Approved by the Academic Program Director: _____
Signature Date

PLANT SCIENCE GRADUATE PROGRAM

APPOINTMENT OF QUALIFYING EXAMINATION COMMITTEE

Name of Student _____ Estimated Date of Exam: _____

COMMITTEE MEMBERS:

	<u>Name</u>		<u>Department Affiliation</u>
1.	_____ (Chair)		_____
2.	_____		_____
3.	_____		_____
4.	_____		_____
5.	_____ (PSLA Departmental Rep)		_____

PLEASE NOTE: The Qualifying examination committee must include five (5) members of the Graduate Faculty, at least three (3) of whom must be Full Members. A regular member of the UMCP Graduate Faculty from the Department of Plant Science and Landscape Architecture (PSLA) is required to serve as PSLA Departmental Representative.

Approved: _____ Date: _____
Printed Name and Signature of Graduate Admissions and Examination Review Committee

PLANT SCIENCE GRADUATE PROGRAM

QUALIFYING EXAMINATION COMMITTEE REPORTING FORM

Name of Student: _____ Name of Major Professor: _____

Years in Program _____ Date of Qualifying Examination: _____

Title of Research Proposal/Plan (submit a copy of the research proposal with this form to the Graduate Director):

Committee Members:

Name	Signature	Date
Chair: _____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
PSLA Departmental Rep	_____	_____

Outcome of the qualifying examination

The student has (passed or failed) _____ the qualifying examination.

If the student passed the exam, the major professor is required to submit an Application for Admission to Candidacy form to the Office of the Registrar. If the student failed the exam, a second trial of the exam can be scheduled between 3-12 months from this examination date.

Conditions & Comments:

Graduate Admissions and Examinations Committee Chair (Name & Signature)

Date

Graduate Outcome Assessment
 Plant Science (PLSC) Graduate Program
 MS Thesis Defense Evaluation

Candidate Name: _____ Advisor: _____

Date of Evaluation: _____

Thesis Title: _____

Instructions: Each member of the thesis defense examination committee should complete this evaluation and completed forms should be submitted to the PLSC Graduate Coordinator.

Evaluation Criteria	Does Not Meet Expectations	Meets Expectations	Exemplary Performance
1. Problem Definition: Research problem is clearly stated and articulated			
2. Literature and Previous Research: Demonstrates a thorough knowledge of literature in the area of research and prior research on the specific research topic			
3. Impact of Research: Demonstrated the value of the research and how it advances knowledge within the area of study			
4. Research Approach: Sound and appropriate research methods/tools used to solve the research problem and the methods/tools were described effectively			
5. Results: Analyzed and interpreted research results/data effectively and appropriately			
6. Quality of Written and Oral Communication: Research results were clearly communicated both written and orally			
7. Critical Thinking: Demonstrated capability for independent research and expertise in the area of study and ability to make original contributions to the field			

8. Broader Impact: Demonstrated awareness of broader impacts of the research to the field of study			
9. Publications: Journal or conference publications have or will result from this research			

Overall Assessment: The assessment of the overall performance of the candidate based on the criteria provided in items 1-9 above.

CRITERIA	PERFORMANCE RATINGS		
	Does Not Pass Thesis Defense Examination	Passes Thesis Defense Examination	
Overall Rating of the Thesis	Does not meet Expectations	Meets Expectations	Exemplary Performance

Name of Examination Committee Member: _____

Signature of Examination Committee Member: _____

Graduate Outcome Assessment
 Plant Science (PLSC) Graduate Program
 Ph.D. Candidacy Examination Evaluation

Student Name: _____ Advisor: _____

Date of Evaluation: _____

Instructions: Each member of the supervisory committee should complete this evaluation and completed forms should be submitted to the PLSC Graduate Coordinator.

Criteria	Exemplary	Strong	Competent	Marginal	Unacceptable
Understanding of Questions	→→ Responds incisively and directly to questions asked.	→→ Most responses are direct and relevant to the questions asked.	→→ Responds adequately to questions asked; occasionally responds with unrelated information	→→ Confuses some significant concepts in the questions asked.	→→ Does not understand questions and/or concepts.
Response to Questions	→→ Response to questions are specific, defensible and complex.	→→ Response to questions are more general, but still accurate: analyses goes beyond the obvious.	→→ Responses to questions are overly general and disorganized; may have some factual, interpretive or conceptual errors.	→→ Response to questions are vague or irrelevant.	→→ No discernable response to most questions asked.
Support of Arguments	→→ Provides substantial, well-chosen evidence and used strategically.	→→ Provides sufficient and appropriate evidence to support arguments.	→→ Provides some evidence but not always relevant, sufficient or integrated into the response.	→→ Evidence usually only narrative or anecdotal; awkwardly or incorrectly used to support arguments.	→→ Little or not evidence used to support arguments.

Communication of Responses	→→ Responses are presented and communicated in a professional manner.	→→ Most responses are presented and communicated well; few problems in communication of ideas and concepts.	→→ Responses are generally presented and communicated adequately; occasional problems in communication of ideas and concepts.	→→ Responses sometimes repetitive and not related topic; frequent problems in communication of ideas and concepts.	→→ Responses are not coherent, illogical poorly structured; student fails to communicate ideas and concepts.
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Name of Committee Member: _____

Signature of Committee Member: _____

Graduate Outcome Assessment
 Plant Science (PLSC) Graduate Program
 Ph.D. Dissertation Defense Evaluation

Candidate Name: _____ Advisor: _____

Date of Evaluation: _____

Dissertation Title: _____

Instructions: Each member of the dissertation defense examination committee should complete this evaluation and completed forms should be submitted to the PLSC Graduate Coordinator.

Evaluation Criteria	Does Not Meet Expectations	Meets Expectations	Exemplary Performance
1. Problem Definition: Research problem is clearly stated and articulated			
2. Literature and Previous Research: Demonstrates a thorough knowledge of literature in the area of research and prior research on the specific research topic			
3. Impact of Research: Demonstrated the value of the research and how it advances knowledge within the area of study			
4. Research Approach: Sound and appropriate research methods/tools used to solve the research problem and the methods/tools were described effectively			
5. Results: Analyzed and interpreted research results/data effectively and appropriately			
6. Quality of Written and Oral Communication: Research results were clearly communicated both written and orally			
7. Critical Thinking: Demonstrated capability for independent research and expertise in the area of study and ability to make original contributions to the field			
8. Broader Impact: Demonstrated awareness of broader impacts of the research to the field of study			

9. Publications: Journal or conference publications have or will result from this research			
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Overall Assessment: The assessment of the overall performance of the candidate based on the criteria provided in items 1-9 above.

CRITERIA	PERFORMANCE RATINGS	
	Does Not Pass Dissertation Defense Examination	Passes Dissertation Defense Examination

Overall Rating of the Dissertation	Does not meet Expectations	Meets Expectations	Exemplary Performance

Name of Examination Committee Member: _____

Signature of Examination Committee Member: _____

Appendix II. Recommendations of coursework for MS students and PhD students without a MS degree in Plant Science or closely related discipline

MS students are strongly encouraged to plan their coursework (total 30 credits) as outlined below:

1. Core Courses (or their equivalents):

PLSC608	Research Methods	2 credits
PLSC618	Advances in Research	1 credit
PLSC619	Seminars in Plant Science and Landscape Architecture	1 credit
PLSC799	Master's Thesis Research	6 credits
PLSC400	Environmental Plant Physiology	4 credits
BCHM461	Biochemistry I	3 credits
BIOM601	Biostatistics I	4 credits

2. Additional courses (or their equivalents) may be chosen from the following five big categories regardless of the student's research interests with approval of the student's advisory committee and PLSC Graduate Program:

- Plant Ecology and Conservation Biology

PLSC471 (Forest Ecology, 3 credits), PLSC481 (Vegetation Assessment and Analysis, 2 credits), PLSC489O (Special Topics in Plant Science; Plant Taxonomy, 2 credits), PLSC601 (Plant Genomics, 3 credits), PLSC685 (Advanced Plant Ecophysiology), PLSC689C (Special Topics; Conservation Biology, 1 credit), ENST410 (Ecosystem Services: An Integrated Analysis, 3 credits), and BIOM602 (Biostatistics II, 4 credits).

- Crop & Food Security ○ Plant Pathology

BSCI410 (Molecular Genetics, 3 credits), BSCI411 (Bioinformatics and Integrated Genomics, 4 credits), PLSC415 (Diseases of Trees and Shrubs, 3 credits), PLSC420 (Principles of Plant Pathology, 4 credits), PLSC601 (Plant Genomics, 3 credits), PLSC489W/PLSC689W (Special Topics; Plant-Microbe Associations, 3 credits), BIOM405 (Computer Applications in Biometrics, 1 credit), and BIOM602 (Biostatistics II, 4 credits).

- Food Safety

BSCI410 (Molecular Genetics, 3 credits), BSCI411 (Bioinformatics and Integrated Genomics, 4 credits), ENST432 (Environmental Microbiology, 3 credits), PLSC489F (Special Topics in Plant Science; Food Safety - Linking Agriculture and Public Health, 1 credit), PLSC489Q (Special Topics in Plant Science; Microbiology of Agricultural Systems, 1 credit), PLSC489W/PLSC689W (Special Topics; Plant-Microbe Associations, 3 credits), PLSC689Q (Special Topics; Microbiology of Agricultural Systems, 1 credit), CBMG688M (Special Topics in Cell Biology and Molecular Genetics; Microbial Genetics, 2 credits), MIEH773 (Foodborne, Waterborne and

Airborne Infectious Diseases, 3 credits), NFSC679M (Selected Topics in Food Science; Food Microbiology, 3 credits), and BIOM602 (Biostatistics II, 4 credits).

o Stress Physiology

BSCI410 (Molecular Genetics, 3 credits), BSCI411 (Bioinformatics and Integrated Genomics, 4 credits), BCHM462 (Biochemistry II, 3 credits), BIOM602 (Biostatistics II, 4 credits), and CBMG699Y (Special Problems in Cell Biology and Molecular Genetics; Plant Cell Biology Journal Club), ENST415 (Renewable Energy, 3 credits), PLSC601 (Plant Genomics, 3 credits), and PLSC685 (Advanced Plant Ecophysiology). o Invasive Species and Weed Science

BSCI410 (Molecular Genetics, 3 credits), BSCI411 (Bioinformatics and Integrated Genomics, 4 credits), BCHM462 (Biochemistry II, 3 credits), PLSC601 (Plant Genomics, 3 credits), PLSC453 (Weed Science, 3 credits), PLSC481 (Vegetation Assessment and Analysis, 2 credits), PLSC685 (Advanced Plant Ecophysiology), and BIOM602 (Biostatistics II, 4 credits).

• Plant Development & Cell Biology

BSCI410 (Molecular Genetics, 3 credits), BSCI411 (Bioinformatics and Integrated Genomics, 4 credits), BCHM462 (Biochemistry II, 3 credits), PLSC601 (Plant Genomics, 3 credits), PLSC689T (Special Topics; Tree Genomics, 1-3 credits), PLSC789M (Advances in Research: Plant Membrane Biology, 1 credit), BIOM602 (Biostatistics II, 4 credits), CBMG699Y (Special Problems in Cell Biology and Molecular Genetics; Plant Cell Biology Journal Club).

• Agricultural Production Systems

PLSC407 (Advanced Crop Science, 3 credits), PLSC433 (Technology of Fruit and Vegetable Production, 4 credits), PLSC420 (Principles of Plant Pathology, 4 credits), PLSC432 (Greenhouse Crop Production, 3 credits), PLSC452 (Environmental Horticulture, 3 credits), PLSC460 (Application of Knowledge in Plant Sciences, 3 credits), PLSC489R (Special Topics in Plant Science; Agricultural Mechanics, 1-3 credits), PLSC489F/PLSC689G (Special Topics; Advanced Food Safety - Linking Agriculture and Public Health, 1 credit), ENST441 (Sustainable agriculture, 3 credits), and BIOM602 (Biostatistics II, 4 credits).

• Landscape Resource Management o Landscape Resource Management

PLSC425 (Green Roofs and Urban Sustainability, 1 credit), PLSC432 (Greenhouse Crop Production, 3 credits), PLSC489D (Special Topics in Plant Science; Low Maintenance Plant Design, 3 credit), PLSC489G (Special Topics in Plant Science; Communications in the Green Industry, 2 credits), PLSC489M (Special Topics in Plant Science; Landscape Contracting I, 2 credits), and PLSC489N (Special Topics in Plant Science; Communications in the Green Industry II, 2 credits).

o Turf Management

PLSC401 (Pest Management Strategies for Turfgrass, 3 credits), PLSC407 (Advanced Crop Science, 3 credits), PLSC410 (Commercial Turf Maintenance and Production, 3 credits), PLSC420 (Principles of Plant Pathology, 4 credits), PLSC453 (Weed Science, 3 credits), PLSC489P (Special Topics in Plant Science; Pro Golf Turf, 1-3 credits), and

PLSC489B (Special Topics in Plant Science; Private and Public Sector Applications, 1 credit).

PhD students without a previous M.S. degree in Plant Science or closely related discipline are strongly encouraged to plan their coursework (total 36 credits) as outlined below:

1. Core Courses (or their equivalents):

PLSC608	Research Methods	2 credits
PLSC618	Advances in Research	1 credit
PLSC619	Seminars in Plant Science and Landscape Architecture	1 credit
PLSC899	Doctoral Dissertation Research	12 credits
PLSC400	Environmental Plant Physiology	4 credits
BCHM461	Biochemistry I	3 credits
BIOM601	Biostatistics I	4 credits

2. Additional courses (or their equivalents) may be chosen from the following five big categories regardless of the student's research interests with approval of the student's advisory committee and PLSC Graduate Program (see the same list for MS students).