

Molecular Plant Sciences Graduate Handbook

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This Handbook will be available at the MPS website (<http://mps.natsci.msu.edu/>).

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This handbook is designed to help graduate students in the Michigan State University (MSU) Molecular Plant Sciences (MPS) program to understand the requirements and guidelines for degree completion, and to provide students with general information on life at MSU. Entering students will be provided a copy of this handbook and should become familiar with the contents. Please keep this copy because the guidelines that were in effect at the time of entry into the program are the ones that will apply for your entire tenure as a student, i.e., changes made to the guidelines after your entry into the MPS program are generally not retroactive. Also, please note that all requirements of the Graduate School and the College of Natural Sciences or College of Agriculture & Natural Resources also apply to you, even if not specified in this manual, although we have attempted to include this information.

I. PROGRAM OVERVIEW

A. MPS IS A DUAL-MAJOR PROGRAM.

The Graduate MPS program at Michigan State University is a dual-major program. All students must be affiliated with a home department or degree granting interdepartmental program. Therefore, this document serves as a supplement to the Graduate Handbook for each student's home program. Each program has specific requirements, expectations, and other guidelines for its students. In some cases, the MPS requirements are similar or identical to those for home programs. In other cases, the requirements for MPS may extend those that pertain to the student's home program.

All MPS students must therefore be cognizant of the dual requirements, expectations, and guidelines pertaining to both the MPS program and their home program. In addition to consulting the relevant graduate handbooks, every MPS student should work closely with their advisor, guidance committee, and administrative staff to ensure that they are satisfying all of the relevant requirements.

B. PARTICIPATING DEPARTMENTS.

Upon completion of the degree requirements, students are awarded a degree in "Molecular Plant Sciences/[Dual-Major]", for example, "Molecular Plant Sciences/Plant Biology" or "Molecular Plant Sciences/Biochemistry and Molecular Biology". Currently, possible dual-majors are with the departments of Plant Biology (PLB), Biochemistry and Molecular Biology (BMB), Horticulture (HRT), Plant and Soil Microbial Sciences (PSM), Statistics and Probability (STT), and Entomology (ENT). Within PSM, MSU offers Ph.D. degrees in Crop and Soil Sciences (CSS) and Plant Pathology (PLP). Dual-majors are also possible with the degree-granting programs in Genetics (GEN) and Cell & Molecular Biology (CMB). Affiliated departments and programs are subject to change. The MPS program offers only the Ph.D. degree.

Links to Graduate Handbooks for participating departments and programs:

BMB: <https://bmb.natsci.msu.edu/graduate-program/for-current-students/>

PLB: <https://plantbiology.natsci.msu.edu/grad-program/>
CMB: <https://cmb.natsci.msu.edu/current-students/forms-and-student-handbook/>
GEN: <https://genetics.natsci.msu.edu/curriculum/>
HRT: http://www.hrt.msu.edu/students/graduate_hort/current_graduate_students
PSM: http://www.psm.msu.edu/degree_certificate_programs (both the Crop & Soil Sciences and the Plant Pathology handbooks)
ENT: http://www.canr.msu.edu/ent/students/graduate_studies/
STT: <https://stt.natsci.msu.edu/graduate-program/>

C. GOALS OF THE MPS PROGRAM

MPS students are trained (1) to do independent and original research, (2) to have depth of knowledge in all aspects of modern plant molecular sciences, (3) to effectively communicate, orally and in writing, in the language of science, (4) to be able to work in a cooperative, professional manner with culturally diverse individuals as members of research groups and teams, and (5) to uphold themselves and others to the highest standards of personal and professional ethics.

In keeping with these goals, students are expected to complete program and departmental coursework requirements along with requirements determined by the student's guidance committee, and to pass all required examinations. Students are also expected to attend the weekly MPS seminar series (<https://mps.natsci.msu.edu/news-events/mps-seminars/>), the seminars of their primary departments, as well as dissertation proposal and defense presentations by fellow students. They are expected to attend professional meetings to present their research results, to learn as much as they can about their field of study and its history, and to make professional contacts as a part of the networking process essential to future success.

D. RESOURCES

Some web pages that graduate students should consult:

- MPS Homepage (<http://www.mps.natsci.msu.edu>)
- Academic Programs
<https://reg.msu.edu/AcademicPrograms/Default.aspx>
- Student Rights and Responsibilities
<http://splife.studentlife.msu.edu/student-rights-and-responsibilities-at-michigan-state-university>
- MSU/Graduate Employee Union (GEU) Contract
<http://geuatmsu.org/about/geu-contract/>
- Guidelines for Graduate Student Advising and Mentoring Relationships
<http://grad.msu.edu/sites/default/files/content/researchintegrity/guidelines.pdf>
- Guidelines for Integrity in Research and Creative Activities
<https://grad.msu.edu/researchintegrity>

E. ADMINISTRATIVE ORGANIZATION

The MPS program is officially administered by the College of Natural Sciences, with strong participation by the College of Agriculture and Natural Resources. The MPS program is governed by its Bylaws (<https://mps.natsci.msu.edu/about/bylaws/>) and administered by the program Director and Executive Committee.

The **Director of the MPS Program** is responsible for the overall operational guidance of the program, including long-range planning with respect to graduate student training and budgetary matters. The faculty members of the MPS program select the Director for a five-year term. The Director may also serve as a liaison between the program and MSU colleges and departments, and in this role is assisted by participating faculty especially members of the MPS Executive Committee. The Director also oversees supportive services and program functions including but not limited to: graduate student recruitment and admission, graduate student requirements, progress of graduate students through their programs, support of graduate student research, MPS core courses, seminars, retreats, and any personnel issues within the realm of the MPS program.

Faculty in the MPS Program may include any MSU tenured or tenure-track faculty with an active interest in any area of molecular plant sciences. MPS faculty may supervise students in the program and serve as major professor (i.e., advisor) on the student's guidance committee. A faculty member serving as major professor should ensure that a student's progress fulfills the requirements, expectations, and guidelines of the MPS program as well as those of the home program. The MPS faculty also participate in teaching the core MPS courses along with graduate seminars and other relevant courses. In addition, MPS faculty serve on MPS committees, attend MPS program faculty meetings, and participate in other MPS activities such as seminars.

The **MPS Executive Committee** (MPSEC) consists of the Director, six additional faculty members, and one student representative. The Executive Committee is organized to represent the college, department, and sub-discipline diversity of the program. The MPSEC advises the Director on major policy matters relating to the MPS program. In addition to any meetings scheduled by the Director, any MPSEC member may initiate a meeting at the request of any MPS Program faculty member or graduate student for the purpose of discussing a specific matter or concern that should be brought to the attention of the committee. If a suggested solution from the MPSEC or Director does not satisfy the concern, the individual raising the concern may request that the matter be brought before the MPS program faculty at a meeting of all MPS faculty. The graduate student representative on the MPSEC is chosen democratically by the MPS graduate students.

The **MPS Graduate Committee** consists of the Executive Committee and the Director. The Graduate Committee coordinates with the graduate admissions committees of the relevant departments and programs (e.g., BMS, PLB, HRT, PSM, ENT) to identify students for admission to and funding by the MPS program. It tracks the progress of every graduate student by ensuring that students meet with their committee once a year, reading the annual evaluations from the major professor, and meeting with the student and/or professor if necessary. The Graduate

Committee evaluates each MPS graduate student's record at the end of the student's Ph.D. career, checks that all program requirements have been met, and recommends to the MPS Director whether a student should be granted the MPS dual-major Ph.D. certification. (Each home department will separately evaluate whether a student fulfills its own requirements.)

The **MPS Seminar/Symposium Committee** will include one MPS graduate student that is chosen democratically by the MPS graduate students.

II. PROGRAM COMPONENTS

Other requirements set forth by each student's home (primary) program must also be met in order to obtain the MPS dual-major Ph.D. The extent to which the MPS Program's course requirements may fulfill some of the course requirements in the student's home program varies among programs. If a student decides to leave the dual-major MPS program, they can revert to the requirements of the primary program. Course requirements of the MPS program and the participating primary programs can be found on the MPS website (<https://mps.natsci.msu.edu/current-students/coursework-requirements/>).

The program of study consists of courses, seminar courses, qualifying exam, and a dissertation including an oral dissertation defense. **The home department or program determines any teaching requirements.** The student's Guidance Committee administers the qualifying exam, recommends coursework beyond the MPS core courses, and supervises the execution and completion of the dissertation. Coursework is recorded in GradPlan (<https://grad.msu.edu/gradplan>).

III. DEGREE REQUIREMENTS

A. ADMISSIONS

The admissions requirements and process are described on the MPS website (<https://mps.natsci.msu.edu/admissions/how-to-apply/>). Students must choose a primary (home) department or program, indicate on their application an interest in the MPS program, and submit a one-page supplemental application to the MPS program. The MPS program does not have an official application deadline, but all participating departments and programs do. Students can be admitted to the MPS program at any time up until they take their qualifying exam (typically completed at the beginning of the third year). MPS coursework requirements for students who enter the program after their first semester at MSU will be decided by the MPS Director in consultation with the MPS Executive Committee.

B. ROTATIONS

Most students will be supported for their first year by assistantships from the MPS program, the Plant Science recruiting program, the BMS program, or from college or university fellowships. Students are expected to participate in three or four consecutive 8-week rotations starting immediately after their arrival at MSU (any exceptions require approval by the MPSEC). Thus, in most cases, students who start rotations in September can be finished with rotations by mid-February, after which they will join a lab permanently for their dissertation research.

Funding permitting, students may have the option to start graduate school in the summer before the normal Fall start date. The first rotation can then start in the summer.

Guidelines for setting up rotations:

1. The primary purpose of rotations is to identify an advisor. At any time in the process, students are encouraged to seek advice from the MPS Director, a member of the MPS Executive Committee, or someone in their home unit.
2. The process of choosing the first lab rotation should start at least several weeks before arriving on campus so that students can begin their first rotation as soon as they arrive. Second and third rotations should be set up in a similarly timely fashion.
3. To initiate rotations, students should first ask potential faculty mentors if they are taking students, and if so, when they have openings in their labs during the coming year. Rotations should be done only in laboratories that have reasonable expectations of having space and resources to support the student throughout their graduate career.

C. CREDIT REQUIREMENTS

The minimum credit requirements for the University are 24 credits of doctoral dissertation research (PLB 999, BMB 999, or equivalent) in addition to credit for all the courses specified by the student's Guidance Committee. The maximum number of doctoral dissertation research credits a student can enroll in is 36 credits. In practice, this means that if students are on track to get 24 research credits before graduation, they should enroll in the minimum number of 999 credits that they need to meet their minimum enrollment requirements each term.

D. RESIDENCY REQUIREMENT

Each student must meet a residency requirement, which is two consecutive semesters, involving the completion of at least six credits of graduate work each semester.

E. COURSEWORK, SEMINARS, AND PUBLIC PRESENTATIONS

For coursework requirements of the MPS program and home departments, see the relevant pages on the MPS website (<https://mps.natsci.msu.edu/current-students/coursework-requirements/>). All MPS students are required to attend the weekly MPS seminars

<https://mps.natsci.msu.edu/news-events/mps-seminars/>) and present two public seminars during their tenure at MSU. The first is the Dissertation Proposal seminar as part of the Comprehensive Exam. The second is a seminar on the student's completed dissertation research, held immediately prior to the Dissertation Exam. The dissertation seminar is considered part of the Final Examination (Dissertation Defense). Each seminar must be announced to the MPS community by email and other appropriate means at least one week prior by the MPS graduate secretary.

Because students' backgrounds and programs are all different (e.g., some students come to MSU with a Master's degree), applications for waivers and substitutions of required courses will be considered. The MPS Graduate Committee must approve all waivers and substitutions. For waivers due to overlap with courses taken at other institutions, a syllabus must be provided.

F. COMPREHENSIVE EXAM (QUALIFYING EXAM)

To remain in good standing, students must complete their comprehensive exam (also known as the qualifying exam) before the end of the first semester of their third year in the program, preferably within one month of the start of the third year. Students must be enrolled at the time they take their Comprehensive Exam. The purpose of the exam is to determine whether the student has mastered knowledge of molecular plant sciences, understands the scientific method, can think independently and creatively, and in general is prepared to do independent doctoral research. The BMB, Genetics, PLB, and other departmental student handbooks have excellent detailed advice on how to prepare for the exam.

The above skills can be assessed in different ways. MPS is collaborating with the various participating departments to have a single comprehensive exam format for all MPS students (described below), but MPS is a new program so this process is still ongoing. You may instead be expected to use your home department's exam format. Be sure to discuss this with your research advisor.

The Comprehensive Examination consists of the preparation of a written research proposal, its oral presentation in a public seminar, and its oral defense before an examining committee. Both the written and the oral exam are pass/fail. To pass either portion of the exam, the student must receive a passing vote by at least three-fourths of the members of the Guidance Committee, with not more than one dissenting vote from among the MSU regular faculty members on the committee. The student must pass both the written and oral portions of the exam to pass the Comprehensive Examination. A student who fails either the written or the oral examination, will be given one opportunity to repeat the exam within six months of the Committee's determination that the student did not pass on the first attempt.

Students must establish a date for the examination at least two months prior. For example, in order to complete the examination by November 15th of the third year, the exam date must be scheduled by September 15th. Students must notify the MPS graduate secretary at least two weeks before taking the exam. The student should obtain the appropriate paperwork from the MPS Graduate Secretary and bring it to the exam.

The Comprehensive Exam Committee shall be composed of the student's Guidance Committee with the exception of the dissertation research advisor (also known as the major professor). However, the research advisor will attend, but will not participate in the examination. In addition, an MPS representative chosen by the director or executive committee, who is not a member of the student's guidance committee will serve as observer. Home departments may also appoint a representative to the committee.

The written part of the exam will be a dissertation proposal. The proposal must be submitted to each member of the Guidance Committee at least one week in advance of the oral presentation and oral defense.

The majority of the effort on the written research proposal must come from the student. However, the student can receive input from the guidance committee, from other students and from various other sources that may be helpful, to make the formal proposal as thorough, complete, concise, and polished as possible. The role of the major professor should be to help prepare the student for the exam by directing the student to relevant reviews and research articles, discussing the scope, significance, and specific aims of the project, and discussing strategies for effective writing and oral presentation. The major professor should not *directly* participate in writing or editing the proposal.

The student is strongly encouraged to make use of a Reader for the research proposal. The Reader may be a faculty member from MPS or other unit, a postdoctoral researcher, or an advanced graduate student, but the individual must be familiar with the required format and expectations of the exam. The Reader will evaluate and comment on the student's research proposal to the student, emphasizing the writing format, scientific logic, and clarity of language rather than the specific experimental details of the proposed research. The Reader must not be a member of the student's Comprehensive Examination Committee. The Reader will be chosen by agreement between the student, the major professor, and the selected individual. To the extent possible, the Reader's expertise should overlap the topic of the student's research. The Reader will try to help the student anticipate problems with the research proposal with respect to presentation and scientific content. However, the primary responsibility for developing an acceptable proposal rests with the student. The student must give the research proposal to the Reader at least four weeks before the comprehensive examination. The Reader must return the progress report and research proposal to the student within one week. This will allow at least two weeks for the student to make revisions, since a copy of the research proposal must be given to each member of the Comprehensive Examination Committee at least one week before the examination. The identity of the Reader will be known to the exam committee and the Reader's efforts will be publicly acknowledged at the oral presentation.

The dissertation proposal should be no longer than 15 pages (12 pt, single-spaced, 1-inch margins). The 15-page limit includes everything except the literature cited. The proposal must include Aims and Introduction (< 5 pages which includes background, a discussion of significance/importance of the proposed research, and clearly stated hypotheses), followed by Experimental Plan and Preliminary Results (< 10 pages). Experimental design must be described

in adequate detail for the committee to judge the quality and feasibility of the proposal and the student's grasp of the underlying principles, experimental methods, and possible outcomes.

The student will make a public presentation (seminar) on the research proposal. The seminar should include background, description of the problem, preliminary results and experimental plan. Length should be about 45 minutes followed by questions from the audience except committee members. Announcements of the public presentation should be made through the MPS and primary department newsletters and by posting on appropriate bulletin boards at least 4 days before. The MPS secretary can help with publicity.

There will be an oral defense of the research proposal immediately following the oral presentation. The oral defense will be in closed session with only the exam committee present (i.e., the graduate committee and MPS representative, but not the major professor). The defense will typically take two to three hours and will focus on the proposal but can include any area of scientific knowledge relevant to the student's proposal or that the student has studied in the MPS core courses and other coursework. Before the closed examination begins, the committee will briefly discuss any relevant general issues and the chair will remind the committee of the purpose, scope and criteria for the examination. Near the conclusion of this examination, the student will be excused from the room while a decision is reached.

The purpose of the Comprehensive Examination is to assess the potential of the graduate student to complete a research project suitable for her/his dissertation. The exam should evaluate the student and not the project. The following criteria will be used in evaluating student performance on the comprehensive examination. First, the candidate shall demonstrate an understanding of the scope and significance of the research, and shall have defined and adequately defended the specific aims of the proposed project. Second, the candidate shall demonstrate knowledge and understanding of the fundamental concepts on which the thesis project is based. Third, the candidate shall demonstrate adequate knowledge of the basic principles and concepts of molecular plant sciences. Fourth, the candidate shall demonstrate skill in analytical thinking and in the application of the scientific method to the research topic. Fifth, the student shall have made sufficient progress on their research project to demonstrate an ability to execute experiments successfully and to interpret the results. Sixth, the student will have composed a suitable written proposal, including organization of the scientific concepts and appropriate professional writing style. Seventh, the student will have demonstrated adequate oral presentation skills including organization and clarity.

If a student has not taken the exams before the end of the first semester of the third year in the program, they will receive a warning letter from the Chair of the home department and the MPS Director that they must take the oral examination before the end of the third year in the doctoral program. Beyond that, the Chair and MPS Director can grant extensions of the time limit up to, but not exceeding the University time limit. If no extension is granted, a majority of the Guidance Committee, together with the Department Chair and MPS Director, shall inform the candidate by letter that the student will be dismissed or asked to withdraw.

The form used to report the examination result is available from the MPS Graduate Secretary. Within one week of the examination date, the completed form must be returned by the

Examination Committee chairperson to the MPS Secretary for the recording of the result, filing, and distribution of copies to the student, the major professor, and each member of the examining committee. The chairperson of the student's Examination Committee will inform the student and the major professor/research advisor of the decision without delay.

A copy of the student's Comprehensive Examination Research Proposal must be maintained by the MPS program office or the primary department in the student's file.

G. DISSERTATION

The dissertation must represent original research and make a significant contribution to knowledge in the field of molecular plant sciences. The Guidance Committee should approve the proposed research program at the time of the written part of the comprehensive exam. Any changes made to that research plan must be approved by the Guidance Committee to avoid any confusion about the final content of the dissertation or the amount of work that it comprises.

The dissertation must be approved by the student's major professor and considered to be in final form before it is distributed to the Guidance Committee. The unbound dissertation or a digital copy, as preferred by the committee members, must be distributed at least two weeks prior to the Final Examination to all committee members.

H. FINAL EXAMINATION (DISSERTATION DEFENSE)

Important note: Students must be enrolled for at least one credit at the time they take their final exam. The final oral examination will be primarily in defense of the dissertation, but may include general knowledge as well. Details on the exam procedure are given below and will include a public presentation of the dissertation results.

The student schedules the final oral examination. A minimum of three hours should be set aside for the exam and all members of the examining committee should participate during the entire period. The exam itself is preceded by a public seminar on the dissertation research. The MPS graduate secretary should distribute notice of the seminar and examination at least two weeks in advance.

For the final examination, the student should be prepared to discuss:

- Reasons for the study
- Methods used
- Important findings and their significance
- Unanswered problems suggested by the research

To pass the defense, the student must be recommended for the degree by a positive vote by at least three fourths of the voting members, with not more than one dissenting vote from among

the MSU regular faculty members on the committee. The decision of the Guidance Committee will be recorded on the "Record of Completion of Requirements for the Doctoral Degree".

The final examination must be scheduled no earlier than two weeks after the dissertation and abstract has been submitted to the Guidance Committee. The student must be registered during the semester in which the final oral examination is taken.

I. FINALIZING THE DISSERTATION

After the student has passed the final oral examination in defense of the dissertation, the student must incorporate any agreed-upon changes or corrections before presenting it to the major professor for final review and signature of the bookplate.

MSU only accepts electronic dissertations submitted via ProQuest. The instructions for electronic submissions are available from <http://grad.msu.edu/etd/>. The target date for the final approval of an electronic dissertation to the Graduate School for graduating the semester of that submission is FIVE working days prior to the first day of classes for the next semester. Be aware that a submission via ProQuest does not mean that the document has been accepted. The review process is interactive and final approval can take anywhere from a few hours to weeks, depending upon the extent of the necessary revisions and how diligent the author is at making the necessary revisions. Graduation in the semester of the electronic submission is only guaranteed if the document is approved on or before the target date for that semester.

By tradition, the student provides a hardbound copy for their major professor.

J. FINAL CERTIFICATION

In order to graduate, a student must:

1. Submit an *Application for Graduation* with the Office of the Registrar, RM 150 Administration Building, very early in the semester in which a student intends to graduate.
2. Obtain a *Dissertation Submission Packet* of forms from the Graduate School, and take note of the various deadlines, which are also provided by the Graduate School.
3. A *Final Certification* form will be sent to the MPS office by the Degree Certification Office. The graduate secretary will examine the student's records to verify their completion of the requirements. The "Final Certification" form lists the following: Guidance Committee members, date of passing comprehensive (qualifying) exam, date of passing final examination, and all courses with grades used for the degree. The course requirements will include all of those shown in GradPlan. Thus, it is important that a student make certain that all information is placed and maintained in their departmental

files. If everything is in order, the Graduate Secretary will pass on the forms to the College of Natural Science and the Graduate School.

4. Before leaving MSU, students should check with the Degree Certification Office to make certain that their credentials are in order. Their records are used to determine completion of the degree requirements. Discrepancies may delay the granting of the degree.
5. By University rule, students must complete the dissertation, and all the other requirements, within eight years of entering the doctoral program. The MPS program expects doctoral students to finish all the requirements in five years, but the MPS Director can grant extensions up to, but not exceeding, the University time limit. Under exceptional circumstances, further extension of the University time limit can be granted but must be approved by the College and the Graduate School.

K. TYPICAL TIMELINE FOR THE PH.D. DEGREE

The typical student will devote most of their first year taking the required MPS core courses and elective coursework to begin mastering the relevant subject areas. An important aspect of graduate coursework is delving into the primary scientific literature, learning how to integrate and summarize this information both in speaking and in writing, and engaging in open discussions and collegial debates about the strengths and limitations of that literature. Typically, students will identify their major professor in their first year and begin to meet regularly with that individual to discuss possible ideas for research, suggestions for scientific literature to read, the composition of their guidance committee, required and recommended courses, etc.

In the second year, most students will continue with their elective coursework to meet both MPS and department/program requirements, conduct dissertation research, and assemble their guidance committee. During this time students may also fulfill a departmental teaching requirement. As the second year progresses, students will typically begin preparing for the comprehensive exam.

By the start of their third year, students should have developed a concrete plan/proposal for their research in consultation with the major professor, guidance committee, and home department. However, every Ph.D. student should realize that there are no guarantees that a scientific project, however interesting or clever, will succeed. Hence, students should remain flexible by considering changes to their original research plan or even the development of a new project to replace their original one. All of this planning should, of course, involve deliberation and consultation with the major professor and guidance committee. Other MPS faculty and graduate peers in the MPS program will also often be excellent sounding boards to discuss research challenges and opportunities.

The typical MPS doctoral student is thoroughly immersed in his or her research in the third, fourth, and fifth years. Many students will continue to avail themselves of occasional courses, seminars, workshops, and reading groups to further master the knowledge base in their areas of interest and even to look ahead toward areas they might want to pursue later in their scientific careers. Consultation, discussion, and even good-spirited debate with one's major professor, guidance committee, and peers should continue to occur while the research is in progress. MPS students in these years should also avail themselves of opportunities to attend scientific meetings

and, once they are ready, present the results of their own on-going research via posters and talks at such meetings. In the fifth year or so, most MPS students will wrap up their research project, write their dissertation, and seek a postdoctoral position or other employment.

IV. SELECTION OF DISSERTATION ADVISOR

The graduate student should select their major professor within their first academic year in the program; this requires mutual consent between the professor and student, and many factors go into this important decision. It is the collective responsibility of all MPS faculty to advise graduate students in their research and professional development and students should feel free to seek advice from any MPS faculty member. A student's home department is also responsible for approving the choice of major professor. Guidelines for Graduate Student Advising and Mentoring Relationships can be found on the Graduate School website. Each department may also have additional guidelines and expectations for successful advising and mentoring that are specifically relevant to the disciplines represented in their department. MPS students are encouraged to consult all these materials and discuss them with their major professor.

The major professor shall, with the help of the student's Guidance Committee, advise and mentor the student in his/her research and professional development. The major professor should be a regular faculty member in the MPS program. If a MPS student selects a nonparticipating MSU faculty member as their major professor, that faculty member can apply to become a member of the MPS program. If the student cannot find a faculty member to serve as their major professor, they should immediately consult the MPS Director, members of the MPS Executive Committee, or the home department chair or graduate advisor to help find a suitable match.

Regardless of the student's home department, there are some important issues to consider when choosing a major professor. These include identifying a faculty member with similar research interests to those of the student. Also, the student should consider the facilities that the professor has to support the student's research interest, including equipment and laboratory space. When offered a research assistantship, students should be aware that research funding to the professor has a limited time frame, and so the duration of any assistantship should be discussed, as well as the expectations of the professor for the student and his or her research activities. Finally, a graduate student should consider his or her personal compatibility with the potential major professor. A clear understanding between the student and the major professor about their individual and mutual expectations will help to promote the development of the student's academic and scientific potential. The major professor, and the members of the student's guidance committee, are officially recognized by the University when entered into GradPlan (Ph.D. students; <https://grad.msu.edu/gradplan>) and approved. Every year the major professor must complete a graduate student progress report and submit it to the MPS graduate secretary.

A professional relationship is expected between the graduate student and his or her major professor, as well as other members of the student's guidance committee. If irresolvable disagreements arise between the student, professor, and/or guidance committee, the initial task of conflict resolution rests with the home department of the student and major professor. If the parties involved are from different departments, then the grievance procedures of the College of

Natural Sciences will be followed since it serves as the lead college for the MPS Program. In some cases, the student and faculty member may be advised to seek further assistance from the Office of the Ombudsperson, the MSU Counseling Center, or the Dean of the Graduate School. MSU policies on Graduate Students Rights and Responsibilities, including procedures for adjudication of cases involving these rights and responsibilities, are available at the Office of the Ombudsperson.

Most graduate students have the same major professor throughout their degree program, but students should be aware that it is possible to change to another major professor. Such a shift might be desirable, for example, if the student determines that his or her research interests are much more closely aligned with those of another faculty member than with those of the current major professor. A change may sometimes also be appropriate if a student and faculty member find that their styles of discussion and mentoring are not mutually compatible. Any such change must involve timely discussions with the MPS director and the graduate director in the student's home department, and a change should be pursued as early as possible in the graduate student's training program.

In cases where the major professor leaves MSU before the student completes his/her degree program, the student should consult the MPS Director and the chair of the home department to identify a suitable replacement. It is the joint responsibility of the student and the MPS program to make arrangements for completion of the degree, and it requires mutual consent between the student and a major professor.

V. SELECTION AND DUTIES OF THE GUIDANCE COMMITTEE

The student's Guidance Committee is selected by the student in consultation with the major professor and is subject to approval by the MPS Director via GradPlan (<https://grad.msu.edu/gradplan>). The members of the Guidance Committee are normally selected based upon research and professional expertise, so as to best advise the student in specific aspects of their proposed research and professional development. At least 50% of the Guidance Committee members must be members of the MPS program. Changes in membership may be made by the student in concurrence with the major professor and MPS Director. Any changes in committee membership must be approved via GradPlan. The Guidance Committee determines which courses will be required for the student, advises the student with regard to the research project, career development and administers the Comprehensive and Final Examinations. Guidance Committees are composed of a minimum of four MSU regular faculty members, including the major professor. At least two of the committee members must belong to the student's home department and at least two must be affiliated with the MPS program.

Special permission is required if a student wishes to have someone besides MSU tenure-stream faculty on their committee, including fixed-term faculty. Non-MSU scientists may not be the chairperson of the committee and the number of MSU tenure-stream faculty must be equal to or greater than the number of non-MSU scientists on all committees. There is a special process set up to approve non-MSU and non-tenure-stream members. See <https://grad.msu.edu/non-regular-faculty-committees>. Please seek approval prior to a fixed-term faculty member directing a graduate student's dissertation/thesis research or serving on a student committee. The process is meant to insure oversight for expertise, temperament, availability, and commitment.

The committee must meet yearly with the student to review the student's progress. A form attesting to this meeting (Annual Progress Report – see below) must be completed and submitted to the MPS Graduate Secretary after every committee meeting.

Functions of the Guidance Committee include:

1. Assistance in planning the program of study and research
2. Formal approval of the program of the student (GradPlan)
3. Advising and assisting in the research process and career development
4. Participation in the Comprehensive and Final Examinations

The Guidance Committee's main function is to help students succeed in their graduate careers and timely and frequent consultation with all committee members is essential to accomplish this goal. Committee members can provide the student with valuable aid regarding the selection of courses, research bottlenecks, techniques, professional opportunities, and overall support for the student's professional development.

Scheduling committee meetings can be a challenging task. Plan well ahead, including scheduling a room for the committee meeting. A reminder and distribution of relevant materials a few days before the meeting is advised.

VI. ACADEMIC PERFORMANCE, INTEGRITY AND SAFETY IN RESEARCH AND CREATIVE ACTIVITIES

A. ACADEMIC PERFORMANCE

A student admitted into the MPS graduate programs must meet certain minimal academic performance standards. This section provides details about these standards and explains procedures that occur when students encounter difficulties in meeting these expectations.

A 3.0 cumulative grade point average is the minimum University standard. Research credits are not considered in determining the grade point average. Attainment of the minimum GPA, however, is an insufficient indicator of potential for success in other aspects of the program and in the field. The student's Guidance Committee is responsible for evaluating the student's competency and rate of progress.

To assist in evaluation of progress, the major professor must file an Annual Progress Report, typically immediately after the required annual committee meeting. The major professor must sign the progress report and should supply written evaluation comments summarizing the committee's comments and discussion. The student can then add written comments in response for inclusion in the Annual Progress Report. A copy of the progress report and evaluation will be kept in the student's file and made available to various officials including the MPS Director and

Executive Committee, the student's Guidance Committee, and the Chair, Associate Chair, and Director of Graduate Studies of the home department.

The accumulation of grades below 3.0 in more than three courses of three or more credits or "deferred" in more than three courses of three or more credits at any given time, or a combination of the above in excess of four courses, automatically removes the student from candidacy for the degree. Until the official program of study is filed, all courses on the student's record are considered part of the required program.

To remain in good standing the student also needs to follow home department as well as University rules for completing their degree requirements in a timely manner. If a student is not making timely and reasonable progress towards their degree in terms of completing coursework, taking the necessary exams or in completion of their dissertation research the student should receive a letter from the MPS Director and home department Chair specifying the deficiencies and describing the expected steps, with a timetable, to get back in good standing. There will be a space on this letter for the student to respond in writing if they disagree either with the deficiencies listed or with the steps and timetable for remediation. Their response will then become a part of the student's file.

The student has a right to receive a warning when academic performance is judged to be unsatisfactory (GSRR 2.4.8.1 and 2.4.8.2). The student has a right to access their educational records including the academic file that the department keeps on them (GSRR 3.2.3). Requests to view and/or copy the file should be made through the MPS graduate secretary.

Comprehensive examinations and final examinations are pass/fail. A student who fails either the written or oral comprehensive examination or dissertation defense will be given one opportunity to successfully repeat the exam, typically within three months but no later than 6 months. If the student fails an exam a second time, they will be dismissed from the program.

In cases where dismissal is being considered, judgment is made by the student's major professor and Guidance Committee. To facilitate a decision, the committee may consult the MPS Director and home department Chairperson. If a majority of the Guidance Committee decides that a student has not met standards, he/she may be asked to withdraw or be dismissed according to the procedures as defined in the Graduate Student Rights and Responsibilities (GSRR) document, which can be obtained at <http://splife.studentlife.msu.edu/graduate-student-rights-and-responsibilities>.

B. SAFETY

Graduate students must complete the Office of Radiation Chemical and Biological Safety (EHS) Hazardous Waste Safety Training before classes begin in the first semester of their academic program. They must also complete a refresher course each year. Information on safety training and regulations can be found at: <http://www.ehs.msu.edu/>

Further safety training may be required by the particular lab that the student does research in, whether on a rotation or as a regular member of the laboratory. If unsure, the

student should ask the faculty member in charge of the lab as to what additional safety training is required.

C. INTEGRITY

Policies regarding graduate studies at Michigan State University are established at three levels of academic administration: University, College, and Department or Program. This section is intended to bring all of these policies into focus and to clarify those that may appear to be contradictory. In general, University policies override College policies, College policies override Department or Program policies, and Department policies override Committee policies. Program policies have been established, as necessary, to resolve issues not specifically covered by College or University policies.

All MPS graduate students have a home Department that is affiliated with the MPS Program. All MPS graduate students are therefore subject to the policies of their home Department, as well as those of the MPS Program, the College, and the University. Those policies specific to a student's Department can be found in the Graduate Handbook of that Department.

Every faculty advisor and graduate student should be aware of the document *Guidelines for Integrity in Research and Creative Activities* (<https://grad.msu.edu/sites/default/files/content/researchintegrity/guidelines.pdf>), which gives criteria for dismissal due to unethical or dishonest behavior. The Graduate School also has guidelines and rules for responsible conduct of research (RCR), authorship, data management, control, and access, use of animals, and misconduct (<https://grad.msu.edu/policies-and-procedures>).

Students and faculty should be aware that the Academic Council and Academic Senate approved a revision of the Integrity of Scholarship and Grades Policy. This document should be consulted when revising the department/unit policy on penalty grades and other issues related to academic dishonesty. <https://ombud.msu.edu/academic-integrity/>

VII. GRADUATE STUDENT GRIEVANCE PROCEDURES

The MPS Program is not the home department for any graduate student or faculty appointments. Therefore, most grievances will be pursued through the procedures set by the involved departments, colleges, or other administrative units. In the event that a grievance specifically addresses the MPS Program, the Bylaws stipulate the following procedures:

Any MPS program faculty member or MPS graduate student may initiate a grievance, alleging violation of existing policies or established practices by an administrator, pursuant to the procedures set forth in the Michigan State University Faculty Grievance Procedure or Michigan

State University Graduate Student Grievance Procedure. The MPS Program Director or MPS Executive Committee shall meet with the parties involved in an effort to resolve the grievance informally. In the event that the grievance is not resolved by the parties, a grievance hearing will be arranged by the Faculty Grievance Official (FGO) or Graduate Student Grievance Official pursuant to the procedures set forth in the Faculty Grievance Procedure or Graduate Student Grievance Procedure.

In general, any grievance that involves graduate students or faculty in the MPS program, and which cannot be resolved informally, will be referred to the appropriate Department and College, and their respective judicial process will then be followed. MSU policies on Graduate Students Rights and Responsibilities, including procedures for adjudicating cases that involve graduate student rights and responsibilities, are available on their websites.

VIII. WORK RELATED POLICIES

A. GRADUATE ASSISTANT ILLNESS/INJURY/PREGNANCY LEAVE POLICY

See: <https://reg.msu.edu/AcademicPrograms/Text.aspx?Section=111#s351>

A graduate assistant unable to fulfill the duties of their appointment because of illness or injury shall notify an administrator of their major unit as soon as circumstances permit. Similarly, a graduate assistant unable to fulfill the duties of her appointment because of pregnancy shall notify the administrator of her major unit as soon as circumstances permit.

During the illness, injury, or pregnancy, the major unit shall adjust (reduce, waive, or reschedule) the graduate assistant's duties as the assistant's physical circumstances reasonably dictate. If total absence from duties becomes necessary, the major unit shall maintain the stipend of the appointment, provided the graduate assistant is still enrolled, for a period of two months, or to the end of the appointment period, or of the semester, whichever should occur first.

The graduate assistant shall have the right to return to the assistantship, within the original terms of the appointment, at such time as he/she is able to reassume the duties of the position.

B. SPECIAL INFORMATION FOR INTERNATIONAL STUDENTS

International Students interested in joining the MPS Program should work through their prospective or current home department to make sure that they understand and fulfill the requirements for foreign students. The [Office for International Students and Scholars \(OISS\)](#) is a resource center for information on matters related to international students and scholars, and their website provides additional information.

IX. OTHER MPS POLICIES

A. TRAVEL

All official travel requires a Travel Authorization form to be filled out prior to traveling. External support is from grants and contracts and will be at the discretion of the principal investigator. Some travel funds are available from the MPS program, home department, Graduate School, and the College of Natural Sciences.

When students appointed as TAs or RAs travel outside the U.S. to conduct required dissertation research, to attend meetings, or to collaborate with investigators conducting research abroad, the department or research grant supporting the work will be required to pay for all needed vaccinations and or medications as determined by the MSU Travel Clinic. Students may include those costs in applications for funds from the Research Enhancement or [Travel Grant](#) programs administered by the Graduate School. Students who plan to travel to a foreign country on Michigan State University activities should visit [Travel at State](#).

X. OTHER RESOURCES

See: <https://mps.natsci.msu.edu/current-students/student-life/>

XI. EDUCATION/TRAINING PLAN FOR RESPONSIBLE CONDUCT OF RESEARCH

Training in the Responsible Conduct of Research (RCR) is essential in the preparation of future scholars and professionals. An understanding of the issues concerning the conduct of research in an increasingly complex world has become critical in successfully navigating the research landscape. Policies for RCR are established by the University, the Colleges, and the home departments.

Note that for some students additional training above the department minimum may be necessary. Students who are supported by NSF, NIH, or USDA grants may be required to complete additional specific training; they must meet the timeline and content requirements of training for that grant. Students engaged in research involving human subjects or animal use must complete the MSU training modules for those subjects before submitting IRB or IACUC approvals. These online modules may be completed as part of the CITI (Collaborative Institutional Training Initiative) Modules Year 2 requirements below.

Compliance with these requirements will be monitored via the online SABA system (for online modules) and on annual reports of graduate students (for discussion-based training).

Required training and certification:

Online CITI modules: (access via <https://ora.msu.edu/CITI-RCR-registration>)

Year 1 as required by the University:

- Introduction to the Responsible Conduct of Research

- Authorship
- Plagiarism
- Research Misconduct

Year 2 any *three* additional CITI modules from the following list:

- Collaborative Research
- Conflicts of Interest
- Data Management
- Financial Responsibility
- Peer Review
- Mentoring
- Rigor and Reproducibility

Compliance with the requirements for online modules is automatically tracked in the SABA system.

Discussion-based training:

Each student will be required to participate in at least three hours of discussion-based training each year. This training may occur in one-on-one meetings with their faculty advisor, during lab meetings, during the RCR Workshop Series sponsored by the Graduate School, or a combination of these options. These discussions should focus on the topics listed in items 1-5 above.

Every student must have completed at least 6 hours of discussion-based training by the end of their second year. Refresher training may also be comprised of online courses beyond those required in Year 1 and 2.

Compliance will be documented in the annual reports of graduate students. Each student will be required to submit an explanation of how they received their discussion-based training (one-on-one meetings with their faculty advisor, during lab meetings, or during the RCR Workshop Series), the amount of time spent in discussion, and the topics covered. This statement will be certified by their faculty advisor on the student's annual report. The annual report will be kept on file in the home department office. For each student, the relevant graduate secretary will record compliance into GradPlan, with the first two years' training recorded as "Initial Training" and later years' training recorded as "Annual Training."

XII. TRAINING IN RELATIONSHIP VIOLENCE AND SEXUAL MISCONDUCT POLICY

All TAs and RAs must complete the on-line training about the Relationship Violence and Sexual Misconduct Policy. To access the training, login to the training website at: <https://studentsuccess.org/msu15nae-notAnymoreEMP/home>. It will take approximately 30

minutes to complete all assignments. For assistance, contact the Helpdesk at 517-884-4600 or train@ora.msu.edu

XIII. NECESSARY FORMS

University Forms – all done through GradPlan (<https://grad.msu.edu/gradplan>).

1. Record of Completion of Dissertation and Oral Examination Requirements
2. Record of Comprehensive Examinations for Doctoral Degree

MPS/departmental Forms

1. Guidance Committee selection form
2. Annual Progress Report of the Guidance Committee
3. Annual Evaluation by the MPS Graduate Committee
4. Laboratory Rotation evaluation form (one for each rotation)