

GRADUATE PROGRAMS

2012

CROP AND SOIL SCIENCES

Department of Plant, Soil & Microbial Sciences



MICHIGAN STATE

U N I V E R S I T Y

**DEPARTMENT OF PLANT, SOIL AND MICROBIAL SCIENCES
CROP AND SOIL SCIENCES GRADUATE STUDENT HANDBOOK**

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PREFACE

This document represents the Plant, Soil and Microbial Sciences department's position on graduate education policy for degrees in Crop and Soil Sciences. It was developed after extended discussion and consultation among faculty and students. The Graduate Programs Committee (GPC) in CSS coordinated the development of this document in the 1987-88 academic year. The document's most recent revision occurred in August, 2012.

Appeals concerning interpretation of this document may be referred to the Coordinator of Graduate Programs and, ultimately, to the Department Chairperson.

Your major professor plays a central role in planning your graduate education. The relationship between your professor and you should be founded on mutual respect and an understanding of what constitutes graduate education. Soon after arrival, you should meet with your major professor to establish program requirements such as course scheduling, program planning and thesis research. There should be an understanding of project responsibilities, vacation and sick leave, and a tentative timetable for program completion.

I. GRADUATE EDUCATION: An Overview

The graduate program in the Department of Plant, Soil and Microbial Sciences is an important and integral part of the department's total activities in teaching, extension, research and international programs. The department places a high priority on graduate education and attempts to create an intellectual environment conducive to effective learning. In order to facilitate maximum personal development, the department's program is flexible and permits substantial freedom by both students and faculty. This is intended to permit and encourage individual initiative by students in developing their educational programs and to provide the maximum basis for originality and creativity.

Though certain minimum requirements must be satisfied, a wide range of programs can be developed to fit the unique interests and needs of individual students. Programs can be developed to emphasize training in crop science or soil science with various fields of specialization in each area. Since the student, under the direction of his/her major professor and guidance committee, is given wide range and latitude in developing programs, it is important that the student accept the responsibility for making early and thoughtful decisions with regard to total program content. Though program changes may be required at a later date, it is important that the overall direction of the student's program, including research, be developed at an early date. Appropriate research areas include the applied fields as well as problems with a theoretical or methodological focus. In many cases a combination of these approaches will emerge. This document also describes the guidelines for the development of individual graduate programs and specifies the evaluation procedures to be used to assure that each graduate has achieved an acceptable level of competence.

The general university and college requirements for graduate programs including residency requirements, are found in the Michigan State University publication, *Academic Programs*, and can also be found at <http://www.reg.msu.edu/AcademicPrograms/>. It should be consulted even though many of the relevant university and college requirements are included herein. This document is intended to establish policy guidelines, to clarify college and university requirements and to establish departmental requirements for graduate education in the Department of Plant, Soil and Microbial Sciences. In addition, students are advised to consult the section entitled "Graduate Student Rights and Responsibilities" in *Spartan Life: MSU Student Resource Guide and Handbook*. A copy of *Spartan Life* may be obtained from Student Affairs and Services, 162 Student Services Building or by visiting the website at: <http://splife.studentlife.msu.edu/>. This document contains additional information concerning academic programming, termination of graduate assistantships, access to student records, and redress of grievances, among other subjects

Dual Enrollment by Undergraduates

Dual enrollment provides an opportunity for academically talented undergraduate students to enroll in graduate courses and conduct research towards a graduate degree while completing the last two years of their bachelor's degree(s) programs.

To be considered for dual enrollment, the student must first file an Application for Admission to Graduate Study, as indicated under Application Procedure in this section of the catalog and be admitted into a graduate program. Subsequent to admission to a graduate program, in regular status, the student must complete a Request for Dual Enrollment Status form, available from the Office of the Registrar. A student who is accepted for dual enrollment can be admitted to both the undergraduate and graduate degree program upon reaching junior standing.

Within the first semester of dual enrollment, the student's graduate degree program adviser must be identified and the appropriate graduate degree guidance committee established. The adviser and committee assist the student in developing a program of study for the graduate degree. Admission to graduate study must be approved before work to apply toward a graduate degree program is undertaken. Credits completed prior to admission to graduate study *cannot* be applied toward a graduate degree program.

A student will be classified as an undergraduate until the minimum number of credits required for a first bachelor's degree is completed. When the student is classified as a graduate student, eligibility begins for graduate assistantships, other forms of graduate student financial aid, or those services and prerogatives normally reserved for graduate students.

A student pays undergraduate tuition up to the total number of credits required for a first bachelor's degree(s) in his/her major(s), at which point graduate tuition is applicable and students are eligible for graduate fellowships and assistantships. If approved by the graduate program, a maximum of nine credits, at the 400-level or higher, from the undergraduate degree program can be applied toward the requirements for the graduate degree program for credits completed after admission to graduate study.

In semesters when the student is dually enrolled, federal financial aid designated for the first bachelor's degree (Federal Pell Grant and Federal Supplemental Educational Opportunity Grant (SEOG)) will be determined based upon the number of undergraduate credits only. Awards will be manually adjusted as necessary once the student is registered. Students are not eligible for financial aid as a graduate student until the semester after the minimum number of credits required for the first bachelor's degree has been earned.

Applicants with adequate academic backgrounds are admitted as regular status. Students with subject matter deficiencies will be admitted as provisional status and will be changed to regular status when the conditions of provisional admission have been met, e.g., collateral courses have been completed and/or specified grades have been attained.

II. ELECTRONIC SUBMISSIONS OF THESES & DISSERTATIONS

Graduate handbooks must indicate that MSU only accepts electronic theses and 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 Thesis or 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 (see future target dates below). **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 when making the necessary revisions.

Electronic Submission's Approval Target Dates:

Fall 2012 – December 26, 2012

Spring 2013 – May 5, 2013

Summer 2013 – August 20, 2013

Fall 2013 – August 20, 2013

Graduation on the semester of the electronic submission is only guaranteed if the document is APPROVED on or before the target date for that semester

III. EXIT SURVEYS

A new short online exit survey for all students graduating with a Plan A or Plan B masters or with a Doctoral degree was introduced May 9th of 2011. Only students who have applied for graduation will have access to the survey. The survey asks questions about educational experiences in MSU graduate programs, as well as about immediate professional plans. The Graduate School uses data from this survey when reviewing graduate programs and to guide decisions about services and initiatives for graduate students.

The identity of all respondents will be kept confidential and only aggregate (group) information will be made available to faculty and administrators. The students will receive an e-mail message from the dean of the graduate school with a link to the survey. However, students do not need to wait for that e-mail message to complete the survey after applying for graduation. It takes about 5-10 minutes to complete the online survey. Below are the instructions for completing the survey and they are also available from <http://grad.msu.edu/etd/>

Instructions for students:

- Access the following website:
- Doctoral Students: <https://www.egr.msu.edu/doctoral/survey/>
- Master's Students: <https://www.egr.msu.edu/masters/survey/>
- Enter your MSU NetID (Login Name) and Password
- Complete all the items on the survey. When finished, click **Submit**.

IV. THE MASTER'S PROGRAM

A. Introduction

The master's degree program in Crop and Soil Sciences recognizes that the background and post-degree plans of students vary widely. Students who plan to acquire a Ph.D. degree should develop their master's program as an integral part of their total graduate program. Students enrolled in interdisciplinary programs such as Plant Breeding and Genetics are required to fulfill all degree requirements for both Crop and Soil Sciences and the interdisciplinary program. It is the student's responsibility to learn about relevant requirements.

B. Selection of Major Professor

Students are not admitted to a graduate program in the Department of Plant, Soil and Microbial Sciences until a tenure-system (or approved adjunct) faculty member has agreed to serve as major professor. If a student's educational objectives change at a later date, he/she may request another major professor. Requests to change major professor, however, may affect a student's funding. Requests for the proposed change should be submitted to the Coordinator of Graduate Programs for action. Similarly, a major professor may resign from this responsibility.

C. Guidance Committee

It is the responsibility of the student, in consultation with the major professor, to form a guidance committee at the earliest possible date, but not later than the end of the first semester of study after completion of provisional requirements, if any. The guidance committee must consist of at least three members of the regular faculty. The major professor usually serves as chairperson of the committee. At least one member of the committee must be from a department other than Plant, Soil and Microbial Sciences. The primary function of the guidance committee is to provide direction and counsel and to oversee the progress of the student. This committee will also function as the examining committee (see Section II K.)

The guidance committee should meet during the first semester of study following completion of any provisional requirements. In accordance with university regulations, either the student or the major professor must take minutes at each committee meeting, and both the major professor and the student should retain a copy of the minutes in their files. It is recommended that each student remain in contact with all members of his/her committee throughout the M.S. program. In some cases, it may be advisable to convene a committee meeting during the third or fourth semester to discuss research progress and future goals.

Should the student's major professor leave the university, or become unable to serve, the CSS Department Chairperson will work with the student and the remaining committee members to

resolve the situation, perhaps by appointing a new major professor.

D. Program of Study

In keeping with the department's philosophy of allowing maximum flexibility for individual situations, two programs of study, designated as Plan A and Plan B, are offered. These plans differ primarily in their research component. Both Plan A and Plan B require a minimum of 30 semester credits, including credits to meet the requirement for writing and general presentation skills (see Section F). In addition, both Plan A and Plan B require a final oral (certifying) examination and the presentation of a seminar.

Please note MSU change in grading policy for “Deferred” grades: Except for CSS 899 and CSS 999, students who receive a DF (Deferred) grade in course must complete the required work and a grade must be reported within 6 months with the option of a single six-month extension. If the required work is not completed within the time limit, the DF will become U-Unfinished, and the student's grade will be changed to DF/U under the numerical system. Again, this rule does not apply to graduate thesis or dissertation work.

1. Plan A

a. Plan A consists of course work, research, thesis, seminar, teaching/extension experience, and certifying examination. It is recommended for students whose career interests and plans suggest the need for research experience, and for all students who may pursue a Ph.D. at a later date. The thesis represents from 6 to 10 semester credits of research earned in CSS 899. Thesis research must be original research which will contribute to the body of knowledge of the student's disciplinary topic. Copies of recent theses are available in the CSS Reading Room, 260 PSS Building.

b. In Plan A, a minimum of 20 semester course credits with a grade point average of at least 3.0 is required. Collateral courses and research credits are not included in computing the grade point average. A total of 30 semester credits (some combination of 20 to 24 semester course credits and 6 to 10 semester research credits) is required. Up to 9 semester credits may be transfer credits from graduate programs at other universities. Credits earned at MSU in Class 5 Special Program Undergraduate status do not count as graduate credit in a degree program. (cf. Graduate Studies)

c. A minimum of 16 semester credits (including 6-10 research credits) must be completed in courses at the 800 or 900 level.

d. The course program is developed jointly by the student and major professor. The program must be approved by the student's guidance committee and the Department Chairperson, or his/her designee, usually the Coordinator of Graduate Programs, and the Dean of the College. This is accomplished by completing a Proposed Academic Program form, which should be submitted to the Graduate Programs Office as early as possible and prior to the completion of two semesters.

e. All students in Plan A are required to submit one unbound copy of the thesis to both the Plant and Soil Sciences Building Reference Library and the major professor.

2. Plan B

a. Plan B consists of course work, seminar, teaching/extension experience, and a certifying examination. In addition, Plan B requires special problems paper(s) that demonstrate the student's ability to define a significant problem, choose and apply appropriate analytical techniques, and interpret the results in a meaningful way.

b. In Plan B, a total of 30 semester course credits with a grade point average of at least 3.0 is required. Students may earn up to 6 semester credits in CSS 890 for their research paper or special problems paper(s). These credits are computed in the overall grade point average. Students in Plan B do not enroll in CSS 899.

c. A minimum of 16 semester credits (including CSS 890 credits) must be completed in courses at the 800 or 900 level.

d. The course program is jointly developed by the student and major professor. The program must be approved by the student's guidance committee and the Department Chairperson, or his/her designee, usually the Coordinator of Graduate Programs, and the Dean of the College. This is accomplished by completing a Proposed Academic Program form which should be submitted to the Graduate Programs Office as early as possible and prior to the completion of two semesters.

3. Normally, only 400 level and higher level courses are accepted for graduate credit. However, the following Physical Chemistry courses maybe taken for graduate credit: CEM 383 and 384.

E. Teaching/Extension Requirement

1. The Department of Plant, Soil and Microbial Sciences requires all graduate students to participate in a meaningful teaching or extension experience and to exhibit proficiency in both writing and general presentation skills as a part of their graduate academic programs. The teaching/extension requirement is to be an experience that is beneficial and relevant to the education of each student. Obtain the form from the CSS Graduate Programs Office, A372 PSSB. A teaching or extension activity is part of the student's academic program and helps prepares her/him for the professoriate. Therefore, students are not appointed as TAs as referenced in the MSU-GEU contract (<http://www.geuatmsu.org/>).

a. All domestic AND, international students are required by the University to complete the Teaching Assistant Orientation. The orientation is offered prior to the start of the fall semester. Students should attend the orientation in the academic year they plan to serve as a TA.

b. Students must have prior approval of the major professor and the Coordinator of Graduate Programs before serving as a Teaching Assistant and/or Extension Assistant.

Teaching Activities

A minimum of three of these activities should be done to qualify as a meaningful teaching experience:

- Attend as many classes as possible, at the discretion of the professor.
- Develop and present at least one lecture/ demonstration-discussion before the entire class.
- Coordinate field and/or laboratory activities and possibly develop new exercises to be used a field or lab activities.
- Contribute to the grading and recording of students homework and exams.
- Contribute questions to be used on exams and homework.
- Hold office hours and/or help sessions.
- Time commitment: (assume 3 hours prep for each contact hour;
Example: a student responsible for a 2 hour lab =
2 contact hour

6 prep hours

3 hour lecture

11 hours + misc. time

(Misc. time to include grading, exam question prep, assisting student, etc.)

Extension Activities

A person to person requirement should be part of the experience. For example, the student should either present a session utilizing the teaching aid or publication developed or should interact with clientele in some other way. A list of suggested activities follows.

- Write an extension bulletin and get it published.
- Develop and teach an Extension Short Course for a specific audience
- Develop and coordinate a field day or a field tour for a specific audience.
- Develop an exhibit to be used at Extension activities (person to person interaction).
- Develop a PowerPoint presentation for use by Extension Agents, agri-science teachers, or other agency personnel (person to person interaction).
- Develop a video on a specific topic for a specific audience (person to person interaction.)
- Develop and initiate a field demonstration plot for use by Extension agents and others.

F. Completing the Teaching/Extension Requirement

1. Prior to the semester in which the teaching and extension experience will be completed, all students (domestic and international) must fill out the top part of the **Graduate Teaching/Extension Requirement** form, which constitutes a description of the proposed teaching and extension experience. The proposed teaching/extension experience must be approved in advance by the appropriate instructor/specialist, the student's major professor, and the Coordinator of Graduate Programs. The Graduate Teaching/Extension Requirement form can be obtained from the Graduate Programs Office and must be completed prior to the experience.

2. In circumstances where the guidance committee judges that a student has had adequate teaching/extension experience, the major professor may petition for waiver of this requirement. The petition must be submitted in writing to the Graduate Programs Committee at least two semesters before the candidate plans to graduate.

G. Writing and General Presentation Skill Requirement

The Department of Crop & Soil Sciences requires that both MS and PhD students exhibit proficiency in writing and general presentation skills. The faculty recognizes that these skills can be acquired through a variety of means ranging from formal coursework to on the job experience. The Writing and General Presentation Skill Requirement form provides the guidance committee flexibility in identifying the course work that a given student should complete to satisfy the General Writing and Presentation Skills Requirement. The form must be completed choosing either Current Course Option or the Other Experience Option. If other experience is chosen, the guidance committee chair must sign the bottom portion of the form when the requirement is completed. If the current course option is chosen, that course must appear on the program of study. Current Course Options are listed below.

CSS 880	Scientific Communication and Professional Development (one credit)
NSC 840	Writing in the Sciences (two credits)
ENT 812	Graduate Seminar (one credit)

H. Annual Evaluation and Student Records

An evaluation of each student's progress will be conducted prior to Spring semester. It is the responsibility of the student to complete an evaluation form and review it with his/her major advisor. The student is evaluated on both the completion of program requirements and the progress made on assistantship and research responsibilities. An evaluation form will be distributed to students one month prior to Spring semesters. The form must be completed, signed by the major advisor, and returned to the CSS Graduate Office by the date indicated. If the major professor is not available to review the student's evaluation, the major advisor must appoint a substitute in advance. Each year prior to Fall semester you will be provided an academic update to keep you updated on your academic progress.

All evaluation forms will be reviewed by the Coordinator of Graduate Programs or by the GPC Chairperson if the Coordinator is unavailable. Students will be notified in writing if they are not making normal academic progress. Evaluation forms, programs of study forms, application and admission materials, degree requirement completion forms, lists of honors and recognition, and other relevant student records, will be filed in the student's permanent file in the CSS Graduate Programs Office and a student may access her/his individual records by submitting a written request to the Graduate Programs secretary. Students have the right to challenge the accuracy of their files by writing a letter that is placed in the file.

I. Seminar Requirement

Each M.S. student is required to present one oral seminar on his/her research activities or the contents of the special problem paper. This seminar is open to anyone interested in attending and generally is presented immediately prior to the final oral examination. **Seminar notices will be emailed and posted at least 1 week prior to the seminar by the Graduate Programs secretary.** The Result of Final Defense form may be obtained from the Graduate Programs Office prior to the seminar.

J. Master's Degree Evaluation Procedure

All M.S. students are required to successfully complete a final oral certifying examination. The oral examination is considered to be a comprehensive examination of the student's qualifications for the M.S. degree. Since M.S. degree programs may vary markedly between students, the oral examination will also vary, but in each case the examination will attempt to determine if the candidate has achieved (a) an acceptable level of competence in the general area of crop and/or soil science and related fields, and (b) a comprehensive knowledge of his/her major area of specialization. In addition to the oral examination, a written examination may be given by and at the discretion of each member of the guidance committee.

For students in Plan A, the oral examination must include a defense of the thesis, but may also include course work-related questions. Plan A students should provide members of the examining committee with a copy of the thesis at least one week before the oral examination. For students in Plan B, the oral examination may include a defense of the special problem paper and/or course work-related questions.

While a unanimous report is usual, a two-thirds majority vote to pass is sufficient for successful completion of the examination requirement. Each member of the guidance committee will sign the Result of Final Defense form, which must be forwarded to the Coordinator of Graduate Programs, and then to the Dean of the College.

Distribution of Thesis. Each student is required to electronically submit the thesis to the Office of the Graduate School for approval and provide a bound copy to the major professor and committee, if required.

K. Application to Graduate

During the semester in which you plan to graduate you will need to obtain an Application to Graduate form. It is available at the following web site: <http://www.reg.msu.edu/StuForms/GradApp/GradApp.asp>. Be sure to check deadlines in the schedule of courses catalog. Thesis and Dissertation information can be found online at: <http://grad.msu.edu/etd/>. In addition you may consider visiting Career Services Network web site at: <http://careernetwork.msu.edu/>.

L. Master's Degree Requirements and Due Dates

<u>Requirements</u>	<u>Due Date</u>
Selection of Guidance Committee	Prior to completion of first semester.
Proposed Academic Program (Form Required)	Prior to completion of second semester.
TA Seminar on College Teaching	Attend just prior to fall semester of the academic year you will TA.
Teaching/Extension Requirement (Form Required)	Must have prior approval the semester before the teaching/extension experience.
Writing and General Presentation Skills (Form Required)	The semester after the requirement is completed.
Application to Graduate (Form Required)	See the University Calendar: http://www.reg.msu.edu/ROInfo/Calendar/Academic.asp
Final Oral Examination (Form Required)	See the University Calendar: http://www.reg.msu.edu/ROInfo/Calendar/Academic.asp
Final draft of thesis to the Graduate School	See the University Calendar: http://www.reg.msu.edu/ROInfo/Calendar/Academic.asp

V. THE DOCTORAL PROGRAM

A. Introduction

Admission to the CSS doctoral program is open to students with master's or bachelor's degrees. It is usually desirable, but not mandatory, that a student earn a master's degree before proceeding to a doctoral program.

Students completing a master's degree at Michigan State University may apply for a doctoral program in the Department of Plant, Soil and Microbial Sciences by requesting the major professor submit a letter of recommendation/commitment to the Graduate Programs Committee. The request requires approval of the department and the College.

The doctoral program has flexibility to accommodate the diverse interests and talents of the future scientists being educated in the department. This flexibility implies responsibility for the student to make an early selection of a major professor and, in consultation with the guidance committee, an early selection of a program of courses and a research area. Changes in academic programs may be made as further evidence suggests modifications are needed by submitting a Change in Academic Program form to the Coordinator of Graduate Programs for approval.

All doctoral programs in the Department of Plant, Soil and Microbial Sciences must include course work, a teaching/extension experience and general presentation skills requirement, written research proposal, research and dissertation, comprehensive examination, seminar, and final oral examination. Students enrolled in interdisciplinary programs such as Plant Breeding, Genetics and Biotechnology or Environmental Toxicology are required to fulfill all degree requirements for both Crop and Soil Sciences and the interdisciplinary program. It is the student's responsibility to be informed about relevant requirements.

Definition of "full time status:"

Full time status for doctoral students is defined as a minimum of 1 credit for those students who:

- a. have successfully completed all comprehensive examinations and are actively engaged in dissertation research: or
- b. are doing department-approved off-campus fieldwork related to preparation of their dissertation.

B. Selection of Major Professor

Students are not admitted to a graduate program in the Department of Plant, Soil and Microbial Sciences until a tenure-system (or approved adjunct) faculty member has agreed to serve as major professor. If a student's educational objectives change at a later date, he/she may request another major professor. Requests to change major professor, however, may affect a student's funding. Requests for the proposed change should be submitted to the Coordinator of Graduate Programs for action. Similarly, a major professor may resign from this responsibility. In certain cases,

someone other than the major professor may act as the dissertation supervisor. Joint supervision is also possible. Should the student's major professor leave the university, or become unable to serve, the CSS Department Chairperson will work with the student and the remaining committee members to resolve the situation, perhaps by appointing a new major professor.

C. Guidance Committee

It is the responsibility of the student, in consultation with the major professor, to form a guidance committee at the earliest possible date, but not later than the second semester of study following completion of provisional requirements, if any. The guidance committee must consist of at least four members of the faculty. The major professor usually serves as chairperson of the committee. At least two committee members must be from the Department of Plant, Soil and Microbial Sciences, and at least one member of the committee must be from another department. The primary function of the guidance committee is to provide direction and counsel and to oversee the progress of the student. The guidance committee also has final responsibility for determining whether the student has met the standards for the Ph.D. degree. (see Section III. M.)

The guidance committee should meet as early as possible, but not later than the end of the second semester following completion of any provisional requirements such as English language classes. In accordance with university regulations, either the student or the major professor must take minutes at each committee meeting, and both the major professor and the student should retain a copy of the minutes in their files. It is recommended that each student remain in contact with all members of his/her committee throughout the doctoral program. In some cases, it may be advisable to convene a committee meeting during the second or third year to discuss research progress and future goals.

D. Program of Study

1. The program of courses is developed by the student and major professor in consultation with the guidance committee. Individual course programs vary greatly between students depending on each student's specific interests and prior education and experience. The course program should strengthen the student's overall understanding of crop and/or soil sciences and provide greater depth in the student's specific area of interest. The course program must be reviewed and approved by the student's guidance committee. Following committee approval, a Report of the Guidance Committee form must be submitted to the Department Chairperson or his/her designee, usually the Coordinator of Graduate Programs, and the Dean of the College for approval. This process must be completed prior to completion of two semesters. University regulations require that each Ph.D. student register for a minimum of 24 semester credits of Dissertation Research (CSS 999). In addition, it is strongly recommended that each Ph.D. student complete at least 24 semester credits of course work.

Please note MSU change in grading policy for “Deferred” grades: Except for CSS 899 and CSS 999, students who receive a DF (Deferred) grade in course must complete the required work and a grade must be reported within 6 months with the option of a single six-month extension. If the required work is not completed within the time limit, the DF will become U-Unfinished, and the student’s grade will be changed to DF/U under the numerical system. Again, this rule does not apply to graduate thesis or dissertation work.

2. A grade point average of 3.0 in the non-research courses is required before the student can be certified for graduation. Collateral courses used to meet minimum requirements for undertaking the planned graduate study are not included in this calculation.

3. Normally, only 400 level or higher level courses are accepted for graduate credit. However, the following Physical Chemistry courses may be taken for graduate credit: CEM 383 and 384.

The department has no language or language substitution requirements.

E. Teaching/Extension Requirement

1. The Department of Plant, Soil and Microbial Sciences requires all graduate students to participate in a meaningful teaching or extension experience and to exhibit proficiency in both writing and general presentation skills as a part of their graduate academic programs. The teaching/extension requirement is to be an experience that is beneficial and relevant to the education of each student. Obtain the form from the CSS Graduate Programs Office, A372 PSSB. A teaching or extension activity is part of the student's academic program and helps prepares her/him for the professoriate. Therefore, students are not appointed as TAs as referenced in the MSU-GEU contract (<http://www.geuatmsu.org/>).

a. All domestic AND, international students are required by the University to complete the Teaching Assistant Orientation. The orientation is offered prior to the start of the fall semester. Students should attend the orientation in the academic year they plan to serve as a TA.

b. Students must have prior approval of your major professor and the Coordinator of Graduate Programs before serving as a Teaching Assistant and/or Extension Assistant.

Teaching Activities

A minimum of three of these activities should be done to qualify as a meaningful teaching experience:

- Attend as many classes as possible, at the discretion of the professor.
- Develop and present at least one lecture/ demonstration-discussion before the entire class.
- Coordinate field and/or laboratory activities and possibly develop new exercises to be used a field or lab activities.

- Contribute to the grading and recording of students homework and exams.
- Contribute questions to be used on exams and homework.
- Hold office hours and/or help sessions.
- Time commitment: (assume 3 hours prep for each contact hour;
 Example: a student responsible for a 2 hour lab =
 2 contact hour
 6 prep hours
 3 hour lecture
 11 hours + misc. time
 (Misc. time to include grading, exam question prep, assisting student, etc.)

Extension Activities

A person to person requirement should be part of the experience. For example, the student should either present a session utilizing the teaching aid or publication developed or should interact with clientele in some other way. A list of suggested activities follows.

- Write an extension bulletin and get it published.
- Develop and teach an Extension Short Course for a specific audience
- Develop and coordinate a field day or a field tour for a specific audience.
- Develop an exhibit to be used at Extension activities (person to person interaction).
- Develop a PowerPoint presentation for use by Extension Agents, agri-science teachers, or other agency personnel (person to person interaction).
- Develop a video on a specific topic for a specific audience (person to person interaction.)
- Develop and initiate a field demonstration plot for use by Extension agents and others.

F. Completing the Teaching/Extension Experience

1. Prior to the semester in which the teaching and extension experience will be completed, all students (domestic and international) must fill out the top part of the **Graduate Teaching/Extension and Presentation Requirement** form, which constitutes a description of the proposed teaching and extension experience. The proposed teaching/extension experience must be approved in advance by the appropriate instructor/specialist, the student's major professor, and the Coordinator of Graduate Programs. The Graduate Teaching/Extension Presentation Requirement form can be obtained from the Graduate Programs Office and must be completed prior to the experience.

2. In circumstances where the guidance committee judges that a student has had adequate teaching/extension experience, the major professor may petition for waiver of this requirement. The petition must be submitted in writing to the Graduate Programs Committee at least two semesters before the candidate plans to graduate.

G. Writing and General Presentation Skill Requirement

The Department of Crop & Soil Sciences requires that both MS and PhD students exhibit proficiency in writing and general presentation skills. The faculty recognizes that these skills can be acquired through a variety of means ranging from formal coursework to on the job experience. The Writing and General Presentation Skill Requirement form provides the guidance committee flexibility in identifying the course work that a given student should complete to satisfy the General Writing And Presentation Skills Requirement. The form must be completed choosing either Current Course Option or the Other Experience Option. If other experience is chosen, the guidance committee chair must sign the bottom portion of the form when the requirement is completed. If the current course option is chosen, that course must appear on the program of study. Current Course Options are listed below.

CSS 880	Scientific Communication and Professional Development (one credit)
NSC 840	Writing in the Sciences (two credits)
ENT 812	Graduate Seminar – Scientific Writing (one credit)

H. Seminar Requirement

Each doctoral student is required to present at least **two** seminars as part of the requirements for graduation. Each student is required to present an oral seminar on his/her dissertation research as part of the final oral examination. **A notice of this seminar should be posted at least one week in advance.** Each student is also required to present at least one additional seminar. The first seminar may be either an oral or poster format and may be presented at a professional meeting. **Students must complete and submit a Seminar Requirement form for the first seminar.** It can be obtained from the Graduate Programs Office. Record of the exit seminar is placed on the Dissertation form.

I. Annual Evaluation and Student Records

An evaluation of each student's progress will be conducted prior to Spring semester. It is the responsibility of the student to complete an evaluation form and review it with his/her major advisor. The student is evaluated on both the completion of program requirements and the progress made on assistantship and research responsibilities. An evaluation form will be distributed to students one month prior to Spring semesters. The form must be completed, signed by the major advisor, and returned to the CSS Graduate Office by the date indicated. If the major professor is not available to review the student's evaluation, the major advisor must appoint a substitute in advance. Each year prior to Fall semester you will be provided an academic update to keep you updated on your academic progress.

All evaluation forms will be reviewed by the Coordinator of Graduate Programs or by the GPC Chairperson if the Coordinator is unavailable. Students will be notified in writing if they are not making normal academic progress. Evaluation forms, programs of study forms, application and admission materials, degree requirement completion forms, lists of honors and recognition, and other relevant student records, will be filed in the student's permanent file in the CSS Graduate

Programs Office and a student may access her/his individual records by submitting a written request to the Graduate Programs secretary. Students have the right to challenge the accuracy of their files by writing a letter that is placed in the file.

J. Proposal Requirement

Each doctoral student is required to complete a written research proposal. The purpose of the proposal requirement is to provide students with experience in writing research proposals and to ensure communication on the research project between the student and guidance committee. The proposal must be approved by the guidance committee within two years of admission into the doctoral program. The Research Proposal Requirement form can be obtained from the CSS Graduate Programs Office. Dissertation research must be original research which will contribute to the body of knowledge of the student's disciplinary topic. Copies of recent theses are available in the CSS Reading Room, 260 PSS Building.

K. Comprehensive Examinations

1. Introduction: Comprehensive examinations are designed to test the student's competence as a professional crop and/or soil scientist. In the comprehensive examination, the student is expected to demonstrate more than an ability to recall principles, theories, facts, and hypotheses that have been learned in formal course work. He/she is expected to demonstrate an ability to integrate knowledge and information in solving problems. In evaluating a student's performance, emphasis is placed upon the student's ability to recognize problems and to propose and defend solutions.

2. Examination Format: The comprehensive exam is made up of two components, the written and the oral exam. Students must pass both components to pass the comprehensive exam. The written component must be passed before the oral exam is taken. Students have two attempts to pass each component of the comprehensive exam.

3. Guidelines for the Comprehensive Exam:

a. The comprehensive exam is a pass/fail examination required of all Ph.D. students and should be taken after 80% of required course work is completed. Students must be registered the semester in which they take the comprehensive exam, and they must pass the comprehensive exam within five years of enrollment as a doctoral student.

b. The written component of the comprehensive exam must be passed before the oral component is taken. A student has two attempts to pass each component of the exam. A student who fails either the written or oral component of the comprehensive exam twice will be terminated from the Ph.D. program. He/she may request reclassification as a master's candidate.

c. To "pass" the written component the student may receive a "fail" grade from not more than one committee member.

d. To "pass" the oral component the student may receive a "fail" grade from not more than one committee member.

e. A student must wait until the following semester before retaking either the written or oral component of the comprehensive exam.

4. Administration of the Comprehensive Exam:

a. The guidance committee chairperson is responsible for maintaining the record of the comprehensive exam. He/she should obtain the University Record of Comprehensive Examination form from the CSS Graduate Programs Office prior to exam initiation. This form lists the participating guidance committee members and their subject matter.

b. The written component is comprised of individual tests administered by the student's committee. Students should be informed of the subject areas well in advance of the written exam. Subjects are chosen by the committee and based on the student's area of emphasis. One of the tests must be in either crop science or soil science. Each written test should be designed to be completed in 4 to 6 hours. The decision as to whether reference materials or electronic devices are used is a committee or committee member's decision. All written tests should be administered within a 2 week period.

c. Each committee member must date, sign, and mark pass or fail for the written component of the comprehensive exam on the University Record of Comprehensive Exam form as soon as possible after the completion of the written exam. The chairperson of the guidance committee will then communicate to the student and to the committee whether the student has passed the written exam and can schedule the oral examination.

d. A copy of each written exam must be given to the Graduate Programs Office for long term storage with the student's records and kept on file for three years (University policy).

e. The oral component of the comprehensive exam should be scheduled as soon as possible after successful completion of the written component of the comprehensive exam.

f. All members of the committee must participate in the oral exam or have a representative of their subject area serve for them. Students should be informed of the subject areas well in advance. Oral exams should not exceed four hours.

g. The chairperson of the guidance committee should bring the University Record of Comprehensive Examinations to the oral examination. Following completion of the oral exam the student should be excused from the room while the committee discusses the exam. Each committee member then signs and dates the form and indicates a grade of pass or fail. A pass may be conditional by requiring further work such as additional course work, a written paper, or a similar

assignment at the discretion of the examining committee.

h. A student passes the oral component of the comprehensive exam if all committee members or all but one committee member give a passing grade.

i. The student is informed of the results of the oral component of the comprehensive exam immediately and the form is then returned to the CSS Graduate Programs Office for approval by the Department Chairperson or his/her designee, usually the Coordinator of Graduate Programs, and the Dean of the College.

j. For students who were enrolled in the Spring and are taking their comprehensive exams during the immediate Summer semester, the department can request a waiver of the requirement that the student be enrolled for at least one credit the semester of the comprehensive exam. These requests are to be directed to the Graduate School and must be endorsed by the student's department and college. **All students defending their thesis or dissertations in the Summer need to be registered for at least one credit during that Summer, regardless of their being enrolled in the preceding Spring semester.**

L. Doctoral Degree Evaluation

1. Oral Examination: Upon completion of the dissertation, a final oral examination in defense of the dissertation is held. The final examination consists of two parts: 1) Oral seminar presented by the student on his/her research. The seminar is open to anyone interested in attending. A notice of the seminar and examination should be posted at least one week in advance. 2) Final oral examination conducted by the guidance committee, chaired by the major professor. All members of the guidance committee and all Plant, Soil and Microbial Sciences faculty will be invited to attend and participate in the final oral examination. Each guidance committee member should have a copy of the dissertation at least one week prior to the examination.

2. Evaluation: On the basis of the dissertation and the student's defense, the guidance committee either approves or rejects the dissertation. Approval may be conditional, requiring additional work. While a unanimous report is usual, a three-fourth majority vote of attending members of the guidance committee is sufficient to approve the dissertation and pass the student. Following the defense, each member of the guidance committee will sign the Dissertation and Oral Examination form which must be forwarded to the Coordinator of Graduate Programs, the Department Chairperson, and then to the Dean of the College.

3. Distribution of dissertation: Each student is required to electronically submit the dissertation to the Office of the Graduate School for approval and provide a bound copy to the major professor and committee, if required.

M. Application to Graduate

During the semester in which you plan to graduate, you need to obtain an Application to Graduate form from the Graduate Programs Office and submit it to the Office of the Registrar, 150 Administration Building. Be sure to check deadlines in the schedule of courses catalog. You also need to pick up a packet of forms from the Graduate School, 118 Linton Hall. In addition you should register with Career Services and Placement, 113 Student Services Building, by completing a credential form online, or by calling (517) 355-9510, ext. 162.

During the semester in which you plan to graduate you will need to obtain an Application to Graduate form. It is can be found at the following web site: <http://www.reg.msu.edu/StuForms/GradApp/GradApp.asp>. Information on Commencement and Ceremonial events can be found at: <http://www.reg.msu.edu/sitemap.asp?Group=6>. Thesis and Dissertation information can be found online at: <http://grad.msu.edu/etd/>. In addition should register with Career Services Network, by completing a credential file with Interfolio at the following web site: <http://careernetwork.msu.edu/>.

O. Doctoral Degree Requirements and Due Dates

<u>Requirements</u>	<u>Due Date</u>
Selection of Guidance Committee	Prior to completion of second semester
Report of Guidance Committee - Doctoral and Other Programs (Form Required)	Prior to completion of second semester.
SPEAK/INTERVIEW test – International Students (Form Required)	Prior to teaching/extension experience. (Check schedule with the English Testing Office). Must pass before the end of the first year of academic program in CSS.
TA Seminar on College Teaching (Registration Required)	Attend just prior to fall semester of the year you will TA.
Teaching/Extension Requirement (Form Required)	Must have prior approval the semester before the teaching/extension experience.
General Presentation Skills (Form Required)	The semester after the requirement is completed.
Seminar Requirement (Form Required)	After completion of first semester.
Proposal Requirement (Form Required)	Must be approved by the Guidance Committee within <u>two</u> years of admission to the doctoral program.
Comprehensive Examination (Form Required)	Can be taken when 80% or more of course program is completed.
Application to Graduate (Form Required)	See the University Calendar: http://www.reg.msu.edu/ROInfo/Calendar/Academic.asp
Final Dissertation Defense (Form Required)	See the University Calendar: http://www.reg.msu.edu/ROInfo/Calendar/Academic.asp
Final draft of Dissertation to the Graduate School	See the University Calendar: http://www.reg.msu.edu/ROInfo/Calendar/Academic.asp

VI. MENTORING OF GRADUATE STUDENTS

The graduate programs in the Department of Plant, Soil and Microbial Sciences are monitored by the Graduate Programs Committee. The Committee consists of four Department Faculty (one of whom serves as the Chair), an ex-officio Graduate Programs Coordinator, and two graduate student representatives. In addition to admission decisions, this committee implements policies established by the CSS Faculty, including oversight of academic progress of students and the appropriate mentoring of students by faculty. Toward that end, students and faculty have shared roles as outlined below.

A. Responsibilities of the Major Professor include:

Advising the student on planning the program of study, including selection of academic courses;

Ensuring that the student receives and understands information about requirements and policies of the graduate program

Advising the student on selection of a thesis or dissertation topic with realistic prospects for completion within an appropriate time frame;

Conducting written annual evaluations on the student's progress, and

Completing and approving the final certification for the degree.

B. Responsibilities of the Student's Guidance Committee include:

To review and approve a student's Program of Study, and to see that the student completes all requirements for the degree;

To meet with the student and review his/her proposed thesis/dissertation research or Plan B research problem;

To approve the student's thesis or dissertation; and

To administer the required qualifying and final examinations.

C. Responsibilities of the Graduate Student include:

Learning and adhering to University and academic unit procedures and policies, including those related to use of equipment, space, telephones, office equipment and other policies stated in the STAFF & BUILDING RESOURCES document provided to all new graduate students at the department orientation; Meeting University and Departmental requirements for degree completion; Forming a guidance committee, in consultation with the student's major professor,

that meets University, College and Department requirements and policies;

Following disciplinary and scholarly codes of ethics in coursework, thesis or dissertation research;

Practicing uncompromising honesty and integrity according to University and federal guidelines in collecting and maintaining data;

Seeking regulatory approval for research where appropriate, and

Keeping the major professor and guidance committee apprised on a regular basis of the progress toward completion of the thesis or dissertation.

VII. STUDENT CONDUCT AND CONFLICT RESOLUTION

The document entitled "Graduate Student Rights and Responsibilities, Michigan State University" is available on line at <http://splife.studentlife.msu.edu/rights-and-responsibilities> and in the Graduate Secretary's office, Room A372 PSS Building. Students are expected to be familiar with its content, including those sections dealing with grievances brought by and against graduate students. Graduate students are encouraged to settle disputes informally. If informal procedures do not settle a grievance, a party or parties may file a formal grievance with the Department Judiciary following procedures set forth in the CSS Bylaws, Appendix B: Grievance Procedures for the Department of Plant, Soil and Microbial Sciences. A copy of the CSS Bylaws is available in the CSS Department office.

VIII. INTEGRITY AND SAFETY IN RESEARCH AND CREATIVE ACTIVITIES

A. Integrity and Misconduct

The conduct of research and creative activities by faculty, staff, and students is central to the mission of Michigan State University and is an institutional priority. Integrity in research and creative activities is based not only on sound disciplinary practice but also on a commitment to basic personal values such as fairness, equity, honesty, and respect. The foundation underlying all research is uncompromising honesty in presenting one's own ideas in research proposals, in performing one's research, and in reporting one's data. Misconduct in research, such as falsification and plagiarism, is grounds for termination.

The Research Integrity Office is an additional source of information:

<http://www.rio.msu.edu>

The Graduate School research and scholarly integrity webpage is:

<http://grad.msu.edu/researchintegrity/>. **All students are especially encouraged to attend Workshop 5 of the series -- *Misconduct in Research & Creative Activities* -- January 18, 2012.**

B. Safety Issues

Graduate students in CSS perform research in a variety of settings, including laboratories, greenhouses and field research facilities. Because students may be exposed to hazardous materials while conducting research or participating in course work, it is imperative that students participate in the mandatory safety training session offered the CSS Department each semester. Additional information on safety is available at the website of the Office of Radiation, Chemical and Biological Safety at <http://www.orcbs.msu.edu/>. Appropriate authorization forms may be required. If students have questions, they should consult the CSS Safety Officer, Dr. Don Penner.

C. Research Involving Humans or Animals

Federal and University regulations require that all research projects involving human subjects and materials of human origin be reviewed and approved by an Institutional Review Board (IRB) before initiation. A human subject of research is an individual from whom an investigator obtains data by interaction or intervention or about whom the researcher obtains confidential information.

For more information, please see the University Committee on Research Involving Human Subjects (*UCRIHS*) web site at: <http://www.humanresearch.msu.edu/>

If your research involves animals, please consult the Animal Use and Care web site at: <http://www.animalresearch.msu.edu/>

IX. GRADUATE ASSISTANTSHIPS

Graduate assistantships are awarded to students based on availability and are usually from research funds generated by the major professor. Assistantships levels, timelines of employment and stipends conform to University guidelines. The amount and timing of vacation are at the discretion of the major professor. Assistantships may be terminated if the student is not making acceptable academic progress toward the degree and/or if the cumulative GPA falls below a 3.0, or in cases of insufficient funds.

Receipt of externally funded fellowships by students who have written their own grant applications and worth at least \$20,000 (direct costs) now makes the students eligible for in-state tuition rate. The in-state tuition rate applies only to the semesters during which the student is supported by the fellowship. This policy applies only to grants funded through a competitive process by a US institution/agency/foundation. Funds obtained through non-competitive processes (e.g., need-based fellowships) or from international sources do not qualify the students for in-state tuition rates. For more information contact Melissa Del Rio (mdelrio@msu.edu) in 110 Linton Hall.

X. UNIVERSITY RESOURCES

A. Graduate Student Rights and Responsibilities

This document is published in Spartan Life, and can also be accessed via Michigan State University's Web page at <http://splife.studentlife.msu.edu/> It contains University policies concerning graduate education.

B. Preparation of Master's Theses and Doctoral Dissertations

This describes the final procedures for degree completion and manuscript requirements for the thesis or dissertation. It is available from The Graduate School, 118 Linton Hall, or on line at <http://grad.msu.edu/etd/>.

C. Office for International Students and Scholars (OISS)

The Office for International Students and Scholars (OISS, <http://oiss.isp.msu.edu/>) serves international faculty and students. OISS is a resource center for information and consultation on matters related to the international student and faculty/scholars. The OISS is located in room 103 in the International Center.

D. Olin Health Center Phone: 353-4510

The Student Health Service (<http://olin.msu.edu/>) is located in Olin Health Center. In the event of an emergency, go directly to Sparrow Hospital, St. Lawrence or Ingham Regional Medical Center if possible. Otherwise, go to the nearest emergency center

E. Ombudsman

The Ombudsman is an advocate for students who will help resolve conflicts students may experience. The ombudsman's office is 129 N. Kedzie, and the e-mail address is ombud@msu.edu.

F. The Graduate School

The Graduate School website is <http://grad.msu.edu>. This site contains a wealth of information and guidelines relevant to graduate students and graduate programs.

G. Graduate Education Union

Information about, and the handbook for, the GEU can be found at the following web site: <http://www.geuatmsu.org/>.

H. International Travel

1. Students traveling abroad should visit the “Travel Smart” website (<http://grad.msu.edu/travel/>) before their trip.
2. Check the International Studies and Programs website for issues related to safety around the world <http://www.isp.msu.edu/travel/>
3. Apply for assistance with travel funding via the Graduate School. If the Graduate School provides funding, they will also provide a MEDEX emergency card.