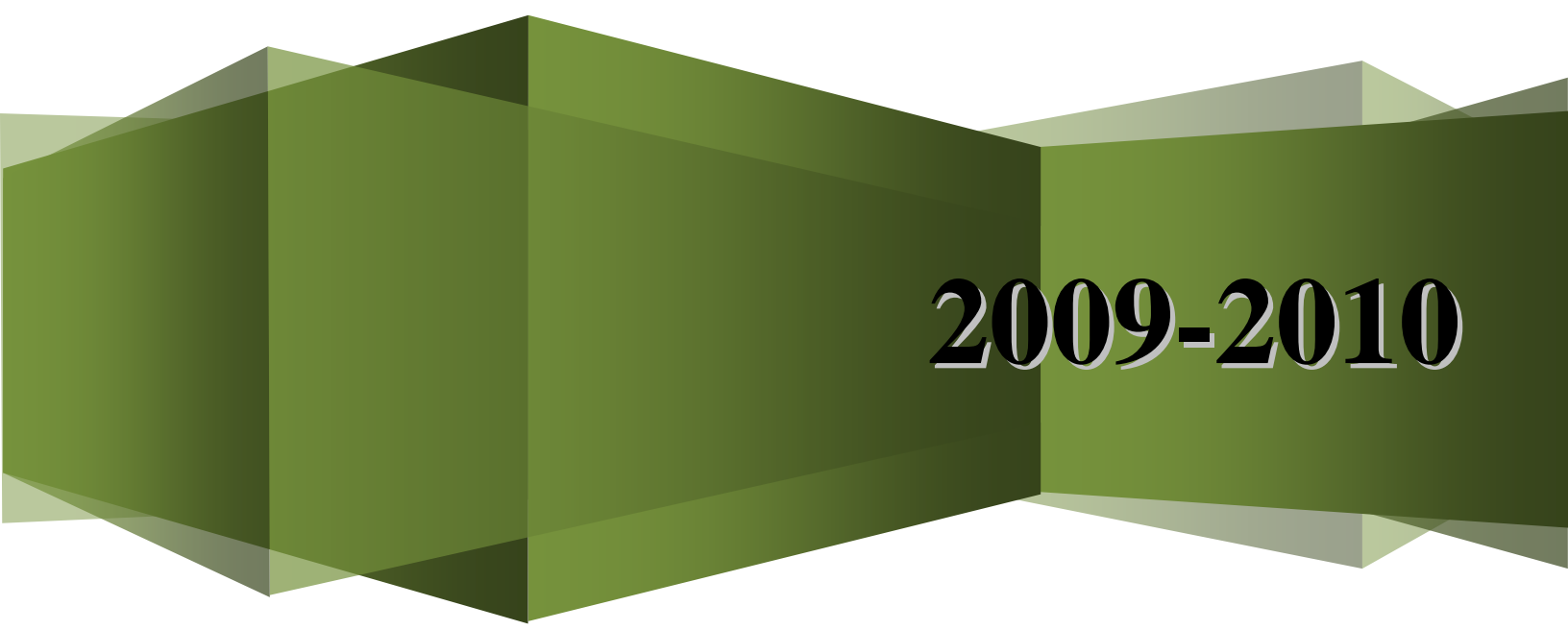


Michigan State University  
**Graduate Handbook**  
Department of Plant Biology



**2009-2010**

## Table of Contents

<b>I.</b>	<b>PROGRAM OVERVIEW</b>	
	A. PROGRAM GOALS .....	1
	B. HOW TO APPLY .....	2
<b>II.</b>	<b>PROGRAM COMPONENTS/PLAN OPTIONS</b> .....	6
	A. MASTER’S OF SCIENCE (M.S.) DEGREE .....	6
	B. DOCTOR OF PHILOSOPHY (Ph.D.) DEGREE .....	6
<b>III.</b>	<b>DEGREE REQUIREMENTS</b> .....	7
	A. ADMISSIONS .....	7
	B. READMISSION .....	8
	C. BACKGROUND COURSES IN PLANT BIOLOGY .....	8
	D. REGISTRATION PROTOCOL .....	8
	E. TEACHING REQUIREMENTS .....	8
	F. OPTIONAL ROTATIONS .....	9
	G. DETAILED DEGREE REQUIREMENTS – M.S. ....	9
	H. CHECKLIST AND RECOMMENDED TIMETABLE FOR MASTER DEGREE. ....	14
	I. DETAILED DEGREE REQUIREMENTS – PH.D .....	16
	J. CHECKLIST AND RECOMMENDED TIMETABLE FOR DOCTOR OF PHILOSOPHY DEGREE.....	22
<b>IV.</b>	<b>SELECTION OF THESIS/DISSERTATION ADVISOR</b> .....	25
<b>V.</b>	<b>FORMATION OF THE GUIDANCE COMMITTEE</b> .....	27
<b>VI.</b>	<b>THESIS/DISSERTATION DEFENSE AND FINAL ORAL EXAMINATION</b>	
	A. ROLE OF THE DEPARTMENTAL REPRESENTATIVE .....	29
	B. PREPARATION FOR ORAL EXAM .....	29
	C. FINAL EXAMINATION FOR MASTER’S DEGREE.....	30
	D. FINAL EXAMINATION FOR DISSERTATION.....	31
<b>VII.</b>	<b>DEPARTMENTAL POLICIES: ACADEMIC PERFORMANCE</b> .....	32
<b>VIII.</b>	<b>DEPARTMENTAL POLICIES: INTEGRITY AND SAFETY IN RESEARCH AND CREATIVE ACTIVITIES</b> ..	34
<b>IX.</b>	<b>STUDENT CONDUCT AND CONFLICT RESOLUTION</b> ...	35
<b>X.</b>	<b>WORK RELATED POLICIES</b> .....	37
	A. GRADUATE ASSISTANTSHIPS .....	37
	B. GRADUATE ASSISTANT ILLNESS/INJURY/PREGNANCY LEAVE POLICY .....	40
	C. OUTSIDE WORK FOR PAY .....	40
	D. LANGUAGE REQUIREMENTS FOR INTERNATIONAL TAs .....	41
	E. DEPARTMENTAL RESOURCES .....	41
<b>XI.</b>	<b>UNIVERSITY RESOURCES</b> .....	44

This handbook is designed to assist graduate students in the Department of Plant Biology in understanding the guidelines for degree completion and to provide students with information to familiarize them with our graduate program. Entering students are given 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 Plant Biology Department may not apply to you. Also, please note that all requirements of the Graduate School or the College of Natural Sciences also apply to you, even if not specified in this manual, though we have attempted to include this information.

## **I. PROGRAM OVERVIEW**

### **A. PROGRAM GOALS**

The Graduate Program in Plant Biology at Michigan State University is one of the finest in the country for research, training, and scholarship in the plant sciences. Plant Biology is central to many disciplines that make up modern plant science at Michigan State University. Students in this program can study all aspects of plant biology, from the molecule to the ecosystem, and they are trained to integrate information between different hierarchies of biological organization. In addition to a core of seminar requirements, the student's program is individually tailored depending on their interests and background. The Department of Plant Biology offers both an M.S. and a Ph.D. degree, and it is possible for students to get dual degrees or certifications by fulfilling requirements in various other programs offered by the University.

Our graduate students are supported by many national and international fellowship programs, by university, college, and departmental level fellowships, teaching and research assistantships, and by grants to individual faculty members. We urge applicants to review carefully the research interests of the faculty, as summarized in our departmental webpage <http://www.plantbiology.msu.edu/> and to contact those faculty members with whom they might like to work, well in advance of the application deadline (December 15<sup>th</sup>), to inquire about possible sponsorship for the following fall semester.

Our graduates are very competitive in the job market, as some go directly for employment in industry, government, small colleges or nature organizations and others go on for additional post-doctoral training, often leading to faculty positions at research universities or directing research in industry or government. Fitting the needs of employers, our students are trained (1) to do independent research and to master their subject areas, (2) to effectively communicate, orally and in writing, in the language of science, (3) to be able to work in a cooperative, professional manner with culturally diverse individuals, both as committee members and as members of research groups and teams, and (4) to have an appreciation of science ethics. In keeping with these goals, students are expected to complete 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 departmental Plant Biology seminar series, 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 more about their

field of study, and to make professional contacts as a part of the networking process essential to future success. Some essential web pages that graduate students should consult are as follows:

- Plant Biology Homepage <http://www.plantbiology.msu.edu/>
- Academic Programs <http://www.reg.msu.edu/ucc/ucc.asp>
- Student Information and Services, Rights and Responsibilities, and Regulations  
<http://www.vps.msu.edu/SpLife/default.pdf>
- MSU/GEU Contract <http://grad.msu.edu/geu/agree.pdf>
- Guidelines for Graduate Student Advising and Mentoring Relationships  
<http://grad.msu.edu/all/ris04relations.pdf>
- Guidelines for Integrity in Research and Creative Activities  
<http://grad.msu.edu/all/ris04activities.pdf>

## B. HOW TO APPLY

Admission to the Department of Plant Biology is based on your credentials, faculty interest, and funding opportunities. To be fully competitive, you should have contacted faculty with whom you are interested with working prior to application. Be sure to include the name(s) of faculty with whom you are interested in working in your Academic Statement (see below).

Your application should include the following:

1. MSU <i>Application for Admission to Graduate Study</i>
2. Academic Statement
3. Personal Statement
4. Three letters of recommendation
5. Transcripts
6. Graduate Record Examination (GRE) Scores.
7. TOEFL scores (International students only)
8. Application fee

**Deadlines:** Submission of application materials on time is an important requirement for full consideration. To be sure that you will be considered for teaching and research assistantships and for a variety of possible university, college and departmental fellowships, you must have all materials in our hands by **December 15<sup>th</sup>**, for possible entry into the graduate program the following Fall Semester. Late applications may be considered as long as positions are available.

### 1. MSU *Application for Admission to Graduate Study*

Instructions for applying can be found at <http://www.msu.edu/user/gradschl/apply.htm>

**Apply Online:** Follow the appropriate link to go to an interactive form that will allow you to send all of your information directly to MSU over the internet. All

information is secured with SSL encryption. When a completed application form is received by the University, it will be sent automatically to the Department of Plant Biology if you list the correct major code (see below).

**Apply by Mail:** You can print a PDF version of the application found online. Instructions for completing the form are provided in the PDF. Be sure that each page prints full size. Mail the completed form and the remainder of your application materials to:

Department of Plant Biology  
166 Plant Biology Laboratories  
Michigan State University  
East Lansing, MI 48824-1312

**Major Code:** Question # 17 on the University Application form asks you to specify a “major code” and “major name.” The major code for a **Plant Biology Ph.D.** is 7019. The major code for a **Plant Biology M.S.** is 7018.

## **2. Academic Statement**

Provide a moderately detailed explanation of your plans for graduate study, your future professional goals, and how the graduate program in the Department of Plant Biology will help you meet your career and educational objectives. Be sure to indicate your area(s) of research interest and include mention of any research experience you have had prior to applying to graduate school at MSU. Please indicate specific faculty who you may wish to work with in the Department of Plant Biology.

## **3. Personal Statement**

Provide a personal statement about how your background and life experiences, including social, economic, cultural, familial, educational, or other opportunities or challenges motivated your decision to pursue a graduate degree. This information is especially helpful when considering applicants that may be eligible for fellowships.

## **4. Letters of Recommendation**

Request three letters of recommendation, from individuals qualified to assess your promise of success in a graduate program, and have these letters sent directly to:

Department of Plant Biology  
Graduate Admissions Committee  
166 Plant Biology Labs  
Michigan State University  
East Lansing, MI 48824-1312

## **5. Transcripts**

Arrange to have official transcripts sent to the above address. Most successful applicants have a GPA of 3.3 or higher with not less than a 3.0 in science and math

courses. Consideration may be given to students who have a GPA less than 3.0 if an alternative proof of potential academic excellence, such as outstanding letters of reference, exceptional performance on the GREs, extensive research experience, etc., is provided to the admissions committee.

## **6. Graduate Record Examination (GRE) Scores**

Have an official report of your GRE scores sent directly from the Educational Testing Service. The Institution Code for MSU is 1465 and the Departmental Code for Plant Biology is 0205. Since there is often a delay before such reports are received by the University, it may be helpful to send or fax a copy of your score report to the departmental address above to be sure that we receive your GRE scores before the **December 15<sup>th</sup>** deadline.

The three standard sections of the GRE, verbal, quantitative and analytical, are required for admission. Most successful applicants have a minimum verbal score of 550 and a minimum quantitative score of 600 on the GRE. The subject area exam (usually in biology but some applicants take it in some other field of science) is not required by our department, but, for some students, it can provide important additional support for the application.

## **7. TOEFL scores (International applicants only)**

Official scores should be sent to the university by the testing service, but you may also send or fax us a copy with your application, to be sure we receive all materials before **December 15<sup>th</sup>**. The Institution code for MSU is 1465, and the Plant Biology program code is 0205. The newest version of the TOEFL exam will include a speaking test and will be on a different scale than the previous TOEFL. Although we prefer the new version of the exam, we will accept scores from the older version. The university minimum requirements are:

Internet-Based : 80 (no subscore less than 19, writing 22)

Computer-Based : 213 (no subscore less than 19)

Paper-Based: 550 (no subscore less than 52)

## **8. Application fee**

Your application fee should accompany your application for admission to the Department of Plant Biology. The application fee was \$50 for the 2007-2008 academic year. Please make your check or money order payable to Michigan State University. Alternately, the online application allows for credit card payment of this fee. The application fee can be waived in special circumstances if a qualified applicant credibly shows s/he is not able to pay the fee but is seriously interested in the program.

The address to which all materials should be sent is:

Department of Plant Biology  
Graduate Admissions Committee  
166 Plant Biology Labs

Michigan State University  
East Lansing, MI 48824-1312

For questions about the above application procedure, contact:

Ms. Kasey Baldwin  
Graduate Secretary  
Phone 517-432-4429  
FAX 517-353-1926  
Email [kbaldwin@plantbiology.msu.edu](mailto:kbaldwin@plantbiology.msu.edu)

For questions about the suitability of our graduate program for your goals and aspirations, contact:

Dr. Alan Prather  
Director of Graduate Studies  
Phone 517-355-4695  
FAX 517-353-1926  
Email [alan@msu.edu](mailto:alan@msu.edu)

## **II. PROGRAM COMPONENTS/PLAN OPTIONS**

### **A. MASTER'S OF SCIENCE (M.S.) DEGREE**

Two Types of Master's Programs are available:

Plan A: (Thesis option) Consisting of prescribed course work, seminar requirements, research, Thesis, a teaching requirement and a final oral examination in defense of the Thesis. More detailed guidelines and descriptions of the requirements are given in Section III.G of this manual. The student's Thesis is defended at the final oral examination. Details regarding the Final Examination are in Section VI. of this manual.

Plan B: (Non-thesis option) Consisting of prescribed coursework, seminar requirements, an optional research project without Thesis, a teaching requirement and a final certifying examination based on coursework. More detailed guidelines and descriptions of the requirements are given in Section III.G. The Final Examination will be oral and based upon coursework, as detailed in Section VI.C.

### **B. DOCTOR OF PHILOSOPHY (Ph.D.) DEGREE**

The program of study consists of courses, seminar requirements, a teaching requirement, research, a Dissertation, and exams administered by the Guidance Committee and a dissertation topic as agreed to by the Guidance Committee. The coursework will consist of courses required by the department plus courses dictated by the student's guidance committee and recorded on the student's *Report of the Guidance Committee* – Doctoral Program. Further details are given in Section III.I of this manual. A Comprehensive Exam and a Final Examination in defense of the dissertation are required. For details of these exams see Section III.I and VI.

### **III. DEGREE REQUIREMENTS**

#### **A. ADMISSIONS**

The review of admission applications begins as soon as the necessary transcripts, application forms, GRE scores, and letters of recommendation are available. These materials are available for any faculty member in the department and the graduate student representative on the Graduate Committee to review. These records and any other supplementary information that may be required are available to the entire Graduate Committee when they are making admittance decisions.

**REGULAR ADMISSION FOR M.S. DEGREE.** The minimum requirements are a Bachelor's degree or its equivalent, a 3.0 grade point average, one year of chemistry, mathematics, physics, and appropriate training in the biological sciences. Admission by the Department's Graduate Committee will be based on a combination of a student's credentials, faculty interest in a student, and funding opportunities.

**REGULAR ADMISSION FOR PH.D. DEGREE.** The minimum requirements are a Bachelor's degree or its equivalent, a 3.0 grade point average, appropriate training in the biological sciences, and one year each of chemistry, mathematics, and physics. Research experience at the undergraduate or graduate level is encouraged. Admission by the Department's Graduate Committee will be based on a combination of a student's credentials, faculty interest in a student, and funding opportunities.

**CONVERSION TO PH.D. PROGRAM.** Students admitted to the Master's program may, following formal approval by their Guidance Committee, transfer directly to the Ph.D. program, without completion of their Master's degree. Details for this procedure are given in Section III.G.7 of this manual.

**PROVISIONAL ADMISSION.** Students that have deficiencies in their application materials but that have other exceptional qualities suggesting potential for a successful graduate career may be admitted to the graduate program upon recommendation of the Graduate Committee to the Department Chair. Such students will not be considered for a degree until she or he has fulfilled the provisions of her or his admission as spelled out in their letter of admission from the department chair.

**ADMITTANCE DECISION.** A recommendation for admittance is made by the Graduate Committee to the Departmental Chairperson. The Chairperson makes all final decisions regarding admission.

## **B. READMISSION**

If the student's program of study is interrupted for three or more semesters, including summer semester, the student must apply for readmission. A readmission form is available from the departmental office.

## **C. BACKGROUND COURSES IN PLANT BIOLOGY**

As part of their review of applications, the Graduate Committee can identify any courses that the student should take in their first year to remedy deficits in the student's prior coursework. The committee may require the student to take up to two undergraduate or graduate classes (one per semester during the first year), in order to ensure that the student is equipped to undertake graduate training in Plant Biology. These course requirements will be stipulated as part of the offer of admission to the graduate program. As part of this, the committee will ensure that all incoming graduate students have or will take the equivalent of at least one undergraduate class in the areas of ecology/evolution/systematics and physiology/biochemistry/molecular biology.

## **D. REGISTRATION PROTOCOL**

Before registering for classes the student should always confirm their plans with their Temporary Advisor or Major Professor. This is especially important at the beginning of an academic program, before the student's guidance committee has been formed. Failure to meet with the Temporary Advisor/Major Professor, or failure to follow the program of study, prescribed by the guidance committee, may cause a delay in completing the program. Also, the Major Professor may have plans for research that could affect the student's plans for courses.

## **E. TEACHING REQUIREMENTS**

All requirements must be accomplished in compliance with the current MSU/GEU contract: <http://grad.msu.edu/geu/agree.pdf>

The communication skills associated with teaching are essential regardless of whether the student will go on to work in academia, the public sector or the private sector. Teaching experience, therefore, is among the academic requirements for the degree. This requirement is accomplished by completing (1) participating in the University TA orientation program to learn about pedagogy in general and the teaching system at Michigan State in particular, and (2) assisting a faculty member in the teaching of one course. The purpose of assisting a faculty member with the course is to improve the graduate student's skills in pedagogy. This may include giving classroom presentations, preparing of teaching materials for student learning, and developing skills with teaching technology. The graduate student must be guided and evaluated by the faculty member during this process, and, following completion of the course, the faculty member must complete the form "Faculty Evaluation of Teaching by a Graduate

Student", which will be kept in the student's academic file. The form is intended to document that the teaching requirement has been fulfilled, as well as to inform the student of things they did well and/or areas where they need to improve for future success.

## **F. OPTIONAL ROTATIONS**

During the first academic year students have the option of completing 8-week laboratory rotations. Up to three rotations are to be completed within their first academic year. After the last rotation, the student should meet with the professor in whose lab they prefer to pursue their thesis or dissertation research and determine if they can mutually agree to establish a relationship as Major Professor and advisee.

### The policy governing rotations:

1. Rotations are optional for most students but required for students admitted to the Plant Research Laboratory (PRL). Rotations can be requested by the incoming student or the student's Major Professor or temporary advisor and must be agreed to by the sponsoring faculty.
2. If the student opts for a rotation he/she indicates this to the Graduate Director.
3. If students choose to rotate they can choose a maximum of up to three rotations during their first academic year. The student should keep their temporary advisor informed of their rotational laboratory. In exceptional instances, a fourth rotation during the summer following the first academic year will be allowed. The fourth rotation must be approved by the Graduate Director (or PRL Graduate Committee Chair if the student is a PRL student) in consultation with the temporary advisor.
4. Students must choose a lab (by mutual consent of the professor) after the fourth rotation or leave the graduate program.
5. Any student in the department can rotate with any PRL faculty (up to two rotations). PRL students can rotate with PLB faculty (up to two rotations).
6. Rotations should only be through laboratories that have reasonable expectations of having space and resources to support the student's graduate work.
7. If a PLB student decides to work in a PRL laboratory or a PRL student chooses a PLB laboratory in which to pursue his/her graduate studies the appropriate funding change will take immediate effect.

## **G. DETAILED DEGREE REQUIREMENTS-MASTER'S OF SCIENCE**

The student must take any courses (up to two) that the Graduate Admissions Committee may require to insure they have an adequate background in Plant Biology. See details in Section III.C. The student will be notified of these specific requirements prior to the beginning of classes in their first fall semester in the graduate program.

## 1. Credit requirements

The M.S. degree obtained under either Plan A (with a thesis) or Plan B (without a thesis) has a minimum requirement of 30 credit hours beyond the Bachelor's Degree, including thesis or research credits. Undergraduate 300-level courses are applicable only if required by the Guidance Committee and approved by the Dean and the Graduate School. The courses which will be counted toward the required 30 credits will be decided upon by the student and Guidance Committee, with approval from the Departmental Chairperson, Dean, and the Graduate School. Required courses not applying to the degree will be designated as collateral. The program of study must be recorded on the *Report of the Guidance Committee – Masters Program* within one semester of the formation of the Guidance Committee. The forms for this report are available in the departmental office. Changes in the program must be reported by letter and filed with a copy of the original report. The *Report of the Guidance Committee – Masters Program* becomes the student's official program when it is approved and signed by the Department Chair and the Dean. If a student drops back to an MS program from the Ph.D., he/she can request that the 999 credits be changed to 899.

**Plan A:** Students must have a minimum of 16 credits of 800-900 level courses, including up to 10 Master's Thesis Research credits (PLB 899). A minimum of four credits of PLB 899 is required. A maximum of nine credits earned elsewhere in a graduate program within the time limit approved by the Guidance Committee are applicable toward the degree. The program of study consists of courses (recorded on the student's *Report of the Guidance Committee – Masters Program*), the seminar requirements, exams, and a tentative thesis topic as agreed to by the Guidance Committee. An original thesis must be approved by the Guidance Committee.

**Plan B:** Students must have a minimum of 30 credits hours beyond the Bachelor's Degree with a minimum of 16 credits of 800-900 level courses, including up to six Master's Thesis Research credits (PLB 899). A maximum of nine credits earned elsewhere in a graduate program within the time limit approved by the Guidance Committee are applicable toward the degree. The program of study consists entirely of courses (recorded on the student's *Report of the Guidance Committee – Masters Program*), and the seminar requirement. A majority of these courses should be selected in specialized fields of plant science at the 800-level to provide the candidate with advanced training in two or more of the following areas: anatomy, cytology, cytotaxonomy, ecology, genetics, molecular biology, morphology, ecology, biochemistry, mycology, paleobotany, physiology, phytopathology, plant virology, taxonomy, or other acceptable areas. At least nine credits of course work approved for graduate credit should be selected from outside the Department to provide a broader background in biology and the physical sciences. While no thesis is required under Plan B, research experience is desirable. The way to obtain this experience is to arrange a Special Problems (PLB 80X) course with some faculty member with appropriate interests. In this manner, at least, some exposure to research can be acquired.

## 2. Transfer Credits:

As many as nine semester credits of graduate work (excluding thesis/research credits) may be transferred into a 30-credit Masters program from other institutions that are accredited within their respective geographic region upon approval of Dean and Department. Only courses in which a grade of 3.0 was achieved are acceptable for transfer. A combined maximum of 9 credits is allowed from transfer courses, Lifelong Education enrollment status, and the Graduate Certificate level with no more than 9 credits from each category

### **3. Residency Credits:**

At least 13 credits must be accrued in residency on an MSU campus.

### **4. Time Limit:**

Many students complete the requirements for a Master's Degree in two years. To remain in good standing students must complete their Masters program within three years. The Department Chairperson may, in some cases, extend the time limit for a student to complete the requirements. The University time limit for completion of the Masters degree is five calendar years from the date at which the first course that applies to the degree was taken. So if a student transfers in a course that counts toward the degree that was taken 3 years prior to entering the program, the starting date is 3 years prior to entering the program.

### **5. Teaching Requirements:**

Each Master's student must gain teaching experience by participating in the teaching of at least one course. Students are expected to participate in the University TA orientation program prior to teaching. Further details about the teaching requirement are given in section III.E.

### **6. Seminars:**

In addition to routine attendance at the Plant Biology Seminars, M.S. students are required to complete:

- PLB 800. Plant Biology Seminar (1 credit), and
- PLB 803. Integrative Topics in Plant Biology (2 credits)

Additionally, each Plan A candidate is required to present a departmental seminar (for no credit) concerning his/her research within the 12 months preceding the student's graduation. This Master's Seminar is considered part of the final thesis defense.

### **7. Bypassing the MS Degree**

It is possible to enter directly into a Ph.D. program without first obtaining an M.S. degree. Any current M.S. student wishing to bypass the M.S. degree and become a Ph.D.

candidate shall petition in writing his/her Guidance Committee and the Department Chairperson for permission to do so.

## **8. The Master's Thesis and Abstract**

The thesis must be organized, typed, and duplicated according to regulations prescribed in the *Formatting Guide for Master's Thesis and Doctoral Dissertations* available from the Office of the Graduate School (<http://grad.msu.edu/graduation.htm>). An abstract of the thesis must also be prepared. The thesis must be approved by the Student's Major Professor, and **considered to be in final form, before it is distributed to the Guidance Committee**, as well as to the faculty observer appointed by the Department Chair. The distribution of the unbound thesis should occur at least two weeks prior to the Final Examination.

The Plan A Master's Student must present a publicly announced Thesis Seminar to the department, which is considered part of the thesis defense.

## **9. Final Examination**

Details of this process are given in given in Section VI. Students in Plan A are required to pass an oral examination in defense of the Thesis and coursework (as required by Guidance Committee). For students in Plan B, the emphasis of the examination is on course work and general knowledge of plant biology and related fields.

## **10. Finalizing the Master's Thesis:**

After the student has passed the final oral examination in defense of the thesis, 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. The student must submit to the Office of the Graduate School an *absolutely final* unbound copy of the thesis, an additional copy of the abstract, the signed bookplate, the microfilming and binding contract and payment, and other forms required by and available from the Graduate School.

The student is also required to provide the Department with a hardbound copy of the final thesis. By tradition, the student also provides a hardbound copy for their Major Professor and it is "good form" to give the other members of the Guidance Committee a softbound copy.

## **11. Final Certification**

In order to graduate, you must:

1. First submit an *Application for Graduation* (<https://www.reg.msu.edu/StuForms/GradApp/GradApp.asp>) with the Office of

the Registrar, RM 150 Administration Building, very early in the semester of your intended graduation.

2. Obtain a *Thesis/Dissertation Submission Packet* of forms from the Graduate School (<http://grad.msu.edu/current/packet.htm>), and take note of the various deadlines, which are also provided by the Graduate School.
3. A *Final Certification* form will be sent to our departmental office by the Degree Certification Office. Our graduate secretary will scrutinize your records to verify your completion of the requirements.

Before leaving MSU, you should check with the Degree Certification Office to make certain that your credentials are in order. Their records are used to determine completion of the degree requirements. Discrepancies may delay your degree.

We salute the successful completion of all requirements!

## H. CHECKLIST AND RECOMMENDED TIMETABLE FOR MASTER'S OF SCIENCE DEGREE

### Year 1

- \_\_\_\_\_ Meet with your Temporary Advisor and with the departmental Graduate Director/Graduate Admissions Committee to determine which courses you should take the first semester and beyond.
- \_\_\_\_\_ Enroll for and complete PLB 800 the first semester of your graduate program.
- \_\_\_\_\_ Complete ORCBS Hazardous Waste Safety Training (before classes begin in the first semester of your academic program)
- \_\_\_\_\_ Take courses advised by your Temporary Advisor or Major Professor
- \_\_\_\_\_ Designate Major Professor (this should be done before the end of the first year in the Master's program).
- \_\_\_\_\_ Form Guidance Committee (before the end of the first year in the program)
- \_\_\_\_\_ File Guidance Committee Report (this should be done before the end of the first year in the Master's program). This report includes a list of all the courses that will be required for the student to complete their degree. In addition to the requirements below, the student's guidance committee determines what course are necessary and appropriate for the student.

### Year 2

- \_\_\_\_\_ Finish other Course Requirements, including
  - \_\_\_\_\_ PLB 803. Integrative Topics in Plant Biology (2 credits). This may be taken in the first or second year of the program.
  - \_\_\_\_\_ One of the following:
    1. Take NSC 830, *Nature and Practice of Science* (1 credit)
    2. Complete workshop series offered by the Graduate School:  
*Responsible Conduct of Research.*
  - \_\_\_\_\_ 30 credits at 400 level or above.
  - \_\_\_\_\_ At least 16 credits at 800-900 level
  - \_\_\_\_\_ 4 to 10 credits of PLB 899 (Plan A only)
  - \_\_\_\_\_ All remaining courses listed in student's *Report of Guidance Committee*
  - \_\_\_\_\_ Fulfill Teaching Requirement (one course)

### **Year 3 (or sooner)**

- \_\_\_\_\_ Submit *Application for Graduation* to the University.
- \_\_\_\_\_ Obtain *Thesis/Dissertation Submission Packet* (Plan A only)
- \_\_\_\_\_ Complete Thesis, get approval from Major Professor to distribute Thesis to Guidance Committee (Plan A only). The thesis must be distributed to the Guidance Committee and to the Departmental Representative at least two weeks prior to the final examination.
- \_\_\_\_\_ Present a publicly announced Master's Thesis Seminar to the department (Plan A only) - no credit. The seminar must be announced to the department by email and notices must be posted around the building on the day of the seminar by the graduate secretary.
- \_\_\_\_\_ Schedule and pass Final Examination (required for both Plan A and Plan B), file paperwork
- \_\_\_\_\_ Turn in final Thesis and Abstract with all necessary corrections, with the signature of the Major Professor and with all the forms required by the Graduate School (Plan A only)
- \_\_\_\_\_ Final Certification

## **I. DETAILED DEGREE REQUIREMENTS - Ph.D.**

The student must take any courses (up to two) that the Graduate Admissions Committee may require to insure they have an adequate background in Plant Biology. See details in Section III.C. The student will be notified of these specific requirements prior to the beginning of classes in their first fall semester in the graduate program.

### **1. Credit Requirements**

In addition to the seminar course requirements, described in section III.I.5, 24 credits of doctoral dissertation research (PLB 999) are required, as are all the courses specified by the Student's Guidance Committee.

### **2. Residency Credits**

One year of residence (made up of two consecutive semesters, involving the completion of at least six credits of graduate work each semester).

### **3. Time Limits**

To remain in good standing, the Department of Plant Biology requires students to complete their Comprehensive Exam before the end of the first semester of their third year in Doctoral Program. All requirements for the Doctoral Degree should be completed within five years. The Department Chairperson may, in some cases, extend the time limits for a student to complete the requirements. The University time limits dictate that the Comprehensive Exam must be passed within five years and all remaining requirements for the degree passed within eight years from the time that the first course taken at MSU that is a part of the student's doctoral plan. Thus, the first course taken on the list of the required courses in the Report of the Guidance Committee "starts the clock" for university time limits. In rare cases, when an extension beyond eight years is approved by the Guidance Committee, the Department Chairperson, the Dean of Natural Science and the Dean of the Graduate School, the doctoral Comprehensive Exam must be re-taken and passed again.

### **4. Teaching Requirement**

In addition to the seminar requirements, each Doctoral student must gain teaching experience by participating in the teaching of at least one course. Further details about the teaching requirement are given in section III.E. Remember that students must participate in the University TA orientation program before they can teach. International students must score a minimum of a 50 on MSU's SPEAK test.

## 5. Coursework and Public Seminars

In addition to routine attendance at the Plant Biology seminar series, the following courses are required for the doctoral degree in Plant Biology:

- PLB 800. Plant Biology Seminar (1 credit)
- PLB 803. Integrative Topics in Plant Biology (2 credits)

One of the following:

1. Take NSC 830, *Nature and Practice of Science* (1 credit)
2. Complete workshop series offered by the Graduate School: *Responsible Conduct of Research*.

One of the following for at least 1 credit\*:

- BMB 978 Seminar in Biochemistry
- CMB 800. *Cell and Molecular Biology Seminar*
- ENT 812. *Graduate Seminar*
- FW 893. *Seminar in Fisheries and Wildlife*
- GEN 800. *Genetics Seminar*
- GEO 874. *Seminar in Geographic Information Science*
- HRT/CSS/FOR 892. *Plant Breeding and Genetics Seminar*
- PLP 894. *Seminar in Plant Pathology*
- ZOL 891. *Current Topics in Ecology and Evolution*
- ZOL 895. *Zoology Seminar*

\*Or another graduate seminar course, with "seminar" in the title, in which PLB is not the lead department, pending approval of the Director of Graduate Studies.

Additionally, the student is required to present two publicly announced departmental seminars for no credit. The first is the Thesis Proposal/Research in Progress Seminar, to be presented within three months of successfully completing the comprehensive examination. The second is the Dissertation Seminar, concerning his/her doctoral research and presented within the 12 months preceding the student's graduation. The Dissertation Seminar is considered part of the Final Examination (Dissertation defense). Each seminar must be announced to the department by email and notices must be posted around the building on the day of the seminar by the graduate secretary.

## 6. Comprehensive Examination.

The purpose is to determine whether the student has mastered the subject of plant biology and related fields, has a good understanding of the scientific method, and is prepared to do independent doctoral research. Passing the oral and written components of the comprehensive exam is necessary to become a Ph.D. candidate.

The Comprehensive Exams should be taken as soon as possible after more than 80% of the required courses have been completed, as listed on the student's *Report of the Guidance Committee*. The student should complete the written exam before the end of the first semester of their 3rd year in the doctoral program. The exception is that a

student who fails either the written or 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 the first attempt.

Both the written and the oral exam are pass/fail. To pass either 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.

Notice of the examination should be posted by the graduate secretary at least two weeks in advance so that interested faculty may attend. The Chairperson shall be informed at least two weeks before the exam of its date so that his/her Representative can be named in good time.

For the oral exam, a Department Representative, who is not a member of the student's Guidance Committee, will chair the examination committee. The student, upon consultation with their Major Professor, may recommend a faculty member to be the Representative, but the Department Chair makes the appointment for a particular exam. The Major Professor will be present, ask questions, and vote, as do the other members of the student's Guidance Committee. The Representative has the option of asking questions at the exam, but is not required to, and the Representative has no vote in the outcome. An assessment form, distributed by the Representative, will be filled out by the Guidance Committee members and the Representative, for use by the graduate committee to assess our programs.

**For the comprehensive exam**, the Guidance Committee must agree to one of two formats (A or B):

### **OPTION A**

1. **The oral exam** will come first, and it will focus on basic knowledge in plant biology and other fields relevant to the student's specialty. The oral examination will be approximately three hours in length. The exam, administered by the Departmental Representative, should be coursework-oriented and will encompass areas indicated in the *Report of the Guidance Committee* form.

If the student passes part 1, he/she will go on to part 2.

2. **The written part of the exam** will be a dissertation proposal. The exam must be completed within three months of passing the oral portion of the exam. For the dissertation proposal, the student can, and should, receive input from his or her 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 dissertation proposal should be written in the format of an NSF Dissertation Improvement Grant. There will be an oral defense of the dissertation proposal, in which the student will receive considerable feedback from their guidance

committee. A Departmental Representative will not participate in this portion of the exam. Once the committee signs off on this written portion of the exam, the comprehensive exam is formally passed.

## **OPTION B**

1. **The written examination** will come first. The written examination questions will be supplied equally by members of the Guidance Committee. The duration of the written exam is to be no less than four hours but less than one working day per committee member. Thus the entire written exam can last up to five working days. The exam should be coursework-oriented and will encompass areas indicated in the *Report of the Guidance Committee* form. The committee will correct and grade the written exam within one week. A departmental representative will not be needed for this written exam.

If the student passes part 1, he/she will go on to part 2, within two weeks.

2. **The oral examination**, administered by an appointed Departmental Representative, with questions from each of the members of the student's Guidance Committee, will be approximately three hours in length. It will focus on basic knowledge in plant biology and other fields relevant to the student's specialty.

By University rules, students must be registered during the semester in which the exam is administered. The date that the last portion of the exam is passed is the date on which the student officially passed the comprehensive exam.

To remain in good standing with the Plant Biology Department, doctoral students should complete the exams before the end of the first semester of their third year in the program. If that limit is exceeded, Graduate Director will consult with the student's Guidance Committee to investigate the circumstances.

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 Department Chair that they absolutely must take the oral examination before the end of the third year in the doctoral program. Beyond that, the Department Chair 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 Chairperson, shall inform the candidate by letter that the facilities of the Department will no longer be available for research or study and the program will be terminated.

## **7. Dissertation and Abstract:**

The Dissertation must be organized, typed, and duplicated according to regulations prescribed in the *Formatting Guide For Master's Theses and Doctoral*

*Dissertations* available from the Office of the Graduate School. An abstract of the Dissertation must also be prepared.

The thesis must be approved by the Student's Major Professor, and **considered to be in final form, before it is distributed to the Guidance Committee**, as well as to the Departmental Representative appointed by the Department Chair. The unbound thesis should be **distributed at least two weeks prior to the Final Examination**.

#### **8. Final Examination (Dissertation Defense):**

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 in Section VI and will include a public presentation of the dissertation.

The final oral examination will be scheduled by the student. 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. Notice of the examination should be distributed by the graduate secretary at two weeks in advance so that interested faculty may attend.

For the Final Examination on the Dissertation the student should be prepared to review briefly:

1. Reasons for the study.
2. Methods used.
3. Important findings and their significance.
4. 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 not earlier than two weeks after the dissertation and abstract has been submitted to the Guidance Committee and the Chair's Representative. The student must be registered during the semester in which the final oral examination is taken.

#### **9. 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. The student must submit to the Office of the Graduate School an *absolutely final* unbound copy of the dissertation, an additional copy of the abstract, the signed bookplate, the

microfilming and binding contract and payment, and other forms required by and available from the Graduate School.

The student is also required to provide the Department with a hardbound copy of the final dissertation. By tradition, the student also provides a hardbound copy for their Major Professor and it is "good form" to give the other members of the Guidance Committee a softbound copy.

## **10. Final Certification**

In order to graduate, you must:

1. Submit an *Application for Graduation* with the Office of the Registrar, RM 150 Administration Building, very early in the semester you intend to graduate.
2. Obtain a *Thesis/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 our departmental office by the Degree Certification Office. Our graduate secretary will scrutinize your records to verify your completion of the requirements. The "Final Certification" form lists the following: Guidance Committee members, date of passing comprehensive exam, date of passing final examination, dates language requirements passed, and all courses with grades used for the degree. The course requirements will include all of those shown on your *Guidance Committee Report*. Thus, it is important that you make certain that all information is placed and maintained in your departmental files. If everything appears to be in order, the Graduate Secretary will pass on the forms for further scrutiny by the College of Natural Science and the Graduate School.
4. Before leaving MSU, you should check with the Degree Certification Office to make certain that your credentials are in order. Their records are used to determine completion of the degree requirements. Discrepancies may delay you degree.
5. By University rule, you must complete the dissertation, and all the other requirements, within eight years of entering the doctoral program. The Department of Plant Biology expects doctoral students to finish all the requirements in five years, but the Department Chairperson can grant extensions up to, but not exceeding, the University time limit. Under appropriate circumstances, further extension of the University time limit can be granted but must be approved by the College and the Graduate School.

We salute your successful completion of all requirements!

## J. CHECKLIST AND RECOMMENDED TIMETABLE FOR DOCTOR OF PHILOSOPHY DEGREE

### Year 1

- \_\_\_\_\_ Meet with your Temporary Advisor and with the departmental Graduate Director/Graduate Admissions Committee to determine which courses you should take the first semester and beyond.
- \_\_\_\_\_ Complete ORCBS Hazardous Waste Safety Training (before classes begin in the first semester of your academic program)
- \_\_\_\_\_ Enroll for PLB 800 the first semester of your graduate program.
- \_\_\_\_\_ Take courses stipulated by the Graduate Committee in your letter of admission to the University
- \_\_\_\_\_ Take courses advised by your Temporary Advisor or Major Professor
- \_\_\_\_\_ Designate Major Professor (this should be done before the end of the first year in the doctoral program)
- \_\_\_\_\_ Form Guidance Committee (before the end of the first year in the doctoral program). The student should meet with their guidance committee on at least a yearly basis thereafter.

### Year 2

- \_\_\_\_\_ File Guidance Committee Report (this should be done before the end of the first semester of the student's second year in the doctoral program). This report includes a list of all the courses that will be required for the student to complete their degree. In addition to the requirements below, the student's guidance committee determines what course are necessary and appropriate for the student.
- \_\_\_\_\_ Finish course requirements (this may not be possible for all students before the end of the second year, but they should be finished as soon as reasonably possible).
  - \_\_\_\_\_ PLB 803. Integrative Topics in Plant Biology (2 credits). This may be taken in the first or second year.
  - \_\_\_\_\_ One of the following:
    1. Take NSC 830, *Nature and Practice of Science* (1 credit)
    2. Complete workshop series offered by the Graduate School: *Responsible Conduct of Research*.
  - \_\_\_\_\_ One of the following for at least 1 credit\*:
    - CMB 800. *Cell and Molecular Biology Seminar*

ENT 812. *Graduate Seminar*  
FW 893. *Seminar in Fisheries and Wildlife*  
GEN 800. *Genetics Seminar*  
GEO 874. *Seminar in Geographic Information Science*  
HRT/CSS/FOR 892. *Plant Breeding and Genetics Seminar*  
PLP 894. *Seminar in Plant Pathology*  
ZOL 891. *Current Topics in Ecology and Evolution*  
ZOL 895. *Zoology Seminar*

\* Or another graduate seminar course, with "seminar" in the title, in which PLB is not the lead department.

\_\_\_\_\_ Pass all courses listed in student's *Report of Guidance Committee*

### **Year 3 and beyond**

\_\_\_\_\_ Pass Comprehensive Exam. This exam should be scheduled before the end of the first semester of the student's third year in the doctoral program. The student must:

\_\_\_\_\_pass written exam

\_\_\_\_\_pass oral exam

\_\_\_\_\_ Present publicly announced seminar involving the student's research proposal and/or research in progress (no credit). This should be done within 3 months of passing the comprehensive exam. The seminar must be announced to the department by email and notices must be posted around the building on the day of the seminar by the graduate secretary.

\_\_\_\_\_ Fulfill Teaching Requirement

\_\_\_\_\_ Earn at least 24 credits of Doctoral Dissertation Research (PLB 999), complete dissertation research project

\_\_\_\_\_ Submit *Application for Graduation* to the University. This should be done near the beginning of the semester in which you intend to graduate, hopefully before the end of Year 5.

\_\_\_\_\_ Obtain *Thesis/Dissertation Submission Packet* from the Grad School.

\_\_\_\_\_ Complete Dissertation, get approval from Major Professor to distribute Dissertation to Guidance Committee. The thesis must be distributed to the Guidance Committee and to the Departmental Representative at least two weeks prior to the Final Examination.

\_\_\_\_\_ Present a publicly announced Dissertation Seminar to the department. The seminar must be announced to the department by email and must be posted around the building on the day of the seminar by the graduate secretary.

\_\_\_\_\_ Pass Final Examination, file paperwork.

\_\_\_\_\_ Turn in final Dissertation and Abstract with all necessary corrections and required forms, with the signature of the major professor

\_\_\_\_\_ Final Certification.

## IV. SELECTION OF THESIS/DISSERTATION ADVISOR

Graduate students are assigned a Temporary Advisor when they accepted into our program, and the Temporary Advisor often, but not always, ends up as the student's Major Professor, who serves as the Thesis/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 our faculty to advise graduate students in their research and professional development. If the student has trouble finding a willing faculty member to serve as the Major Professor, he/she should consult the departmental Graduate Director and/or the Departmental Chair to help find a suitable match.

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 Department of Plant Biology at Michigan State. However, in some cases adjunct faculty will be given approval by the Department Chairperson to serve as Major Professor. Adjunct faculty must also be approved by the College and the Dean of the Graduate School. In exceptional cases, a Major Professor can be faculty member from outside the Department. In these instances, 50% of the guidance committee must be regular faculty members from the Department.

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

Graduate research, whether leading to a Master's Thesis or a Doctoral Dissertation, is usually related to the research interests of the Major Professor. A discussion with the Major Professor will often uncover unanswered problems of immediate interest. From these, an area of research develops.

The Major Professor, and the members of the Student's guidance committee, are officially recognized by the University with the submission of the *Report of the Guidance Committee*, which must be approved by the Departmental Chairperson. Submission of this report should be done before the end of the first year in the Master's program or before the end of the first semester of the student's second year in the doctoral program. Forms for this report are available in the departmental office.

After submitting the Report of the Guidance Committee, if the student desires a different Major Professor for any reason, the change should be requested as early as possible in the graduate training program. Any plans for changing to a different Major

Professor should be discussed with the Graduate Director, the Department Chairperson, the current Major Professor and the student's prospective Major Professor prior to initiation. Before relations with the Major Professor are severed, the student should be sure that another faculty member will serve in that capacity.

## V. FORMATION OF THE GUIDANCE COMMITTEE

The Guidance Committee must be established within the student's first academic year in the program. The student's Guidance Committee is selected by the Major Professor together with the graduate student, subject to approval by the Department Chairperson. The members of the Guidance Committee are normally selected based upon research and professional expertise, so as to best advise the student in their proposed research and professional development. Any changes in committee membership must be reported in writing and filed with a copy of the original Guidance Committee report. The Guidance Committee determines which courses will be required for the student, it advises the student with regard to the research project, and it serves as the Examination Committee for the Comprehensive Exam (Doctoral only) as well as for the Final Examination (Master's and Doctoral).

Guidance Committees are composed of a minimum of three (in the case of a Master's Committee) or a minimum of four (in the case of a Doctoral Committee) of Michigan State University regular faculty members, including the Major Professor. With the approval of the Departmental Chairperson, an exception may be granted to allow an Emeritus faculty member to serve as one of the four required faculty members on a doctoral student's Guidance Committee; in addition, an Emeritus faculty member may continue to serve as chairperson of a Guidance Committee.

Persons who are not regular MSU faculty members may serve as a member of the Guidance Committee (but not the chairperson), providing the number of such persons does not exceed the number of regular faculty on the committee. This process requires a letter from the department chair requesting approval for a non-MSU member, a copy of the individual's CV, and two letters of recommendation that address qualifications (one letter must be from off-campus). The process is a proxy for quality control that is normally part of a tenure-system hire. Off-campus individuals are to be provided with the Graduate Education chapter of the Academic Programs catalog, a copy of the GSRR, the website for the faculty handbook, and the graduate handbook for the program, as they are expected to abide by all MSU policies.

In consultation with the student, the committee plans the student's entire program, including examinations, and thereafter supervises it, making modifications as needed until the degree is completed.

The chair of the Guidance Committee (The Major Professor) shall file a **Guidance Committee Report** with the Department, listing the members of the committee and the course requirements. Any changes or amendments to this report will be done with the full consultation of the Guidance Committee and the student. Changes in membership on the committee may be made by the student in concurrence with the Major Professor and Department Chairperson. The guidance committee report should be filed before the end of the first academic year, in the Master's program, or before the end of the first semester of the second academic year, in the Doctoral program.

Once designated, the committee must meet yearly with the student to review the student's progress.

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 (*Report of the Guidance Committee*)
3. Advising and assisting in the research process
4. Participation in the Comprehensive exam (Ph.D. only) and Final Examination (both Master's and Ph.D.)

Frequent consultation with all committee members is essential, and the annual meeting with the entire committee is intended to be helpful. The Guidance Committee can provide the student with valuable aid regarding the selection of courses, planning, conducting, and interpretation of research, and many other things.

## **VI. THESIS/DISSERTATION DEFENSE AND FINAL ORAL EXAMINATION**

### **A. Role of the Departmental Representative.**

The Department Representative, who is not a member of the student's Guidance Committee, will chair the examination committee for oral exams, including the Master's Final Examination (both Plan A and Plan B), the oral portion of the Doctoral Comprehensive Exam, and the Doctoral Final Examination. The student, upon consultation with their Major Professor, may recommend faculty members to be the Representative, but the Department Chair makes the appointment for a particular exam. The major professor will be present, asks questions, and has a vote, as do the other members of the student's Guidance Committee. As with the Guidance Committee members, the Representative will be given a copy of the dissertation or thesis at least two weeks before the final exam. However, the Representative is not required to read the dissertation or thesis. The Representative has the option of asking questions at the exam, but is not required to, and the Representative has no vote in the outcome. However, the Representative will preside over the exam and report to the Department Chair as to the outcome. An assessment form, distributed by the Representative will be filled out by the Guidance Committee members and the Representative, for use by the graduate committee to assess our programs.

### **B. Preparation for Oral Exams**

The objectives of the oral examinations are (i) to enable the student to learn more about themselves and their abilities, (ii) to guide them toward the goals and high standards demanded of everyone in the proposed profession, and (iii) to measure the student's progress toward these goals and to determine whether the program is satisfactory.

It cannot be emphasized too strongly that preparation for these examinations must be thorough. There are many ways to prepare for this exam. The student's Major Professor and members of the student's Guidance Committee have been through the process and can offer advice on preparation and what to expect. Senior graduate students may also be a source of valuable information about the exams. Through review of course subject matter and synthesis of this information to construct total concepts, the student should arrive at the proper level of competence and confidence. At the same time, the student will gain new insights and understanding of their major discipline and of the scientific method.

Remember – the committee wants to help the student!

## **C. Final Examination for Master's Degree**

The Guidance Committee serves as the examination committee for both Plan A and Plan B examinations. A Departmental Representative (see above), who is not a member of the Guidance Committee, presides over the exam. Students in Plan A are required to pass an oral examination in defense of the thesis and coursework. For students in Plan B, the examination format is decided by the Guidance Committee and usually it covers course work. For both Plan A and Plan B Final Examinations, a majority affirmative vote of the Guidance Committee constitutes a pass.

The examination must be scheduled no later than the tenth Friday of the semester in which graduation is anticipated. At the discretion of the committee, the examination may be open to members of the academic community.

The Final Examination must be scheduled two weeks prior to the examination date, by which time the Department Graduate Secretary must be notified of the date and place of the examination. Likewise, at that time a copy of the thesis, previously approved by the Major Professor, must be distributed to the Guidance Committee, and the Departmental Representative.

As a part of the Plan A Final Examination, the graduate student will present the results of their Master Thesis in a publicly announced seminar open to the community.

The Plan A Master's Final Examination will involve defense of the Master's Thesis as well as examination of coursework knowledge of the field. With regard to the thesis, the student should be well prepared to review briefly:

1. Reasons for the study.
2. Methods used.
3. Important finding and their significance relative to published work in the field.
4. Unanswered problems suggested by the research.

The decision of the Guidance Committee will be recorded for the M.S. degree on the "Record of Completion of Requirements for the Master's Degree."

The Major Professor and members of the student's Guidance Committee can offer further advice on preparation and what to expect, as can fellow graduate students. To illustrate the standards the department requires, past Theses are available for student perusal in Room 148 Plant Biology Laboratory. Bear in mind that a Master's Thesis must contain original research, be written in a scholarly manner, and contribute to the body of knowledge of the discipline. Since science is continually evolving, the more recent theses will be more representative of the standards that must be met.

## **D. Final Examination for Dissertation**

The student's Guidance Committee serves as the Final Examination Committee. A Departmental Representative (see above), who is not a member of the Guidance Committee, presides over the exam. The final oral examination will be primarily in defense of the written Dissertation, but it may include general knowledge as well.

The final examination must be scheduled a minimum of two weeks after the Dissertation and Abstract have been submitted to the Guidance Committee and the Departmental Representative. The student must be registered during the semester in which the final oral examination is taken.

The final oral examination will be scheduled by the Major Professor after the student has established a time (usually 3 hours) when all members of the Examination Committee can be present during the entire period. Notice of the examination should be distributed by the Graduate Secretary two weeks in advance so that interested faculty may attend. The Departmental Representative and other faculty members of the Department who attend may observe the examination but will not enter into the final decision of performance.

As part of the Dissertation Final Examination, the graduate student will present the results of their Dissertation in a publicly announced seminar open to the community.

For the final examination on the Dissertation the student should be well prepared to review briefly:

1. Reasons for the study.
2. Methods used.
3. Important findings and their significance relative to published work in the field.
4. Unanswered problems suggested by the research.

To pass, 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 student's Major Professor and members of the student's Guidance Committee can offer further advice on preparation and on what to expect, as can recent graduates. To illustrate the standards the department requires, past Dissertations are available for perusal in Room 148 Plant Biology Laboratory. Bear in mind that a Dissertation must contain original research, be written in a scholarly manner, and significantly contribute to the body of knowledge of the discipline. Since science is continually evolving, the more recent Dissertations will be more representative of the standards that must be met.

## **VII. DEPARTMENTAL POLICIES: ACADEMIC PERFORMANCE**

When a student is admitted into our graduate programs it is with the full expectation that they will not only survive but thrive academically as developing scientists and scholars. However, sometimes a student's academic performance does not meet the expectations that the student and our faculty have. This sections deals with problems and standards for academic performance.

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 evaluation the student's competency and rate of progress.

To assist in evaluation of progress, each student is required to file an Annual Progress Report each spring semester. The Major Professor must sign the progress report and may wish to supply written comments at that time. The student can then add more written comments in response to the comments of the Major Professor. A copy of the progress report and evaluation will be kept in the student's department file, and will be periodically evaluated by various officials including members of the Graduate Committee, the Student's Guidance Committee, the Associate Chair, and the Department Chair. The student will meet annually with the Director of Graduate Studies in Plant Biology to discuss his/her Annual Progress Report and his/her progress towards the advanced degree.

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 Departmental 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 or taking the necessary exams, within 30 days following their annual meeting with the Director of Graduate Studies, the student should receive a letter from the 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.

It is a disservice to permit a student to continue toward the advanced degree without the necessary qualifications for retention, including a high level of motivation, commitment, and aptitude. Judgment regarding retention is made by the student's Major

Professor and/or Guidance Committee. To facilitate a decision, the committee may consult the Graduate Director and the Department Chairperson. If a majority of the Guidance Committee decides that a student lacks such standards, he/she may be asked to withdraw according to the procedures as defined in the Graduate Student Rights and Responsibilities Document which can be obtained at [www.msu.edu/students/splife/gradrights.html](http://www.msu.edu/students/splife/gradrights.html).

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 departmental Graduate Secretary.

Comprehensive examinations and Final Examinations for the Master's and Doctoral Degrees are pass/fail. A student who fails either the written or oral Comprehensive examination, Master's Defense or Dissertation Defense will be given one opportunity to repeat the exam within three months to six months, as determined by the Guidance Committee. If the student fails one of those exams a second time, they will be dismissed from the program.

Further information on rights and responsibilities of graduate students can be found at the website of the Office of the Ombudsman, <http://www.msu.edu/unit/ombud/>

## VIII. DEPARTMENTAL POLICIES: INTEGRITY AND SAFETY IN RESEARCH AND CREATIVE ACTIVITIES

Each faculty advisor and graduate student should be aware of the document *Guidelines for Integrity in Research and Creative Activities* (<http://grad.msu.edu/staff/mentoreport.pdf>).

Graduate students must complete the Office of Radiation Chemical and Biological Safety (ORCBS) 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.orcbs.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.

Consideration of scientific ethics and integrity is a part of certain courses within the required curriculum, such as PLB 802, *Integrative Topics in Plant Biology*, **NSC 830**, *Nature and Practice of Science*, and the workshop series offered by the Graduate School: *Responsible Conduct of Research*.

Criteria for dismissal due to unethical or dishonest behavior is described in *Guidelines for Integrity in Research and Creative Activities* <http://grad.msu.edu/staff/mentoreport.pdf>.

## **IX. STUDENT CONDUCT AND CONFLICT RESOLUTION**

When there are conflicts between a graduate student and his or her faculty advisor or Guidance Committee, including those that may require a change in the student's Major Professor, the following procedure should be followed.

1. The departmental Graduate Director and/or Departmental Associate Chairperson should be consulted, to determine if an informal resolution is possible.
2. If such a resolution is not possible, a meeting should be set up with the conflicting parties and the Departmental Chairperson. The Departmental Chairperson will attempt to resolve the conflict in keeping with the policies of the Department and University including the *Guidelines for Graduate Student Advising and Mentoring Relationships* <http://grad.msu.edu/staff/mentoreport.pdf>
3. If a student remains unsatisfied with the outcome of those conversations, the student may submit a written request for a Grievance Hearing to the Department Chairperson. The letter must state the specific nature of the complaint and the redress, or remedy, that student seeks as an outcome of the hearing. (Note the word "request" and read on.)
4. Upon receiving a request for a grievance hearing, the Department Chair forwards the letter to the department Hearing Board. The Hearing Board for cases involving graduate students is chaired by the Department Chair and is made up of an equal number of faculty and students.
5. After receiving the written complaint, the Hearing Board can request a response from the faculty member(s) involved with the grievance and then decide if the request for a hearing has merit. If so, the Department Chairperson will schedule a hearing; if not, the Hearing Board can dismiss the case--a decision that the student can appeal to the College of Natural Science hearing board.
6. If a hearing is held, both the student and the faculty member(s) are allowed to call on witnesses to appear at the hearing on their behalf, and they can seek an adviser to help them throughout the process. The advisers must be members of the MSU community—faculty, staff or students.
7. If the student prevails at the hearing, the Department Chair will implement an appropriate redress to accommodate the student. If the faculty member(s) prevail at the hearing, the student can file a request to appeal the department/school hearing board's decision to the College of Natural Science hearing board.

The University Ombudsman is available to assist students, instructors and hearing boards through every stage of the grievance process. The Office of the

Ombudsman can be consulted, to determine the process for resolution at the Departmental, College or University level. <http://www.msu.edu/unit/ombud/>

## **X. WORK RELATED POLICIES**

### **A. GRADUATE ASSISTANTSHIPS**

1. The University wide criteria for awarding, renewing and terminating graduate Teaching Assistants, including length of eligibility, and the process used to evaluate the students' performance can be found in the MSU/GEU Contract: <http://grad.msu.edu/geu/agree.pdf> With regard to Teaching Assistants, the policies below are subservient to new contract agreements that may be posted in the above website in the future.
2. The rights and responsibilities of Teaching Assistants, health insurance options, and salary criteria can also be found under the current version of the contract between MSU and the GEU.
3. Plant Biology Departmental policies for Maintenance/Termination of Assistantships are as follows:

Graduate assistants may be on a  $\frac{1}{4}$  (10 hours per week),  $\frac{1}{2}$  (20 hours per week) or  $\frac{3}{4}$  (30 hours per week) time basis. Assistantship appointments may be for one semester, for one academic year, or for one calendar year. The stipend, activities, and enrollment are proportional to the percent of time designated by the assistantship. As of April 12, 2005, assistantships, whether established by use of general university or research contract funds were at three levels: Level-1- Assistants with B.S. (or equivalent degree) and no graduate experience; Level 2- Assistants with M.S. (or equivalent degree) and/or one year of graduate experience; Senior Level – Assistants with M.S. (or equivalent degree), two years of graduate experience, and successful completion of his/her comprehensive exam. An increase in stipend may accompany an increase in level. Tuition was waived for up to nine credits in the Fall and Spring Semesters (four credits in Summer). Also, all matriculation fees were waived. These guidelines are currently (April 12, 2005) under review and could change in the future.

The minimum/maximum course credits required/permitted to retain an Assistantship are shown in the table below:

<b>Assistantship Appointment</b>		<b>University Minimum Credit Enrollment</b>	<b>Federal (IRS) Minimum Enrollment per Semester</b>	<b>Maximum Enrollment per Semester</b> (excluding 899/999 credits)
1/4 time	Master's Students	6 in Fall & Spring; 3 in Summer	5 Credits	16 credits
Doctoral Students	3 (any semester)	3 Credits		16 credits
PhDs who have passed comps	1 (any semester)	1 Credit		16 credits
1/2 time	Master's Students	6 in Fall & Spring; 3 in Summer	5 Credits	12 credits
Doctoral Students	3 (any semester)	3 Credits		12 credits
PhDs who have passed comps	1 (any semester)	1 Credits		12 credits
3/4 time	Master's Students	3 (any semester)	5 Credits	8 credits
Doctoral Students	3 (any semester)	3 Credits		8 credits
PhDs who have passed comps	1 (any semester)	3 Credits		8 credits

Graduate assistants are responsible to their Major Professor as well as to the assistantship supervisor, who are not always the same person. Therefore, responsibilities for the assistantship will vary. Enrollment in courses, credit load per semester, training activity, etc., should have prior approval of the Major Professor before registration occurs. Before departing on a vacation, or other leave, the student should clear their desires and plans with their Major Professor. All students, whether financially supported or not, should be actively engaged in research, literature reviews, or some other phase of program even during semester breaks. Keep in mind the fact that the graduate program is a “full-time” program.

Assistants who have teaching responsibilities are also responsible to the Instructors of the classes in which the student is assisting. Assignments are made, normally, at least two weeks before the beginning of the semester. As soon as the student receives a teaching assignment, they should check with the Instructor to learn what is expected of them. There is a University Orientation program offered prior to Fall semester. All assignments are expected to participate once prior to teaching in the Department (whether on an RA or a TA). The student is expected to be available during the entire semester of the appointment unless released by the Department Chairperson in consultation with the faculty member to whom the student is assigned. Fall semester is defined as beginning August 16 and ending December 31; Spring semester, January 1 to May 15, Summer semester, May 16 to August 15. The student may very well have to start preparing materials, plants, etc., for the next semester before the end of the current semester.

A student must meet the requirements for Academic Standards and Guidelines for Retention to retain their assistantships.

Any student who is accepted into the Department with financial support *and* chooses a faculty member in the Department of Plant Biology as their Thesis or Dissertation Advisor should have a reasonable expectation that such support will continue until they have completed their degree, provided they make reasonable progress towards completing all requirements. However, providing financial support for graduate students is the joint responsibility of the Department and of the faculty member with whom the student's research is conducted.

Departmental funds for the graduate Teaching and Research Assistantships are most useful if used to recruit outstanding students into our graduate program. Current Department Assistantship incumbents are reviewed by the Graduate Committee as a whole. Those desiring reappointment for the next year and who are otherwise well qualified by ability and maintenance of scholarship and who have not exceeded a three year tenure as Department Assistant (five years in the case of doctoral students) are recommended to the Department Chairperson for reappointment by March 15. Beyond this three or five year time limit, it is the responsibility of the faculty (with student involvement when possible) to provide support in the form of grants, fellowships, etc. In those cases where the Major Professor or student is unable to obtain other forms of support, the Major Professor should request from the Departmental Chairperson and the graduate committee the award of an additional semester or year of Assistantship support. Proof of reasonable effort to obtain extramural funds should be provided by the advisor and student, to be considered for funding after three or five years. Departmental Assistantship support may be provided at the beginning or during the graduate program.

By March 31 of each calendar year, the Department Chair will advise each graduate assistant in writing of one or more of the following:

1. That her/his Assistantship will be renewed for the following semester;
2. That the Assistantship will not be renewed.

If the Assistantship is not renewed, the reasons shall be indicated. One condition of renewal is that the **student** must indicate (by May 1, or as indicated in the appointment letter) her/his intention to return to accept the Assistantship for the next fall.

Termination of Appointment:

1. The Assistantship will terminate upon degree completion. A student who wishes to terminate an Assistantship prior to that time should notify the supervisor and Department office.
2. Substandard Performance: The Department may terminate a graduate Assistantship for substandard performance or inability to perform expected duties. Substandard performance may be brought to the attention of the

Department Chairperson by the Assistantship supervisor or by the normal annual review of Assistantship performance. Academic difficulty will result in a review of the student's overall situation by the Department.

3. Violations: The Department may also terminate an Assistantship in cases of violation of the General Student Regulations contained in the Student Rights and Responsibilities Document which can be obtained at [www.msu.edu/students/splife/gradrights.html](http://www.msu.edu/students/splife/gradrights.html) This action may be initiated by the Department Chairperson or by the student's Major Professor.
4. Budget Constraints: The Department may also terminate Assistantships for budgetary reasons. Should this be necessary, continuing Graduate Assistants will be given some priority over new appointees depending on their qualifications to perform the required activities.

## **B. GRADUATE ASSISTANT ILLNESS/INJURY/PREGNANCY LEAVE POLICY**

A Graduate Assistant unable to fulfill the duties of his/her appointment because of illness or injury shall notify an administrator of his/her 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.

## **C. OUTSIDE WORK FOR PAY**

The Assistantship represents an obligation for the student to perform various duties of benefit to the Department in return for financial assistance. It is assumed that these duties, in combination with the normal course of studies, will amount to a full-time load.

Outside work for Graduate Assistants is discouraged. Before beginning outside employment the assistant should discuss with the Assistantship supervisor the outside employment and how the Assistantship obligations will be fulfilled.

## D. LANGUAGE REQUIREMENTS FOR INTERNATIONAL TAs

Foreign students who wish to hold Teaching Assistantships are required to meet higher English language standards than the minimum required for graduate study. Any appointment of a person who is not a native speaker of English shall be provisional upon the applicant providing scores on the TOEFL or English Language Center (ELC) exam which are sufficiently good that the ELC does not recommend further English language classes.

After admission to the University, all international Graduate Assistants are still required to demonstrate their mastery of spoken English to the satisfaction of the English Language Center by passing the SPEAK test. A minimum score of 50 or waiver by interview is required. International Graduate Assistants must also attend a required English Language workshop, which is usually held two or three weeks before the beginning of Fall semester. Inquire to the English Language Center for specific information about the tests. International students who are appointed as Graduate Assistants will receive information by mail regarding the required workshop. Further information can be obtained through *Academic Programs* <http://www.reg.msu.edu/ucc/ucc.asp>.

## E. DEPARTMENTAL RESOURCES

**The Graduate Student Lounge** is currently located in room 240 Plant Biology Labs (PBL).

**Mailboxes and bulletin boards** are on the first floor of the PBL near the departmental office (room 166). They should be checked daily.

**The graduate student listserv** regularly distributes notices concerning funding opportunities, departmental activities, and other information of interest. Be sure that you are signed up by asking the Graduate Secretary.

**The departmental directory**, which lists names, addresses, and telephone numbers of faculty, staff, and students is available to each student early in the fall semester. The students' residential telephone number and address should be kept current with the graduate secretary. This also lists phone numbers for various facilities that are frequently used by graduate students.

**The Departmental Newsletter** is sent regularly to all departmental members by email. The student can provide items to the Department office that they would like included in the newsletter.

**Copier** – A copier for use by Plant Biology students, faculty and staff is located in room 142 Plant Biology Labs. Material duplicated must have the approval of the student's Major Professor and may be charged to the professor's account. Students may also pay cash (7 cents/copy).

**Supplies** – Paper, pencils, pens and other office supplies are available for faculty, staff, and graduate Teaching Assistants. Such supplies for other graduate students must be procured through book stores and/or procurement worked out with the student's Major Professor. Procedures for purchasing and charging supplies on or off campus to a student's Major Professor's account can be obtained by consulting with the bookkeeper in the office.

**Computers** – A student computer facility is available in room 137. A coordinator is in charge of the equipment in this room. DO NOT tamper with or LOAD programs on the hard drive!

**Travel** – All official travel requires a Travel Authorization form to be filled out prior to traveling. Financial support for travel of graduate students will be considered in categories of internal and external support. External support is from grants and contracts and will be at the discretion of the principal investigator. Internal support will be from MSU funds and requires approval of the Department Chairperson. Some travel funds are available from the Graduate School, the College of Natural Sciences, from certain graduate programs such as EEBB, or from the departmental Taylor Funds.

Students traveling abroad should visit the "Travel Smart" website (<http://grad.msu.edu/travel/>) before their trip. When students appointed as TAs or RAs travel outside the U.S. to conduct required thesis or dissertation research 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 (e.g., anti-malarials) 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.

**Graduate Awards** - In recognition of graduate students whose research and/or teaching is considered meritorious by the Graduate Committee the following are awarded annually to commemorate the work of two outstanding members of our Department:

**Ernest A. Bessey Award for Research** – Ernest A. Bessey was born in 1877 in Ames, Iowa, the son of the distinguished plant biologist Dr. C.E. Bessey. He studied for his Ph.D. at the University of Halle, Germany, receiving this degree in 1904. He came to Michigan Agricultural College in 1910 where he served until his retirement in 1946. During his career at this University, he not only served as Head of the Department of Botany and Plant Pathology, but also became the first Graduate Dean, a post he held between 1930 and 1944. Dr. Bessey was cited in 1956 at the Centennial of the Botanical Society of America as one of the 50 living outstanding botanists.

**William G. Fields Award for Teaching** – Dr. Fields was born in 1933 near Waco, Texas, and died an untimely death in 1975. He attended the University of Texas and received his Ph.D. from Wayne State University in 1963. He served as Assistant Professor in the Department of Botany and Plant Pathology from 1966-72 and as Associate Professor thereafter. He taught numerous courses in mycology and fungal genetics and served in later years as Assistant Department Chairperson. His teaching was authoritative, contemporary and well received.

**Paul Taylor Fund Awards-** Each spring, students may apply for funds for travel to meetings and/or travel to learn new research techniques.

**Plant Biology Graduate Student Organization (GSO)** – The objectives of the GSO are to promote communication to foster an understanding of departmental policies and procedures, and to define the role of graduate students in the Department. All graduate students in the Department of Plant Biology are members of GSO. The organization is in charge of the appointment of graduate student members on the departmental committees. The GSO also provides academic and social interaction among students and faculty within our Department. The club sponsors guest speakers, field trips, social events and other activities.

**Keys** –Appropriate keys may be obtained from the Department office. Some will require a deposit.

**Cold and prep rooms** – these rooms are for departmental use. Students should use the room located on their floor. All material must be labeled with the student's name, lab room number, and date.

**Reserving rooms 52, 148, 168, 247, and mobile LCD projector** – First check the scheduling for these on the departmental web page, then contact the front office (room 166 PBL).

**Telephone calls** – For on-campus calls there is no charge. Campus phones are charged for each off-campus call and are not to be used for personal calls. For long distance calls, permission of the Major Professor should be secured first.

## XI. UNIVERSITY RESOURCES

**Campus mail service** – designed to expedite the delivery of items pertaining to university business. It is not to be used for personal items.

**The Council of Graduate Students (COGS) Office** is a valuable source of information regarding graduate student policies and opportunities. Their office is located at 313-316 Student Services Building, and their website is: [www.msu.edu/~cogs/](http://www.msu.edu/~cogs/). This is the official graduate student organization at MSU. The primary objective of COGS is improvement of the academic, social, and economic position of graduate students at MSU. The organization has official delegates to the Graduate Council, the Academic Council and standing committees thereof, and several all-university and presidential committees. Through membership in these and other bodies, COGS participates in decisions on such matters as tuition and fees, the grading system, traffic regulations, academic and extracurricular programs of the university, graduate assistant stipends, improvements in on and off campus student living conditions, academic freedom and responsibilities, student representation in university government, and the selection of principal administrative officers.

**E-mail** – E-mail is available to all enrolled students. If the student prefers to use another server (e.g., AOL) it will be important to have all of their university email forwarded to their preferred account.

**Financial Aid** - Recent information on scholarships and other financial aid can be obtained in the Financial Aid Office in the Administration Building. Graduate Assistants can use the services of the MSU Federal Credit Union to obtain loans to pay for tuition. COGS, in conjunction with the Financial Aids Office, offers loans to graduate students. Information can be obtained in the Financial Aid Office.

**The Graduate School Office** is located in room 118 Linton Hall. Their website, <http://www.msu.edu/user/gradschl/> is invaluable for providing information about graduate student rights, responsibilities and opportunities at Michigan State. The site includes lists of university deadlines, many important university forms and valuable handbooks.

**MSU News Bulletin** is published bi-weekly and available in room 168 PBL. It includes a list of seminars and other activities from across the campus.

**The State News**, published Monday through Friday during the academic year, is the student newspaper.

**Parking permits** – Information for permits can be obtained from the Department of Public Safety. Graduate Assistants may obtain parking permits by presenting a copy of their current appointment form. Students on fellowships of \$1,000 or more may also obtain a parking permit.

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