

# **Graduate Policies Manual**

Department of Plant Biology SIUC

**Spring 2003**



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## **I. Introduction**

This document summarizes the policies and guidelines for graduate students in the Plant Biology Department at SIUC. Included within are guidelines, rules and policies regarding the routine and frequent matters that arise in the course of a student's graduate program. It is a compilation of information from established procedures of the Plant Biology Department, the Graduate School and from requirements of individual Plant Biology Faculty.

It is hoped that this document will answer most of the questions asked by faculty and graduate students about the graduate programs. It should provide a guide to students to help them efficiently and expeditiously move through their degree programs. Please check the Plant Biology and Graduate School web sites and the current Graduate Catalog for additional information. The ultimate authority, in descending order is, the Graduate School Catalog, the Departmental Operating Paper and finally, this document.

## **II. The Plant Biology Department**

The Department of Plant Biology offers a well-balanced graduate program leading to the degrees of Master of Science, Master of Science in biological sciences, Master of Science in Education in biological sciences, and the Doctor of Philosophy. In addition, the Department offers Certificated in Plant Ecology and in Systematic Biology.

The areas of emphasis are those of the broadly diversified faculty which characterizes the department and faculty members of other departments who participate in joint programs. The department is organized into three nodes, representing its research and teaching strengths. These nodes are Ecology, Molecular and Biochemical Physiology and Systematics and Biodiversity.

The departmental master's programs and the doctoral program are based on a combination of course work, optional teaching, and research. An advisory committee of faculty members from the plant biology and other selected departments help design individualized programs to meet the specific educational goals and career aspirations of each student. The department advocates a broad background in plant biology by encouraging students to have completed training equivalent to one or more courses in the following areas of plant biology: plant diversity, taxonomy or systematics, plant physiology, molecular biology biochemistry and biotechnology. and plant ecology or environmental science.

The Department of Plant Biology is housed in modern facilities in the Life Science II and Life Sciences III buildings. Each departmental faculty member provides laboratory facilities for students they supervise as part of the research program. In addition, there are

a number of cross-appointed and adjunct faculty located in various departments on the SIUC campus including Forestry and Plant and Soil Science who can serve as advisors or as members of advisory committees. The department provides centralized laboratory facilities, including a growth chambers, herbarium, greenhouse complex, and field stations. Several University-owned field station sites are located in southern Illinois along with Research Natural Areas administered by the U. S. Forest Service and State Nature Preserves administered by the Illinois Department of Natural Resources. The University is also involved with the Organization of Tropical Studies. Excellent cooperative research arrangements are available with other departments including Zoology, Microbiology, Forestry and Plant and Soil Science and General Agriculture.

Research faculty in the Department of Plant Biology have additional resources and equipment that could potentially be available for student use provided acceptable arrangements are made between that faculty member, the graduate student, and the graduate student committee. Such resources include the following:

1. An atomic absorption spectrometer and N/S analyzer for elemental analysis
2. Muffle furnaces, digestion blocks, Centrivap concentrators, and a lyophilizer for sample preparation
3. High performance liquid chromatography and gas chromatography for biochemical analyses
4. Beta and gamma counters for radioisotope research
5. A UV-VIS spectrophotometer for colorimetric analyses
6. An electron microscope for anatomical and morphological research
7. Laminar flow hoods, incubators, and water baths for work involving microorganisms
8. A molecular biology suite for biotechnology and systematics research

A distinguishing feature of the Department of Plant Biology is its congenial atmosphere. Individuals are encouraged to develop their own programs and research activities within the scope of available resources or those which can reasonably be attained in collaboration with other faculty. The first master's degree was granted in 1948, and the first Ph.D. degree in 1965. All areas of plant biology have been represented in the course of the department's history, with some shifts in emphasis according to both changing interests within the scientific disciplines and changes in the faculty and student population.

Graduate degrees in plant biology will be awarded to students in recognition of their ability to do independent research as evidenced by the acceptance of a thesis or dissertation and by the demonstration of competent scholastic ability. Teaching experience in undergraduate courses is normally encouraged as part of the Master's and Ph.D. degree programs.

The objectives of the graduate program are to have the students develop skills in:

1. the design and performance of experimental research including knowledge and use of experimental techniques and experimental design along with the appropriate data analysis skills pertinent to their major area of research,
2. interpretation and analysis of primary scientific literature, including familiarity with the current literature in their major area of research as well as in plant biology in general,
3. communication of scientific data and conclusions through publication in peer-reviewed journals and presentation of papers or posters at scientific and,
4. teaching at both the undergraduate and graduate level.

### **III. Graduate Programs**

#### **A. Areas of responsibility related to the graduate programs**

1. **Student responsibilities** - The student is ultimately responsible for his/her graduate program. Students are responsible for meeting all deadlines related to registration, payment of fees, completing appropriate forms when necessary and maintaining progress in their course work and research program in accordance with the schedule agreed to by the advisory committee and major advisor. Students are responsible for keeping their major advisor informed of problems related to research and/or course work. Students are expected to work during the contract period, either on research or teaching responsibilities. Those students on Teaching Assistantship support are expected to report to their supervising instructor at the beginning of the contract period for that term. Other specific responsibilities include:

- a. Maintaining a grade point average of B or better.
- b. Making progress on research as determined by the advisory committee.
- c. Submitting an appropriate progress report each Spring term. This report must be signed by the advisor and the committee members. At this time the student will justify requesting additional months of support (see below).
- d. Meet all Graduate School deadlines for completing the degree.
- e. Make sure that all required forms are supplied to the committee for meetings, seminars, preliminary examinations and thesis/dissertation defenses.

**2. Responsibilities of the major advisor and advisory committee** - The advisor along with the advisory committee must closely monitor the progress of the student and be available to provide guidance and assistance throughout the course of the student's program. The advisor should inform the student of fellowship or scholarship opportunities, dates of important scientific meetings and other important activities. The advisor and advisory committee has a significant responsibility for helping the student plan his/her course work, design and execute the research and write the final thesis or dissertation. The advisor may wish to have the student read and sign a "White Paper" which clearly establishes expectations the advisor has for the student (See Appendix for examples).

**3. Responsibilities of the Department and University** - The departmental Director of Graduate Studies processes all applications and updates the student's folder as necessary. The Director of Graduate Studies also forwards all pertinent paper work concerning the status and progress of the student to the Graduate School and to the appropriate departmental committees. The Director of Graduate Studies also makes students aware of funding or job opportunities as they are identified to him/her. The Director of Graduate Studies processes all applications for fellowships or other awards. It is not the Director of Graduate Studies responsibility to ensure that students meet all pertinent deadlines. Once a student is admitted to the program they can be funded for 24 months for the Master's degree and 48 months for the Ph.D. degree program. One additional semester for each degree may be available if appropriately justified by written request. This justification must state the extenuating reasons why the student did not finish within the allotted time and must have the signatures of all advisory committee members.

## **B. Admission Procedures**

### **1. Inquiry.**

The Director of Graduate Studies handles all inquiries about the graduate program from prospective students. These duties include;

- a. sending a letter or email to the prospective student answering their questions and providing information on how to apply. The student is encouraged to communicate directly with faculty whose interests are aligned with their own. The department will not admit any student who does not have an advisor committed to work with them. Prospective students are referred to the information that can be found on the Plant Biology and Graduate School web pages (see below).
- b. communicating to the prospective student the status of their application and ultimately informing them of acceptance or rejection.

## 2. Application process

Applicants for the Master's degree must have a Bachelor's Degree (or equivalent) in a life science, and have had a course in genetics. A student who does not meet these requirements may petition for admission to the department, or register as a regular non-declared graduate student. Either prior to admission or during their programs, students must complete a course in each of the following categories: 1) plant systematics or plant diversity, 2) plant physiology, cell biology or molecular biology, and 3) plant ecology or environmental science. A course in plant morphology or plant anatomy is strongly recommended for all graduate students.

Application forms may be obtained by writing the Graduate Advisor, Plant Biology Department, Mailcode 6509, SIUC, Carbondale, IL 62901-6509 or by downloading them from the Plant Biology web site: <http://www.science.siu.edu/plant-biology/index.html>. A \$20.00 non-refundable application fee is required. The Graduate School forms will be sent with departmental forms if requested in writing or they may be downloaded from the Graduate School web site: <http://www.siu.edu/gradschl/>. Application for admission requires GRE scores along with official transcripts from all colleges and universities attended. The department uses the total of the Verbal plus the Quantitative scores and GPA as criteria for admission (See Appendix X for sliding scale graphs). All applicants must meet the Graduate School admission requirements for overall GPA which is 2.70 for a Master's degree and 3.25 for the Ph.D. degree. The department requires that the total of the Verbal and Quantitative GRE scores must be above 1000 or be offset by a suitably high GPA. The department also requires three letters of recommendation testifying to the ability of the student to succeed in a graduate program are required as well.

Foreign students must submit TOEFL scores, official transcripts, official diplomas and proof of financial support in addition to the materials listed above to the Graduate School. In addition, before a foreign student can be offered a teaching assistantship, he or she must pass the oral English proficiency examination required and administered by the Graduate School. The student must notify the Director of Graduate Students who will set up the examination with the Graduate School.

Exceptional Ph.D. are encouraged to apply for a Doctoral Fellowship or a Morris Fellowship if they are from another university (U.S. Citizens only). Exceptional students, if coming from a Bachelor's program, also may petition to directly enter the Ph.D. program by submitting a written request along with supporting evidence testifying to the ability of the applicant to conduct independent scientific research to the Director of Graduate Studies. The Awards Committee will then evaluate and vote on Direct Entry into the Ph.D. program. Exceptional M.S. applicants are encouraged to apply for a Master's Fellowship. For information on these awards, please check the Graduate School web page.

Deadlines for receipt of admission materials for the Fall term is February 15<sup>th</sup> and

for the Spring term, October 15<sup>th</sup>.

Once the application is complete, the Director of Graduate Studies will circulate the application folder to the faculty aligned with the research area of interest to the student. They will indicate acceptance or rejection with reasons for their decision. Additionally, they will indicate whether or not they are willing to serve as advisor. Applications for Ph.D. students that indicate an interest in Forestry or Plant and Soil Sciences, are forwarded to the Graduate Advisors in those departments for evaluation. No applicant will be admitted if they do not have a faculty member in Plant Biology (Master's or Ph.D.) or other affiliated departments (Ph.D. only) willing to serve as their advisor.

Once the applicant meets all the admission requirements and has an advisor their mode of support is determined. If not supported by funds from a faculty research grant, the application is put into a pool of all new and continuing students and ranked for funding from departmental sources, e.g., GA or TA support. Preference is given to those continuing students who are making satisfactory progress. New students are then offered funding based on their ranking.

Students may be rejected because they do not meet the admission standards of the Department and Graduate School, they have incomplete applications or because they do not have an advisor.

## C. Programs

### 1. Masters Degree In Plant Biology

#### A. Deadlines:

Deadlines for Masters degree planning in the Department of Plant Biology are summarized below. It is advisable to complete sections A 1, A-2, and A-3 as soon as possible in order to provide the longest period of time for the research component of the program. Where formal paperwork is necessary, obtain the proper form(s) from the Departmental Executive Secretary, complete all appropriate parts, obtain signatures of all committee members, and return it to the Director of Graduate Studies before the stated deadline. Copies of all approved paper work will be returned to the student, major advisor and to each committee member.

1. Formal declaration of your Masters Degree Faculty Advisory Committee, consisting of at least three faculty members (at least half of which must be PLB faculty) must be completed by the end of the first semester enrolled. The appropriate Graduate School form once completed must be sent to the Graduate School by the Director of Graduate Studies. [Form Required].
2. A committee-approved Course Work Program (see B below) must be submitted to the Department before the end of the student's second semester. [Form Required].
3. A committee-approved Research Proposal must be submitted to the Department before the end of the student's second semester. [Form Required].
4. Defense-ready theses must be submitted to the advisory committee at least three weeks prior to the defense. This will allow the committee members to thoroughly read the thesis.
5. A Defense-read form (See Appendix) signed by the advisory committee members and the major advisor stating that the thesis is ready for defense must be submitted to and approved by the Director of Graduate Studies prior to the scheduling of the public thesis seminar and defense.
6. Dates for the final research seminar and oral defense must be scheduled and approved by the Director of Graduate Studies and the Department Chair at least 14 days prior and public announcement must be publicly and to all faculty in the Department no less that 7 days prior (10 working days

preferred). The defense and research seminar must be presented during the academic term; no thesis seminars or defenses are allowed during break periods or during inter-session.

6. The student must check with the Graduate School on the proper formatting of the final draft of the thesis. (See Appendix for Departmental Guidelines for thesis and dissertation writing styles)

## **B. Course Work Program, Thesis, And Other Requirements**

The information below is a compilation of requirements from the Graduate School (GS) and the Department of Plant Biology (PLB). Consult the Graduate Bulletin and information provided to you on entrance by the PLB Director of Graduate Studies (Director of Graduate Studies) for details.

1. All deficiencies, as determined by the student's advisory committee, must be made up during the first year by taking appropriate undergraduate or graduate courses with grades of B or better in each. If undergraduate courses are used to satisfy the deficiencies, these credits will not count toward the credit hour requirements for the degree. (PLB).
2. The student must maintain a minimum GPA of 3.0. (GS)
3. At least one-half of the required credit hours must be earned at SIUC. (GS)
4. At least 9 hours must be taken after admission to the program. Requests for transfer from another program must be in writing to the Director of Graduate Studies who submits this request to the Graduate School. (GS)
5. The program must contain a minimum of 30 hours of graduate credits (400-level and above) beyond the Bachelor's degree (400/500 level). (GS)
6. The program must include a minimum of 21 graded class hours for 400/500 level courses. A grade of C or better is required. (GS)
7. The student must take a minimum 15 credit hours at the 500 level. (GS)
8. The program must include a minimum of 22 Plant Biology (PLB) class hours at the 400/500 level) approved by the advisory committee. (PLB)
  - a. PLB 400, Plant Anatomy, is strongly recommended if not completed prior to entrance into the graduate program. It can be counted for credit toward the degree if taken during the master's degree

program. (PLB)

- b. Of the 22 Plant Biology credit hour minimum, 9 credit hours may be from individualized instruction classes and must include the following minimums : Seminar, 3 hours and Thesis, 3 hours (maximum = 6 hours). (PLB)
  - c. All Master's students must earn 2 credit hours in PLB 590 during their first term of residence and complete a first draft of their research proposal.
  - d. All Master's degree students must earn a minimum of 3 credit hours in graduate seminars (PLB 580, 589, 554 or equivalent), at least 1 of which must be in departmental seminar (PLB 580). Additional seminar requirements can be mandated, if determined to be appropriate, by a student's Advisory Committee. (PLB)
  - e. Attendance at General Seminar (PLB 580) is required by the Department every time offered when the student is in residence with credits earned as described above. A 25-35 minute seminar on their proposed research must be presented in General Seminar by each student during their first year of residency. (PLB)
9. All courses must be taken within six years of conferring the degree. (GS)
10. To be used to satisfy part of the degree requirements, transfer credit (or unclassified graduate credit) must be approved by the Dean of the Graduate School (request communicated via formal letter on behalf of the student and student's Advisory Committee by the Major Advisor). (GS)
11. A research thesis must be completed and approved by the student's Masters Degree Faculty Advisory Committee. A minimum of four bound copies are required: two copies to the Graduate School, one to the Department, and one to the major professor. If the student also wishes one, the total minimum would be 5 copies. (GS) If other committee members request a copy, bound or unbound, the student should provide such to the mutual satisfaction of both parties.
12. The degree Master of Arts (MA) requires passing the appropriate ETS examination (French and German = 465; Russian and Spanish = 440) or taking the appropriate 388 or 488 courses and passing with a grade of B or better in each. (PLB).

### **C. Thesis writing considerations (Preparation, review, public seminar, defense and submission of final copy.**

1. Thesis writing will likely take 3-5 months.
2. Several re-writes will probably be necessary before copy is finally ready for submission to other committee members.
3. Only final copy, carefully reviewed by the major advisor **after revisions** and presumably ready to submit to the Graduate School, should be submitted to other committee members for their review. This should not be done without the approval of the student's major advisor and signed off on the thesis-ready approval form. Once the committee has agreed that the thesis or dissertation is defense-ready, the defense ready form should be completed and given to the Director of Graduate Studies who then will approve scheduling of the public seminar and thesis/dissertation defense.
4. Committee members must be given at least **three (3)** weeks to review the thesis before the final examination (defense). If possible, it is better to review the comments of committee members before the final defense.
5. A final oral examination (or defense; two hours) covering the thesis and course work and administered by the Masters Degree Faculty Advisory Committee must be successfully completed during a regular academic term, including finals week. Defenses are not allowed during break periods or during intersession. The examination will be from 2-3 hours in length and may cover topics related to but not necessarily specific to the thesis as well as topics pertinent to the thesis. The thesis may need revisions following the defense examination prior to submission to the Graduate School. (GS/PLB)
6. On completion of the thesis and preferably prior to and on the same day as the defense, the student must make a public seminar presentation (approximately 40-45 minutes) on the thesis work. This seminar must be presented during regular class days, including finals week. (PLB)

## **2. Ph.D. in Plant Biology**

Information noted below is taken from the 2000-2002 SIUC Graduate Catalog. Sources are indicated at the end of each item and are keyed as follows: GS = Graduate School, PLB = Plant Biology Department, PLB-N = newly adopted PLB Department guidelines/regulations not yet included in the Graduate Catalog.

### **A. Major Advisor And The Research Advisory Committee**

1. Prior to admission to the department, the student must select a faculty member who is willing to serve as the major advisor. No student is admitted without a faculty advisor. Depending on the Graduate Faculty status of the PLB advisor, a co-advisor may be necessary.
2. Also during the first semester in the program, the student in consultation with the major advisor, will then organize a Research Advisory Committee. This committee will consist of at least 5 people, three of which must be voting members of the Plant Biology Department and one of which must be from outside the Department. Faculty without SIUC appointments may serve on advisory committees after appointment to Adjunct Faculty Status in the Plant Biology Department.

### **B. Course work**

1. An accumulative GPA of 3.0 must be maintained throughout the program. (GS).
2. Students will take either prior to or during their program, courses in all of the following categories: 1) plant systematics, 2) plant physiology or plant molecular biology, and 3 ) ecology or environmental science. All deficiencies, as determined by the student's advisory committee, must be made up during the first year by taking appropriate courses (graduate or undergraduate) with grades of B or better in each.
3. A minimum of 20 hours of formal graduate courses in Plant Biology or related class hours is required--excluding seminar, Research, Readings, Dissertation, and Research Tool courses. (PLB).
4. The student's course work program must be approved by his/her Research Advisory Committee and submitted to the Director of Graduate Studies by the end of the first semester. Changes made after the first semester of the student's program must be approved by the majority of the student's advisory committee and filed with the Director of Graduate Studies. (PLB)

5. Courses in plant anatomy and genetics are strongly recommended if not completed prior to entrance into the PLB graduate program. (PLB)
6. All Ph.D. students must earn 2 credit hours in PLB 590 during their first term of residence and complete a first draft of their research proposal.
7. All Ph.D. students must earn a minimum of 2 credit hours in graduate seminars (PLB 580, 589, 554 or equivalent) each year of residence, at least 1 of which must be in departmental seminar. At least 1 credit per year must be Plant Biology 580, General Seminar and 1 of which must be in an area other than the student's area of expertise. A 25-35 minute seminar on their proposed research must be presented in General Seminar by each student during their first year of residency. Additional seminar requirements can be mandated, if determined to be appropriate, by a student's Advisory Committee. (PLB).
8. At least one-half of all required credit hours must be earned at SIUC, and at least 9 hours must be taken after admission to the program. All courses must be taken within six years of conferring the degree. (GS).
9. To be used to satisfy part of the degree requirements, transfer credit (or unclassified graduate credit) must be approved in writing by the student's graduate committee, by the PLB Department Chair, and by the Dean of the Graduate School. (PLB & GS).
10. Residency: At least 24 semester hours of graduate credit (with a maximum of up to 6 hours of Dissertation--DEF) must be completed on campus before advancement to candidacy. These hours can be attained in graded or non-graded courses. (GS).
11. At least 24 semester hours of Dissertation must be taken--all but 6 must be taken after advancement to Candidacy. (GS)
12. Research Tools: Two research tools, one of which must be a language or statistics, are required. The foreign language requirement is met by earning a grade of B or better in an appropriate 400 level course (Latin, French, German, Spanish or Russian). This requirement can also be met by passing the appropriate Educational Testing Service (ETS) examination (French and German = 465; Russian and Spanish = 440). If the student holds a degree from an institution in which Statistics requirements will be satisfied by earning a B or better in at least one graduate level statistics course. Tool requirements other than language or statistics may be completed by earning a B or better in courses selected from the current list approved by the Plant

Biology Faculty. Students wishing to use tools not on the list may petition the advisory committee and the Plant Biology faculty for permission to use the requested tool. See list of tools at the end of this document.

### **C. Preliminary Examination**

1. Preliminary Examination to advance to Candidacy (see current Graduate Bulletin for details; PLB)

#### **a. Objectives of the Preliminary Examination**

Although precise content of the examination is up to the examining committee, students are expected to demonstrate the following:

1. a broad grasp of existing factual and conceptual knowledge central to the area in Plant Biology within which the research is focused;
2. a knowledge of the literature pertinent to the area in Plant Biology within which the research is focused;
3. an awareness and appreciation of the significance of new advances in their area of research;
4. a general knowledge (300-level) of general botany and associated sub-disciplines including a working knowledge of plant anatomy.
5. a full understanding of the assumptions and technical complexities of relevant laboratory/field and data analytic methods and
6. a sound knowledge of the biology of the organisms or systems on which they conduct their research.

#### **b. Scheduling of Preliminary Examinations**

1. Students wishing to schedule the preliminary examination must request this in writing to the Director of Graduate Studies. The Director of Graduate Studies will appoint a plant biology faculty member to chair the examination committee. The Chair of the committee along with the advisory committee is responsible for preparing the examination which will be both written and oral. The chair is not involved in the questioning of the student or the grading of the examination. The responsibilities of the Examination Chair are to:

- A. For the written examination:

1. convene the Advisory Committee to discuss and plan the structure and organization of the written portion of the examination,
2. solicit questions from the advisory committee (and other faculty if necessary) and prepare the examination,
3. schedule and proctor the examination and distribute the completed document to all members of the advisory committee for evaluation and grading,
4. obtain the results (pass or fail) from the committee and inform the student.
5. reconvene the advisory committee to plan the next step; if pass schedule the oral examination, if fail, organize a second written examination on part or all of the subject matter,

B. For the oral examination,

1. schedule the oral examination, secure a room, post notices, provide for refreshments and discuss the examination format with the student.
2. maintain structure and order during the examination such that all members of the advisory committee have a chance for a 20 minute questioning session followed by a 10 minute session. Time should be provided for other faculty, not on the advisory committee, to ask questions as well.
3. call for a break if needed to allow the student to relax and regain composure,
4. provide for a fair and efficient discussion of the student's performance and monitor the voting process,
5. communicate the results to the student
6. write a letter to the student detailing the conclusions and recommendations of the committee; provide a copy of the letter to the Graduate Advisor.

C. The written examination will:

1. be taken first,
2. will cover the student's knowledge of general plant biology and related fields and their history, the student's accomplishments in the

course of study, and the student's progress in the special field. The candidate will be expected to show an understanding of the application of his/her formal work to the field of research.

3. consist of three parts: (i) major field of interest, (ii) basic knowledge in Plant Biology, and (iii) a declared outside minor field, secondary concentration or tools where appropriate.

4. span no more than five working days with each part to last no longer than eight hours.

5. require passing of all parts to proceed to the oral examination.

"Pass" means that the advisory committee (by majority vote) agrees that sufficient information is evident to permit proceeding to the oral part of the examination and that the student will be allowed to continue in the program. Based on performance, the student may be required to retake part or all of the examination (see Graduate catalog for complete details).

6. not be retaken, if failed, during the same academic term. It must be passed by the second attempt in order to continue in the doctoral program.

c. The oral examination will:

1. be taken no sooner than 10 days nor later than 30 days following the completion date of the written examination.

2. be publicly announced and posted at least 10 working days in advance.

3. be scheduled to allow attendance of **all** of the advisory committee and a maximum number of Plant Biology graduate faculty. Attendance is mandatory for all advisory committee members.

4. last at least two hours and no more than four hours.

5. require, for passing, no more than one dissenting vote of the advisory committee (passing may have conditions). This vote must be taken immediately following completion of the examination. If the vote is to pass, there are two levels of pass that may be recognized; Pass and Pass with Distinction. All attending graduate faculty will be given the opportunity to express their opinion on the examination. A student will be allowed two attempts to pass the oral part of the preliminary examination.

6. have the results formally reported in writing (via letter) to the Director of Graduate Studies.

d. Doctoral students entering the program with a Master's degree must pass the preliminary examination and be admitted to candidacy by the end of 36 calendar months after first registering in the Doctoral Program. However, it is recommended that the preliminary examination be taken in the third term of

residency.

#### **D. Advancement to Candidacy and Time To Degree**

1. Advancement to Candidacy will occur after completion of:
  - a. residency requirements.
  - b. research tool requirements.
  - c. passing of preliminary examinations.
  - d. the submission of the completed candidacy form by the student's major advisor and given to the Director of Graduate Studies who signs and submits it to the Graduate School.
2. After Advancement to Candidacy, the candidate has not less than 6 months but not more than 5 years to fulfill the remaining requirements for the degree. If the student does not complete the degree within the 5-year period, the student may be required to take another preliminary examination and be readmitted to candidacy. The student must remain enrolled during both Fall and Spring semesters each year until completion of the degree. One credit hour of PLB 601 -- Continuing Enrollment can be used for this purpose (but note that few benefits are included!). Although higher fees must be paid, consider the benefits of enrolling in PLB 600 - Dissertation for 1 credit before making this decision.

#### **E. Dissertation--Preparation, Review, Final Defense, Seminar, and Final Copy Completion and Submission**

1. Dissertation writing will probably take 6 months (unless started earlier in the student's tenure).
2. Only final copy, carefully reviewed by the major advisor **after revisions** and presumably ready to submit to the Graduate School, should be submitted to other committee members for their review. This should not be done without the approval of the student's major advisor. Once the committee has agreed that the dissertation is defense-ready, the defense ready form should be completed and given to the Director of Graduate Studies who then will approve scheduling of the public seminar and thesis/dissertation defense.
3. Several cycles of review and revision will probably be necessary before copy is acceptable to all committee members and ultimately ready for submission to the Graduate School.
4. Committee members must be given at least **four (4)** weeks to review the thesis before the final examination (defense). If possible, it is better to review the comments of committee members before the final defense.

5. A final oral examination or defense covering the dissertation and course work and administered by the Ph.D. degree faculty advisory committee must be successfully completed during a regular academic term. The regular academic term includes finals week. Defenses are not allowed during break periods or during intersession. The final oral examination will cover the Dissertation and related subject matter and be not more than three hours in duration. The advisory committee will administer the examination and must notify the graduate adviser of the examination date at least two weeks before the examination. "Passing" means no more than one dissenting vote of the advisory committee.
6. On completion of the dissertation and preferably prior to and on the same day as the defense, the student must make a public seminar presentation (approximately 40-45 minutes) on the dissertation work. This seminar must be presented during regular class days, including finals week. (PLB)
7. If the student wishes to participate in the graduation ceremony and be hooded by the major professor, the defense and final revisions of the dissertation must be completed by the Graduate School deadline for that term.
8. After completion of the dissertation defense and public seminar, three copies of the final/approved dissertation must be prepared and distributed as follows (copies a, b, and c, below must be done on thesis bond--at least 25% cotton rag bond paper):
  - a. two copies for the Graduate School (unbound)
  - b. one copy one for the Plant Biology Department (bound)
  - c. one copy for the major professor if requested
  - d. one copy for the student.
9. An abstract (350 words or less) must be provided (in addition to the dissertation) to the Graduate School. This abstract will be published in Dissertation Abstracts and cited in American Doctoral Dissertations and Comprehensive Dissertation Index. (GS).
10. The dissertation will be microfilmed for archival purposes--fee required. It may also be copyrighted by the student--fee required. All related paperwork will be completed and fees will be paid when the dissertation is turned in to the Graduate School. See the current Graduate Catalog for details and costs and/or consult with the appropriate Graduate School representative. (GS)

## **E. Graduation**

1. Actual conferring of the Ph.D. degree traditionally occurs when the student is "hooded" at Graduation. Plan to attend and participate this once-in-a-lifetime ceremony!! Some cost is involved for rental of a cap and gown

(currently about \$38.00).

## IV. Certificate in Plant Ecology

### A. Certificate Requirements

1. A Program of Study must be approved by the Coordinating Committee before the end of the candidates first semester in the program.

Course Requirements / Options – Training is required in 5 major Areas. Courses from other universities deemed equivalent by the Coordinating Committee can substitute for up to 2 courses in the list of required program courses below (Area 1). Additionally, courses from other universities could satisfy the statistics requirement as well.

Hours requirements – 15 from Areas 1, 3, and 4 below. Only half of the certificate hours may count towards a concurrent graduate degree.

- a) Area 1: Required program courses** - students must take at least one course from the following list. This will satisfy the ESA's sub-discipline requirements of population, community and ecosystem ecology.

- (1) Population Ecology

- (a) Population Ecology (PLB 452a and b)

- (2) Community Ecology

- (a) Forest Ecology (PLB443)

- (b) Grassland Ecology (PLB440)

- (c) Wetland Ecology (PLB 445)

- (d) Field Studies (i.e. Fralish's course, tropical studies???)

- (3) Ecosystem Ecology

- (a) Landscape Ecology (PLB 545a and b)

- (b) Quantitative Ecology (PLB 444)

- b) Area 2: Statistics:** A minimum of two courses in statistics including inferential statistics (ANOVA) and regression (i.e., EPSY 506 and 507). Note that these do not count as part of the ecology course requirements for the certificate.

- c) Area 3: Applied Ecology Elective:** One ecology course in an applied area deemed appropriate by the Coordinating Committee; e.g., in forestry,

geography, wildlife biology, or soils.

**d) Area 4: Research experience:** One year of post-graduate experience in research or development of methods demonstrating technical competence in the application of ecological principles and/or theory to decision making will be required. Applicants for the Certificate from industry, private consulting firms or government agencies lacking this research experience, will be required to take three (3) credit hours of independent research (PLB590) to gain this competence.

**e) Area 5: Mathematics and physical sciences:** Students must have completed 12 semester hours in mathematics and physical sciences in either their undergraduate or graduate programs. These hours do not count to the hours requirement for the certificate.

2. Certificate restrictions

a) Student must have a B average in graduate courses and must follow all the rules of the Certification Policy established by the Graduate School.

b) Residency must be at least 1 semester for those coming in to the program for just the certificate. Master's students can satisfy the residency by simply fulfilling the course work requirements.

c) Maximum time allowed to complete the requirements for the certificate is six years.

E. Final Certification process - an assessment instrument will be administered to students during the last semester of their program. This assessment instrument will be administered only twice a year by the coordinating committee at the end of spring and fall semesters. The assessment instrument will be a series of short answer essay questions along with a series of multiple choice questions over the required course work. (OR do we want an oral exam, we should have some writing by the student in the assessment, your thoughts here)

F. How to apply - students will be required to submit an application fee of \$10 to the department of Plant Biology. This is in addition to the necessary application to the Graduate School. (See attached application form)

## V. Graduate Certificate in Systematic Biology

The purpose of a graduate certificate is to enhance marketability of students, confirm special skills or knowledge acquired by students, and provide educational opportunities and continuing education to otherwise unserved segments of the community through short term graduate programs. The certificate program is designed to provide a certification of specialization to individuals who already possess a bachelor's degree.

The Graduate Certificate in Systematic Biology provides specialized training in systematics, the study of the diversity of organisms and their interrelationships, for post-bachelor level students interested in any area of biology. The program requires 18 hours of special course work, 50% of which may also count toward a regular degree in some graduate program (given approval by that program and the student's advisory committee). These hours are distributed across seven areas of training: Systematic Principles, Taxonomic Expertise, Molecular Techniques, Curatorial and Museum Training, Analytical and Information Technology in Systematics, Seminar and Symposium in Systematics, and Independent Study in Systematic Biology. In addition, students must attend or participate in the annual Systematic Biology Symposium (normally one Saturday in the spring semester), must attend or participate in at least one national or regional meeting associated with the field of Systematic Biology, and must deliver orally and deposit one written copy of an individual systematic study of a particular taxonomic group. See their web site for more details. [www.siu.edu/~csb/](http://www.siu.edu/~csb/)

Requirements:

### A. Application Process

1. Completed application form
2. Statement of Purpose
3. Copies of transcripts
4. Must apply before completing "major part" of certificate work (50% of credit hours, or 9 hours)
5. Application fee of \$10 (to defray cost of printing final certificates, advertising, mailings, etc.)

### B. Hours - 18

C. Course Requirements / Options - Courses / training in 7 major areas. An internship could be substituted for listed courses in one of areas 1-5, with the approval of the Center Director.

Area 1: Systematic Principles (3 hours, 1 course from approved list)

Suggested options: ANTH 534 (Seminar in Evolutionary Theory); PLB 449 (Plant Systematics and Evolution); ZOO 405 (Systematic Zoology).

Area 2: Taxonomic Expertise (morphology and natural history - 3 hours, 1 course from approved list - see Appendix A)

Suggested options: any graduate course focused on the diversity of a relevant taxonomic group.

Area 3: Molecular Techniques (population and species level techniques - 3 hours, 1 course from approved list)

Suggested options: MBMB 480 (Molecular Biology of Microorganisms Lab); PLB 420 (Techniques in Plant Molecular Biology); ZOO 579 (Molecular Genetics Techniques).

Area 4: Curatorial and Museum Training (3 hours) COURSE: ZOO 555: Curation of Biological Collections . An overview of the organization and operation of modern collections involving animal, plant, and microbial specimens. Topics include specimen preparation and curation, collection databases, specimen-collection laws, and field-collection techniques.

Area 5: Analytical and Information Technology in Systematics (3 hours, cross-listed, team-taught course) COURSE: ANTH, MBMB, PLB, ZOO 556: Computer Techniques in Systematic Biology (team taught). A survey of computational problems and current solutions in systematic biology. Topics include platform options and limitations, numerical analyses, database management, information dissemination and retrieval, and computer taxonomy.

Area 6: Seminar and Symposium in Systematic Biology (1+1=2 hours, cross-listed, team-run course). Students must participate at least two semesters in the (normally spring) seminar series and symposium. Note- this is graded on a pass/fail basis only. COURSE ANTH, MBMB, PLB, ZOO 554: Systematic Biology Seminar. Interdisciplinary research topics in systematic biology. Seminar consists of presentations by visiting or resident researchers, followed by roundtable discussions with seminar participants. Students also participate in a day-long symposium at which they contribute an oral or poster presentation based on their own research.

Area 7: Independent Study in Systematic Biology (1 hour, with individual faculty member under departmental number)

Students are expected to deposit a copy of a short systematic study done on a particular taxonomic group, analyzing a particular data base, completed under the guidance of a faculty member in the Center for Systematic Biology (see Appendix B), and approved by that faculty member plus the current Director of the Center for Systematic Biology. This paper would normally be 15-30 pages in length. The results of this study must be presented publicly on campus, as part of the seminar series if possible. This is NOT a thesis / dissertation, although it might serve as a preliminary study on a group ultimately examined for the thesis / dissertation in more detail.

Suggested options: ANTH 460; MBMB 528; PLB 570 or 590; ZOOL 593.

#### D. Other Activity Requirements

1. Students are required to check in with the Coordinator at least once a year while in the Certificate Program.
2. All students will be expected to register for the Seminar/Colloquia Series offered each spring, when in residence. This includes required attendance at the research seminar series. Students MUST participate in this class at least two semesters to attain certificate (See Area 6 above - 2 hours required registration), and they are expected to do so continually when in residence until fulfillment of certificate requirements.
3. Students, when in residence, are expected to attend / participate in the annual Systematic Biology Symposium, normally held one Saturday in April, unless excused by the Coordinating Committee. Release is normally only given for requirements of other research / training experiences or health.
4. Students are expected to attend / participate in at least one national or regional meeting associated with the field of systematic biology. Some stipend support may be available to defer some of these costs. Evidence of attendance (copy of registration receipt or other) should be placed in the student's file.
5. Students must deposit a copy of an individual systematic study done on a particular taxonomic group, analyzing a particular data base, as approved by two faculty in the Center for Systematic Biology (one being the Director). An abstract will be posted on the CSB web page. The results of this study must be presented publicly on campus, normally as part of the seminar series. (See Area 7 above - 1-2 hours required registration).

#### E. Coordinator / Advisor

The Coordinator of the Graduate Certificate Program is appointed by the Director of the Center for Systematic Biology. This individual acts as keeper of records and general advisor to assure each student is fulfilling requirements. Students are required to check in with the Coordinator at least once a year while in the Certificate Program. The initial Coordinator will be Dr. Susan Ford (Anthropology; [sford@siu.edu](mailto:sford@siu.edu)).

Restrictions:

A. Student Qualifications

1. Must be admitted to Graduate School (as degree or non-degree student) and meet Graduate School requirements of a minimum undergraduate GPA of 2.7 and/or an MA final GPA of 3.25.
2. Must maintain a minimum graduate GPA of 3.0 while in the program.

B. Time and residency limits

1. There is no minimum time that must be spent in the program, although it is not possible to complete requirements in less than one year.
2. Maximum time allowed to complete requirements is six years.

Final Certification Process:

- A. Must have final GPA of 3.0 or higher.
- B. Must complete all requirements (18 hours) within 6 years.
- C. The independent systematic study must be filed with the program coordinator, with a written abstract for posting on the web site, and it must be presented publicly as a seminar on the SIUC campus.
- D. Upon the student's satisfactory completion of the program, the Coordinator of the Graduate Certificate Program in Systematic Biology will notify the Graduate School. The Graduate School will prepare the certificate, signed by the Dean of the Graduate School and the Director of the Center for Systematic Biology. The name of the certificate will be entered on the student's transcript.

Administrative Home

As an interdisciplinary Certificate Program, the administrative home is the Graduate School.

## Steering Committee

The Coordinating Committee is the Executive Committee of the Center for Systematic Biology. This committee consists of: Dr. Frank (Andy) Anderson (Zoology) Dr. Susan Ford (Anthropology) [Director of CSF, Coordinator, Graduate Certificate], Dr. Michael Madigan (Microbiology) and Dr. Daniel Nickrent (Plant Biology)

## Participating Faculty by Department

Faculty participants include all faculty affiliated with the Center for Systematic Biology. Faculty may be added as outlined in the Guidelines of the Center for Systematic Biology.

### Department of Anthropology (mailcode 4502)

Robert Corruccini  
Susan Ford

### Department of Microbiology (mailcode 6508)

Michael Madigan

### Department of Plant Biology (mailcode 6509)

Barbara Crandall-Stotler  
Daniel Nickrent  
Karen Renzaglia  
Sedonia Sipes  
Raymond Stotler (emeritus)  
Dale Vitt

### Department of Zoology (mailcode 6501)

Frank Anderson  
Joe Beatty (emeritus)  
Ron Brandon (emeritus)  
Brooks Burr  
William Dyer  
George Feldhammer  
Edward Heist  
David King  
Carey Krajewski  
Karen Lips  
Jay McPherson

Approved Courses for Area 2:

Anthropology:

- 440A The Fossil Evidence for Human Evolution
- 455G Primate Biology and Evolution
- 528 Seminar in Primate Evolution
- 568 Seminar in Analytical Methods in Archaeology, when topic is: Wood Anatomy and Variation (cross listed with PLB 500)

Microbiology (MBMB):

- 470 Prokaryotic Diversity

Plant Biology:

- 405 The Fungi
- 406 Bryology
- 409 Field Mycology
- 410 Ecology of Bryophytes
- 400 Plant Anatomy,

Zoology:

- [406 Protozoology]
- 407 Parasitology
- 408 Herpetology
- 413 The Invertebrates
- 414 Freshwater Invertebrates
- 461 Mammalogy
- 465 Ichthyology
- 467 Ornithology
- 471 Entomology
- 473 Aquatic Entomology
- [497 Helminthology]
- [514 Advanced Entomology]
- [520 Advanced Invertebrates]

[ ] = courses not taught on regular basis

## Appendix

### I. TA or RA offer letter

Dear

On the basis of a recommendation by the Awards Committee of the Department of Plant Biology, I am pleased to offer you a Teaching Assistantship in the Department of Plant Biology at Southern Illinois University Carbondale. This Assistantship is valid for nine months beginning fall 2003 semester. It is renewable pending availability of funds and satisfactory performance in your degree program as determined annually by the departmental awards committee. The fall term begins on August XX, 200X. You are expected to be on campus one week prior to the beginning of the Fall term or at the beginning of your contract period, whichever comes first.

This nine -month Assistantship provides a stipend of \$1,158.00 per month. A tuition waiver worth approximately \$6,500.00 will also accompany this award. Students are responsible for fees of about \$600.00 per semester and course-related expenses (books, equipment, etc.). Some support may be available for the three summer months that could include additional teaching or research duties; however, it is not part of this award.

As a graduate assistant, you are expected to devote full time to graduate study and to participate in teaching through a normal load of 8 laboratory-contact hours per week including a maximum of 20 hours per week in teaching-related duties (class preparation, grading, and office hours) or equivalent.

This letter is a formal offer of the award. Please inform me in writing by April XX, 200X as to whether you will accept or decline this award.

Congratulations on having been selected for this assistantship. I look forward to hearing from you. I sincerely hope that your future experience in our graduate program will be a positive one. Please do not hesitate to contact me if you have further questions.  
Sincerely,

Dale H. Vitt

Chair, Department of Plant Biology

Cc: Dr. Philip Robertson, Director of Graduate Program, Department of Plant Biology

### II. White Paper Examples

**A. Example 1**

**POLICY AND EXPECTATIONS STATEMENT  
FOR  
STUDENTS IN PLANT BIOLOGY**

Accepting the position of graduate student in the Department of Plant Biology carries some implicit responsibilities. These responsibilities may include involvement with teaching courses or other duties assigned by the instructor (Teaching Assistantship). If a student is on a Research Assistantship, the responsibilities are dictated by the obligations of the grant and Principal Investigator. In either situation, students are expected to meet the obligations of the department as well as the obligations to their research and course work program and Major Advisor for the graduate degree. Timely progress is expected in the development and execution of the research project. Periodic progress reports will be required; if funded by a research grant, these progress reports may be dictated by the grant agreement. Suitable progress involves keeping up with course-work with acceptable grades and meeting departmental and programmatic deadlines. At least one committee meeting should be scheduled every semester to keep the committee up-to-date concerning progress in completing the degree.. It is expected that graduate students will make some time sacrifices in order to complete the degree program. If it becomes clear that the student is incapable of making suitable progress, two options are available; one is to withdraw further assistantship support and the other is to be dismissed from the program.

Students are encouraged to visit their advisor at any time for assistance and discussion of problems that in any way may be affecting their performance and progress. It is the hope of the Plant Biology Faculty that your program here is fulfilling and rewarding and we will do all we can to meet this end. However, most of the burden is upon your shoulders; what you put into your program will determine what you get out of it. The department wished you success in your development as a professional plant biologist.

Ecology Students (P.A. Robertson)

Students working under my direction will be expected to 1) enroll in all Ecology Seminars offered during their tenure, 2) attend scientific meetings and present a minimum of 1 paper for the Master's Degree and a minimum of 2 papers for the Ph.D. Degree and 3) take a minimum of two graduate-level courses in statistics (EPSY 506 & 507, for example). Students are expected to submit papers for publication. Any papers that involve considerable time, effort or advisement on my part will list my name as a secondary. When attending Scientific Meetings, it is expected that students attend as many sessions in their field as possible. For a successful graduate career, it is essential that graduate students become familiar with both the classical and contemporary literature in Ecology (See reading list).

Philip A. Robertson

Please sign below indicating that you have read and agree to the above responsibilities.

Sign: \_\_\_\_\_ Print Name: \_\_\_\_\_ Date: \_\_\_\_\_

## **B. Example 2**

The following expectations are based upon the premise that no one cares more about your future than you do. Consequently, it is assumed that you will work at your graduate program in a dedicated and diligent manner. Since both the Master's and Ph.D. programs have limited time-frames for completion, certain deadlines must be met. These deadlines include having your proposal completed with appropriate signatures before field/laboratory research begins, having the proposed course-work plan in place with appropriate signatures by the end of the first semester of the graduate program and have research completed no later than one semester before anticipated graduation. If your research is supported by an outside grant, there will be quarterly reports required for submission to the granting agency.

It is expected that students in a graduate program will assume some sacrifice and that course-work and research deadlines will be completed upon schedule. Incomplete grades are undesirable and strong encouragement will be given to complete these forthrightly. It should be understood that if suitable progress is not made, I will begin to exert pressure to keep your program up-to-date to insure timely completion of all requirements. Students are strongly encouraged to use quality break time for work on their research. For example, students should utilize part of the Thanksgiving break, Spring Break and other intersession periods in order to meet deadlines. Repeated failure to comply with certain deadlines or lack of suitable progress in the degree program can result in several actions, 1) the lack of funding for a Teaching or Research Assistantship and 2) my withdrawal as major advisor.

All data are property of Southern Illinois University and should the student decide to quit the program or change advisor, data thus far gathered will be turned over in an error-free form to the major advisor. Upon leaving the department, all data should be left on file and clearly documented for use by other interested parties.

Other expectation/requirements that I have for my students include the taking of a minimum of two graduate-level statistics courses, presenting papers at ASB or other Biological Sciences/Ecological meetings and a 400-level soils course. Since I am often off campus during the summer, plan your activities accordingly. Don't expect to graduate during the summer unless all requirements are completed before I depart for the summer session.

Rest assured that I am here to help and assist you and will give you all the help and encouragement that I can. You as a student, however, must make an equal or greater effort. I will not do the work for you. I expect that you will make every effort to be creative in your research and not be content with just the bare minimum. The bottom line is that you will reap what you sow during your graduate tenure at SIU.

Students are expected to present at least one paper at ASB if working on a

Master's Degree or at least two papers if working on a Ph.D. Degree. When attending scientific meetings, it is expected that students will attend appropriate sessions in their field, particularly if the University is funding attendance at the meetings.

I realize that there are extenuating circumstances in everyone's life and that these circumstances often affect performance in the work-place. If problems arise that cause you difficult in meeting the objectives and requirements of your degree program, please do not hesitate to discuss these with me so that I might have a better understanding of your lack of performance. Also, if any aspect of my expectations of you are unclear or bother you, please discuss these with me. If we understand each other, the program will run smoothly.

Please sign below to indicate you have read and understand this policy.

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## II. GUIDELINES FOR WRITING RESEARCH PROPOSALS FOR MASTER'S THESES AND DOCTORAL DISSERTATIONS DEPARTMENT OF PLANT BIOLOGY

The Research Proposal is one of the most important documents a graduate student will prepare during his/her tenure in Graduate School. It is a guide to the entire research phase of the program. Failure to prepare an adequate research proposal can result in an excessive amount of frustration and work after the research has been completed. Below is an outline of a research proposal and the requirements for each section.

### A. Introduction

1. A brief introduction into the nature of the problem to be investigated. Also, the research should be justified in this section. The introduction section requires a good knowledge of the area to be researched and also requires creative thinking to "ask the right questions".
2. A statement of the Research Question.
3. Objectives - clear statements of what is to be done.
4. Hypotheses (if any) - to be stated as a null ( $H_0$ ) and an alternative ( $H_a$ ). These will be essential in studies where experimental treatments are applied.

### B. Literature Review

1. This section should contain a synthesis of all the pertinent literature for the stated research question and the study area in question.
2. The more that is done in the proposal means the less that has to be done when writing the Literature Review of the thesis or dissertation.

### C. Description of Study Area (for field studies) or Description of Experimental Studies (for laboratory studies)

1. Geographical Location (including maps)
  - a. Physiography
  - b. Geology
  - c. Topography
  - d. Soils
  - e. Climate
  - f. Vegetation and/or Animal Communities
  - g. History (Optional)

#### D. Methods and Materials

1. Field Methods - a detailed description of how the data will be collected in the field or laboratory. The methods should be justified in this section. Remember the field methods must be done in such a way that the objectives of the study will be met.
2. Data Analysis - A detailed description of how the data will be analyzed. If using Inferential Statistics, include the model and the appropriate error terms. Make sure that the data will 'fit' the model. Sometimes it is useful to create fake data sets of the type and dimensionality of the field data to ensure that the model will work. Thoughtful planning here can result in significantly reduced frustration later on in the program. At all times remember that the scientific method is at work; ask the question, "could someone else repeat this study with the information presented?" Indicate how each type of analysis specifically addresses a particular objective or objectives and/or hypotheses.

#### E. Literature Cited

1. Include, in a proper format, all literature cited in the proposal using a format that is representative of the research area, i.e., Ecology, Plant Physiology, etc.

#### F. Writing Style

1. Write in simple declarative sentences.
2. Use the third person, passive voice. i.e., "An experiment will investigate...", instead of "I will do an experiment to investigate..."
3. Be concise, and not too wordy.
4. If in doubt, follow the style of a journal in your research area.
5. Ensure that all figures and tables are clearly drafted and have a fully descriptive legend.

### III. Style Guidelines for Theses and Dissertations

All Graduate School requirements take precedent over departmental guideline requirements. See Graduate School Guidelines at:

## **A. Introductory Pages**

Theses and Dissertations must contain a title page, tables of contents, abstract, acknowledgments, a list of tables and a list of figures.

## **B. Page Numbers**

Each page (including appendices) is numbered at bottom center. Heading pages (i.e., Introduction, Methods and Materials, Results, Discussion, Literature Cited, Vita) are likewise numbered at the bottom center. Pages are numbered using Arabic numerals for the body of the text. Lower case Roman numerals are used to number all pages of introductory sections including the abstract, table of contents, acknowledgments, list of tables, list of figures and list of appendices.

## **C. Table and Figure Numbers and Captions**

Table and Figure labels and captions are indicated above tables or on a facing page. The word "Table" followed by the table's number constitutes its table label. Table labels and captions begin on the same line and are single spaced. If a table label and caption are greater than one line, they are single spaced. They are left-justified with hanging indent. A single blank line separates a table label and a title from its table. Table legend material that explains symbolic representations (i.e., a key) may be included within a table as long as it is clearly demarcated.

Figure labels and caption are placed below figures or on a facing page. The word "Figure" followed by the figure's number constitutes its figure label. Figure labels and captions begin on the same line. Figure labels and titles greater than one line are single spaced and left justified with hanging indent. A single blank line separates a figure label and caption from its figure. Figure legend material that explains symbolic representations (i.e., a key) may be included within a figure as long as it is clearly demarcated. Table and figure titles are written in upper and lower case letters as is appropriate for titles. The placement of table and figure legends must be consistent.

## **D. Spacing**

Text is double spaced. All headings and titles are double spaced. Headings and data within tables are double spaced unless the position of each entry within a row and column is clearly discernible as is the case when a table contains a visible grid. References within the list of literature cited are single spaced. Each reference is separated from adjacent references by a single blank line. A hanging indent is used for all citations. Note that margins for pages are 1.5 inch left and a 1 inch margin for top, bottom and right side of page.

## **E. Quotes**

Quotes greater than 40 words are separated from surrounding text by single blank lines above and below the quote. All lines of the quote are indented five (5) spaces relative to the surrounding text. The quote is single spaced.

## **F. Headings**

Headings and subsequent subheadings are double spaced (see Nov. 1996 Graduate School Bulletin, p 6, "Spacing"). A primary heading is in all caps and centered. A secondary heading is left justified. A tertiary heading uses upper and lower case letters as a title and is left justified. A quaternary heading is in upper and lower case letters as a title, underlined and indented. Bold headings and text are permitted if used consistently (check with Graduate School on bolding limitations). Italics may be substituted for underlining in headings as long as they are used consistently.

## **G. Scientific Nomenclature**

Exact genus and species epithets must be italicized and must be used consistently throughout the document.

## **H. Acceptable Journal Styles**

The following are acceptable journal styles for theses and dissertations in Plant Biology: Ecology, Ecological Monographs, Journal of Ecology, American Journal of Botany, Bulletin of the Torrey Botanical Club, The Bryologist and Plant Physiology.

IV. List of Research Tools

**Research Tools for the Ph.D.** - The student is required to have two research tools approved by his/her graduate advisory committee, one of which must be a foreign language or statistics. A tool is defined as training in laboratory (or field) methods, instrumentation, technology, and communication skills including languages that are integral to the pursuance of research. Specific tool requirements will be determined by the student's graduate advisory committee (see list below). Courses used to satisfy tools requirements shall not be applied toward the total number of hours required for the degree.

The foreign language requirement can be met by earning a grade of B or better in an appropriate 400 level course (Latin, French, German, Spanish or Russian). The requirement can also be met by passing an Educational Testing Service (ETS) examination in French, German, Spanish or Russian. The ETS passing level for French and German is 465 and for Russian and Spanish it is 440. If the student holds a degree from an institution in which the official language is other than English, the language requirement may be waived.

Statistics requirements will be satisfied by earning a B or better in at least one graduate level statistics course. Recommended courses include Field Plot Design (PLSS 560a and b) or Inferential Statistics (EPSY 506) and Multiple Regression (EPSY 507) as well as others deemed acceptable by the student's graduate advisory committee. Tool requirements other than language or statistics may be completed by earning a B or better in courses selected from current lists approved by the Faculty of Plant Biology. If a student and his/her committee wish to use a course not on the list as a tool requirement, the student can petition the advisory committee and entire faculty to add the course to the list.

The current list of tools (or their equivalents) are listed below:

PLB421-4	Botanical Microtechnique
PLB420-3	Techniques in Plant Molecular Biology
PLB444-4	Quantitative Ecology
PLB501a&b	Research Transmission Electron Microscopy
PLB502a&b	Research Scanning Electron Microscopy
PSGA570-4	Agricultural Plant Molecular Biotechnology
PSGA430-4	Plant Propagation
CHEM455-4	Biochemistry Laboratory
GEOG420-4	Advanced Geographic Information Systems
FOR408-4	Introduction to Remote sensing and Geographic Information Sys.
FOR409-3	Forest Resource Decision Making
FOR411-3	Forest Resource Economics
FOR414-3	Information Management
FOR430-2	Forest Site Evaluation
FOR451-2	Natural Resources Inventory
FOR531=2	Biological Productivity of Forests

FOR540-4                      Digital Image Processing  
CS202 and any of the following: CS220, CS361 and CS470.

## Graduate Forms

**Dual Application for Admission  
and Financial Assistance  
Department of Plant Biology  
Southern Illinois University at Carbondale**

Name \_\_\_\_\_ Today's Date \_\_\_\_\_

Mailing Address \_\_\_\_\_ Phone Number (\_\_\_\_) \_\_\_\_\_  
\_\_\_\_\_ email address: \_\_\_\_\_

Proposed Semester of Entry \_\_\_\_\_ Degree Sought \_\_\_\_\_

Type of Assistance Preferred: Teaching Assistantship \_\_ Research Assistantship \_\_ Fellowship \_\_

High School Attended \_\_\_\_\_

Dates \_\_\_\_\_ Rank in Class \_\_\_\_\_

College Attended:                      Major Subject:      Minor Subject:              Degree:              Dates:

\_\_\_\_\_

\_\_\_\_\_

GRE Exam Scores Date(s) Taken \_\_\_\_\_ Advanced Score Optional \_\_\_\_\_

Verbal \_\_\_\_ (\_\_\_\_%) Quantitative \_\_\_\_ (\_\_\_\_%) Analytical \_\_\_\_ (\_\_\_\_%) Advanced \_\_\_\_ (\_\_\_\_%)

Experience in Teaching, Research, or other Employment \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Membership in Honorary and Professional Societies: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Honors, Thesis, or other papers and names of supervisors: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Names, Titles, and Addresses of three or more individuals whom you are asking to forward letters in support of your applications. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Please have all correspondence and credentials sent to: Director of Graduate Studies, Department of Plant Biology, Mailcode 6509, Southern Illinois University, Carbondale, IL 62901-6509

Please fill out information on reverse side of this page.



Before you fill out the information below, please visit the Plant Biology website at: <http://www.science.siu.edu/plant-biology/index.html> to determine the faculty with whom you might wish to work. Please put a **C** next to the name of the faculty with whom you have corresponded about advising you or place a **W** next to the name of the faculty with whom you might wish to work. If you have not corresponded with a faculty member, please do so as we do not admit students who do not have an advisor.

<b>Molecular Biology, Biotechnology, Physiology</b>	<b>Ecology</b>	<b>Biodiversity, Systematics</b>
Dr. Bozolla	Dr. Battaglia	Dr. Crandall-Stotler
Dr. Ebbs	Dr. Gibson	Dr. Nickrent
Dr. Ferreira	Dr. Robertson	Dr. Renzaglia (adjunct)
Dr. Wood	Dr. Vitt	Dr. Sipes
		Dr. Sundberg

If you are a potential Ph.D. student and wish to work with faculty in the Forestry or Plant and Soil Science Departments, please communicate with faculty members in those departments for information on advisement or financial support. Indicate below if you plan on working in those departments. Students working on a Ph.D. in either Plant and Soil Science or Forestry will obtain their degree through the Department of Plant Biology.

<b>PLSS</b>	<b>Forestry</b>
Dr. Lightfoot	Dr. Fralish
Dr. Preece	



## Plant Biology Program Program Of Study (Form 2)

Student

Degree

Date

Deficiencies

Languages

Research tools

Dept.	No.	Sem. Hrs.	Term

\_\_\_\_\_

\_\_\_\_\_

### COURSES TO BE TAKEN

Dept.	No.	Sem. Hrs.	Term

Dept.	No.	Sem. Hrs.	Term

Student signature

Approvals (\*=major advisor or co-major advisor):

typed name

signature

typed name

signature

typed name

signature

typed name

signature

typed name

signature

Director of Graduate Studies

signature

Department Chair

signature

**Defense-ready Thesis/Dissertation Form**  
**Department of Plant Biology**

The thesis or dissertation entitled

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by \_\_\_\_\_ has been read and  
deemed suitable for the public seminar presentation and defense by the advisory  
committee. Dated \_\_\_\_\_, 2003

Advisory Committee

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Major Advisor

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# Plant Biology Program

## Initial Student-Advisory Committee Interview

### (Program Planning) (Form 1)

(to be completed by each committee member)

Student: \_\_\_\_\_

Degree: \_\_\_\_\_

Date: \_\_\_\_\_

Committee member: \_\_\_\_\_ signature

Please assess the student 1-5 (1 is poor and 5 is outstanding).

Assessment (based on available documentation and this interview):

Basic knowledge of plant biology	1	2	3	4	5
Knowledge of field of interest	1	2	3	4	5
Computer skills	1	2	3	4	5
Verbal skills	1	2	3	4	5
Soundness of educational objectives	1	2	3	4	5
Soundness of career objectives	1	2	3	4	5
Knowledge of job opportunities	1	2	3	4	5

Other points of discussion:

Expectations regarding preliminary and/or final examinations, research tool requirements, public defense of research, etc.

General comments:

Recommendations regarding course program:

Final approved course program determined by the student and Advisory Committee is recorded on the Program of Study Form (2).

**Plant Biology Ph.D. Program**  
**Dissertation Research Proposal Assessment (Form 3)**

(to be completed by each Advisory Committee member)

Student: \_\_\_\_\_

Degree: \_\_\_\_\_

Date: \_\_\_\_\_

Committee member: \_\_\_\_\_

\_\_\_\_\_  
signature

Please assess the student's proposal 1-5 (1 is poor and 5 is outstanding).

Assessment:

Scientific merit	1	2	3	4	5
Quality of method and procedures	1	2	3	4	5
Science process skills	1	2	3	4	5
Writing skills	1	2	3	4	5
Verbal skills	1	2	3	4	5
Overall rating (should score 3-5 for approval)	1	2	3	4	5

Comments on equipment, travel, and other funding requirements; sources of funding; and probability of success:

Recommendations:

Final approved of the research proposal is recorded on the Research Proposal Approval Form (4).

**Plant Biology Ph.D. Program  
Thesis or Dissertation Research Proposal  
Approval Form (4)**

Student: \_\_\_\_\_

Major Advisor(s): \_\_\_\_\_

Degree Sought: \_\_\_\_\_

Date: \_\_\_\_\_

Title: \_\_\_\_\_

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Attach to this page a detailed description of the proposed project.

Student signature \_\_\_\_\_

Advisory Committee and other approvals (\*=major advisor or co-major advisor):

\_\_\_\_\_  
typed name

\_\_\_\_\_  
signature

\_\_\_\_\_  
typed name

\_\_\_\_\_  
signature

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\_\_\_\_\_  
signature

\_\_\_\_\_  
Director of Graduate Studies

\_\_\_\_\_  
signature

\_\_\_\_\_  
Department Chair

\_\_\_\_\_  
signature

**Plant Biology Ph.D. Program**  
**Student Public Presentation Assessment (Form 5)**

(to be used at seminars, colloquia, meetings, defenses, etc. by all participating faculty members)

Student: \_\_\_\_\_

Type of presentation: \_\_\_\_\_

Date: \_\_\_\_\_

Evaluator: \_\_\_\_\_

Please assess the following aspects of the student's presentation 1-5 (1 is poor and 5 is outstanding).

Assessment:

Quality of abstract (if available)	1	2	3	4	5
Statement of objectives	1	2	3	4	5
Method and procedures (approach to problem solving)	1	2	3	4	5
Presentation of data (including visuals)	1	2	3	4	5
Validity of conclusions	1	2	3	4	5
Reference to appropriate literature	1	2	3	4	5
Verbal skills	1	2	3	4	5

General comments:

Recommendations:

Evaluator's signature: \_\_\_\_\_

**Plant Biology Ph.D. Program**  
**Teaching Assistant Assessment (Form 6)**  
(to be completed by instructor of record)

Teaching Assistant: \_\_\_\_\_

Course: \_\_\_\_\_

Date: \_\_\_\_\_

Instructor of Record: \_\_\_\_\_

Please assess the student's performance 1-5 (1 is poor and 5 is outstanding).

Assessment:

Participation in TA meetings	1	2	3	4	5
Initiative	1	2	3	4	5
Leadership	1	2	3	4	5
Knowledge of subject	1	2	3	4	5
Preparation	1	2	3	4	5
Introduction of exercises	1	2	3	4	5
Presentation of materials and procedures	1	2	3	4	5
Response to questions	1	2	3	4	5
Testing and grading	1	2	3	4	5
Interpersonal skills	1	2	3	4	5

General comments:

Recommendations:

Evaluator's signature: \_\_\_\_\_

**Plant Biology Ph.D. Program**  
**Research Assistant Assessment (Form 7)**  
(to be completed by the Principal Investigator)

Research Assistant: \_\_\_\_\_

Project: \_\_\_\_\_

Date: \_\_\_\_\_

Principal Investigator: \_\_\_\_\_

Please assess the student's performance 1-5 (1 is poor and 5 is outstanding).

Assessment:

Participation in instructional meetings	1	2	3	4	5
Knowledge of subject	1	2	3	4	5
Preparation	1	2	3	4	5
Application of materials and procedures	1	2	3	4	5
Science process skills	1	2	3	4	5
Record keeping	1	2	3	4	5
Data processing	1	2	3	4	5
Adherence to safety rules and regulations	1	2	3	4	5
Interpersonal skills	1	2	3	4	5

General comments:

Recommendations:

Evaluator's signature: \_\_\_\_\_

**Plant Biology Ph.D. Program**  
**Preliminary Examination Assessment (Form 8)**  
(to be completed by each preliminary examination committee member)

Student: \_\_\_\_\_

Date: \_\_\_\_\_

Committee member: \_\_\_\_\_  
signature

Subject area(s) assigned: \_\_\_\_\_

Please assess student's performance 1-5 (1 is poor and 5 is outstanding).

**Part I. Assessment of written preliminary examination (all or part):**

Knowledge of major concentration	1	2	3	4	5
Knowledge of secondary concentration	1	2	3	4	5
Knowledge of general plant biology	1	2	3	4	5
Writing skills	1	2	3	4	5
Overall assessment (should score 3-5 for approval to proceed to Part II, the oral examination)	1	2	3	4	5

Comments and recommendations:

**Part II. Assessment of oral preliminary examination:**

Knowledge of plant sciences	1	2	3	4	5
Science process skills	1	2	3	4	5
Ability to communicate complex principles	1	2	3	4	5
Performance on written and oral preliminary examinations (must score 3-5 for admission to candidacy)	1	2	3	4	5

Comments and recommendations:

Final approval is recorded on the Graduate School Admission to Candidacy Form.

**ORAL DEFENSE**  
**GRADUATE SCHOOL**  
**SOUTHERN ILLINOIS UNIVERSITY**

An evaluation of eligibility for the \_\_\_\_\_ degree in \_\_\_\_\_  
as reported by members of the final examination committee.

Name of Student	ID Number
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1. Evaluation of Oral Defense of:
- Dissertation
  - Thesis
  - Research Report

Title: \_\_\_\_\_  
\_\_\_\_\_

2. Members of the examining committee and their evaluation of the oral defense:

Recommend		Name (print or type)	Signature	Check if Chair or Co-Chair
Yes	No			
p	p	_____	_____	p
p	p	_____	_____	p
p	p	_____	_____	p
p	p	_____	_____	p
p	p	_____	_____	p
p	p	_____	_____	p

DATE \_\_\_\_\_

GRADUATE FACULTY COMMITTEE  
APPROVAL FORM

Date: \_\_\_\_\_

STUDENT NAME: \_\_\_\_\_

I.D.#: \_\_\_\_\_

DEPARTMENT OF PLANT BIOLOGY \_\_\_\_\_

DEGREE SOUGHT:                    \_\_\_MASTERS                    \_\_\_SPECIALIST  
 \_\_\_DOCTORATE

COMMITTEE COMPOSITION:

(Please Type when filling out form)

NAME	DEPARTMENT	GRADUATE FACULTY STATUS*		
	(Dept. the Faculty Member holds status)	Dir.Dis.	Reg.	Adjunct
1. Chair,				
2.				
3.				
4.				
5.				

Comments:

\_\_\_\_\_

Student's Graduate  
Committee Chair or Co-Chairs

\_\_\_\_\_  
 DEPARTMENTAL APPROVAL  
 Departmental Chair or Departmental  
 Director of Graduate Studies

\_\_\_\_\_  
 GRADUATE SCHOOL APPROVAL

NOTE: