

Graduate Program in Botany



GRADUATE PROGRAM IN BOTANY UNIVERSITY OF WISCONSIN-MADISON

Overview

The Department of Botany at the University of Wisconsin has an active graduate program leading to M.S. and Ph.D. degrees. Graduate students work with faculty and staff on a wide range of projects in plant biology at any level of organization, from molecules, through cells and organs, to populations, communities, and lineages of organisms. Major areas emphasized are molecular biology, genetics, cellular and developmental biology, structural botany, physiology, ecology, evolution, taxonomy, and molecular systematics. Advanced instruction and opportunities for research are also available in phycology, bryology, ethnobotany, paleoecology, and restoration ecology. Increasingly, graduate student projects in Botany encompass more than one of these categories.

Students also interested in fields bordering botany will find rich opportunities for coursework, collaborative research, and seminars in many other departments and schools such as Agronomy, Bacteriology, Biochemistry, Chemistry, Engineering, Entomology, Forestry and Wildlife Ecology, Genetics, Geography, Geology, Horticulture, Physics, Plant Breeding/Plant Genetics, Plant Pathology, Soil Science, and Zoology and in the Nelson Institute of Environmental Studies. Interdisciplinary work is encouraged.

Graduate study in the Department of Botany requires a combination of advanced coursework, participation in seminars, and original research. The course requirements have been set up in four tracks: General Botany; Ecology; Evolution; and Molecular, Cellular, and Developmental Biology. Independent research is usually initiated soon after arrival. Through consultation with a faculty member supervisor, each student selects a track that includes a combination of courses and research topics that are related to his or her interests and that will provide the array of techniques and detailed knowledge needed for effective research.

Application and Selection Process

Completion of the Graduate School's electronic application initiates the application process. Applications that meet the Graduate School's entrance requirements, as described in the University of Wisconsin-Madison Graduate School Catalog, are forwarded to the Botany Department. The Botany Department's Graduate Program Committee selects candidates for advanced degrees from the applications forwarded from the Graduate School. The number of admissions possible in any given year is typically limited by the department's ability to provide financial support.

Admission is based on the applicant's

- 1) undergraduate record,
- 2) Graduate Record Exam (GRE) scores,
- 3) three letters of recommendation,
- 4) previous research experience, and
- 5) shared interests with one or more potential faculty advisors.

To ensure consideration for both admission to and financial support from the Botany graduate program, complete applications are due by December 1st. Late applications may be reviewed until April 15th. All applicants are required to take the GRE general test. The GRE subject test in Biology or in Cell and Molecular Biology is not required but, if available, will be considered in the admissions process and in awarding assistantships.

Botany Department and Graduate School Application Check List

All Applicants complete the University of Wisconsin – Madison Graduate School Electronic Application at <https://www.gradsch.wisc.edu/eapp/eapp.pl> including

- An series of forms requiring personal, demographic and background information
- Reasons for Graduate Study/Statement of Purpose: describing current degree goals and reasons for selecting the UW-Madison Botany program. Statement are uploaded as a separate document (Adobe PDF or MS Word preferred)
- Supplemental Application (accessed after initiating the online application) that includes:
 - Botany Applicant Information Form about the applicant’s interest in botany
 - Course History Form highlighting relevant botany, biology and science courses
 - Current CV
 - Unofficial copy of transcripts: Applicants are asked to upload unofficial transcripts through the supplemental application to facilitate the review process. This does not replace the need to submit official transcripts.
- Three (3) recommendations submitted online by selected faculty or supervisors. Instructions for submitting letters of recommendation can be found at: <http://info.gradsch.wisc.edu/admin/admissions/elorinstructions.html>
- Official GRE scores sent from ETS to UW-Madison via electronic transmission (Institution code: 1846, Department code: 0205)
- Nonrefundable application fee payable to the Office of Graduate Admissions

International applicants, whose native language is not English or whose undergraduate instruction was not in English, submit official TOEFL scores (Institution code: 1846, Department code: 37)

Send OFFICIAL TRANSCRIPTS FROM ALL institutions of higher learning attended for credit to:

Department of Botany
University of Wisconsin-Madison
ATTN: Student Services Coordinator
430 Lincoln Drive, Room 139
Madison WI 53706-1381

Application for Financial Support

The Botany Department offers financial support primarily through teaching, research and project assistantships. (Refer to the “Financial Support” section at the end of this document for details.) The Botany Department may also nominate applicants for University Fellowships. Nominations and appointments depend upon the student’s qualifications and the positions that are available.

Recommended Prior College-level Coursework

- **Mathematics:** up to and including one semester of calculus
- **Statistics:** at least one semester
- **Biology:** strong background in the biological sciences, typically including coursework in cell biology, ecology, evolution, genetics, molecular biology, and systematics
- **Chemistry:** general chemistry and organic chemistry
- **Physics:** at least one course that included electricity and light
- **Foreign Language:** two years at High School or two semesters at college

Incoming graduate students who have not taken the recommended prior coursework may be directed to make up deficiencies that are deemed sufficiently important to the student’s graduate program by the department’s Academic Advisory Committee and/or the student’s major professor and graduate committee.

Degree Requirements for M.S. Students

See the "Record of Student Progress, Botany M.S. Degree" worksheet for a more concise timeline.

1) Academic Advisory Committee Meeting

All entering graduate students meet with the departmental Academic Advisory Committee (AAC) at **the beginning of the first semester, usually during orientation week**. If a major professor has been selected, he or she may participate in the meeting. The AAC answers questions about the Botany graduate programs and advises the student on making up deficiencies, meeting general course requirements, and formulating a program that will lead to an advanced degree in the time allotted. If a major professor has not been selected, a member of the AAC serves as temporary advisor.

Prior to the AAC Meeting, the Graduate Program Coordinator provides each student with a

- [Graduate Program in Botany](#) policy book
- [Record of Student Progress](#)
- [Academic Advisory Committee Meeting Worksheet](#)
- [Track Worksheet](#), multiple worksheets can be provided if a student has not selected a track
- [Certification Meeting Worksheet](#)

Students enter their prior coursework and grades on the [Academic Advisory Committee Meeting Worksheet](#). If the student is ready to select a track, he/she enters relevant prior coursework and grades on a track worksheet. Students do not need to enter the same course on both worksheets. Students should be prepared to discuss the recommended prior coursework and the track requirements as they relate to their background and future program with the AAC.

A copy of the [Record of Student Progress](#) and complementary worksheets (i.e., [Academic Advisory Committee Meeting Worksheet](#), a [Track Worksheet](#), and [Certification Meeting Worksheet](#)) for each student is kept on file in the Graduate Program Coordinator's office. As requirements are completed, each student is responsible for updating his/her information.

2) Selection of Major Professor, Vice Major Professor, and M.S. Committee

Students select a major professor and a vice major professor **as early as convenient within the first year of graduate studies**. The major professor is primarily responsible for directing the student's coursework in their selected track, supervising the student's research and preparation of their thesis, and chairing the M.S. Committee during the Certification Meeting, annual meetings, and the Final Oral Examination. The major professor may specify appropriate requirements in addition to those listed here. The major professor also is responsible for monitoring satisfactory academic progress toward a degree at the end of each semester. The vice major professor assumes the major professor's duties when the major professor is unavailable.

Students form a committee by the end of their first year of graduate study. In most cases, the committee is formed earlier. The M.S. Committee consists of at least 3 faculty members with a majority from Botany. Typically, M.S. committees are comprised of 3 Botany faculty or 2 Botany faculty and 1 non-Botany faculty member. The committee can change in composition, in consultation with the major professor, depending on the student's needs (e.g., the student may find a substitute for a committee member who is not available for the final oral examination.)

3) Selection of a Track in Botany

Students select a track **as soon as possible but no later than the Certification Meeting**. Depending on when the track is selected, students fill out the relevant track worksheet for the Academic Advisory Committee Meeting or Certification Meeting. The AAC or the M.S. Committee advises the student on available courses that could fill track requirements. Students can also use the track worksheet to record courses that meet the Botany Department's minimum credit requirement and seminar requirement. A copy of the track worksheet is kept on file in the Graduate Program Coordinator's office. Each student is responsible for updating his/her information.

For more information, see the Course Requirements section of this document.

4) Certification Meeting

Students meet with their M.S. Committee **by the end of their first year of study** to determine what courses in addition to the major requirements (e.g., courses for the student's selected track, seminar courses, and minimum Botany credits) are required or recommended. These courses are listed on the Certification Meeting Worksheet that the student receives from the Graduate Program Coordinator. A minimum of 3 committee members must be present during the meeting. A copy Certification Meeting Worksheet is kept on file in the Graduate Program Coordinator's office. Each student is responsible for updating his/her information.

5) Completion of Coursework

M.S. students who started their program prior to the Fall of 2014 must complete a minimum of 16 credits while in residence at UW. M.S. students who started or returned to their program in or after the Fall of 2014 must complete a minimum of 30 credits (at least 16 while in residence at UW). Credits include:

- Courses required for their selected track,
- Six (6) credits within the Botany Department (can also fulfill track requirements),
- Two (2) seminar courses
- Courses assigned by the Academic Advisory Committee and/or the student's MS Committee
- Research credits

Graduate School requirements (e.g., GPA requirements, course levels, etc.) are detailed in the "Course Requirements" section in this document.

Each student is responsible for updating his/her Record of Student Progress as course requirements are completed. A copy is kept on file in the Graduate Program Coordinator's office.

6) Research and Thesis Options

Students who complete a M.S. degree and plan to pursue a Ph.D. at the University of Wisconsin – Madison have two options.

Thesis

This option requires a written thesis based on original research conducted for formal research credits (Botany 990-998). For guidelines on how to prepare a thesis, see the Graduate School's "Guide to Preparing your Master's Thesis." Students provide copies of their thesis to all committee members **at least 3 weeks prior to the final oral exam**. The thesis is reviewed and approved by the student's M.S. Committee. After corrections and revisions are completed, the student **deposits his/her thesis in the Memorial Library**.

Research Report

This option requires a written research report based on research conducted for formal research credits (Botany 990-998). Students provide copies of their research report to all committee members **at least 3 weeks prior to the final oral exam**. The research report is reviewed and approved by the student's M.S. Committee. Research reports are **not** deposited in the Memorial Library.

Students may select the research report option for a number of reasons. For example, graduate students who are funded by foreign government scholarships are often required to complete a M.S. degree before they can go forward with a Ph.D. program. In other cases, research results may be potentially patentable, and therefore, cannot be published in a library thesis which would invalidate the patent application.

6) Research and Thesis Options continued

Students who expect to end their graduate studies at the University of Wisconsin - Madison with a M.S. degree have three options.

Thesis (same as the Thesis option described above)

Research Report (same as the Research Report option described above)

Written Literature Review

Graduate students who select the written literature review option complete a minimum of twelve (12) credits of formal, graduate-level (300 or above) courses other than seminars or research credits while in residence at the UW. A minimum of six (6) of these credits is taken in the Botany Department. No formal graduate research credits are required for this option; however, students may have completed some research credits before they select this option. The written literature review is approved by the student's major professor. Students do not deposit their literature reviews in the Memorial Library and do not need to take a final oral exam. Candidates who submit a written literature review normally will not be admitted to the Ph.D. program in the Botany Department at the University of Wisconsin - Madison.

Students may select the written literature review option if they decide to leave a Ph.D. program early but want a product from their work. A thesis proposal is a common document submitted for this degree because such documents are often primarily literature reviews. If the thesis proposal has been used in a successful preliminary exam, the student's committee does not have to further approve the document.

Conservation & Restoration Ecology Non-thesis Track

The Conservation & Restoration Ecology non-thesis track leads to an M.S. Degree in Botany. It is based on coursework and skills training. It is designed to prepare Botany students for careers in environmental consulting, natural resource and environmental agencies, and nongovernmental organizations. The degree is intended for students who wish to complete their studies with a Master's degree.

Along with coursework, each student completes a restoration field practicum and literature review or an internship. A restoration field practicum involves 4 skill modules and may include: 1) Plant Identification, 2) Surveying, 3) Wetland Delineations, 4) Monitoring and Assessment, 5) Use of chainsaws, herbicides, and prescribed burn techniques, 6) Environmental Planning, 7) Environmental Regulations, 8) Global Positioning System (GPS), 9) Geographic Information Systems (GIS), and 10) Facilitating meetings to plan restorations.

Self-funding: Students enrolled in this program are not guaranteed financial support but may compete for graduate assistantships and other funding.

Time to degree: Students, who enter with at least 20 credits in natural sciences that include plant ecology, plant physiology, evolution, genetics, plant identification, plant anatomy or morphology, could complete this curriculum in 1 calendar year. If enrolled part-time, students would normally finish in ≤ 3 years.

For more information, contact the Botany Graduate Program Coordinator.

7) Final Oral Examination

M.S. candidates who submit a **thesis** or **research report** take a final oral examination administered by the student's M.S. committee. A minimum of three committee members from the Botany Faculty, including the student's major professor, administer the final oral exam. Students contact the Graduate Program Coordinator and submit a "Master's Degree Warrant Request Form" **at least 3 weeks prior to the scheduled final oral exam**. The Graduate School issues the warrant authorizing the department to administer the final exam.

The committee will base the final oral exam on the student's thesis or research report and test the student's ability to:

- analyze biological problems and formulate effective research approaches to such problems,
- integrate and apply knowledge from a variety of related fields to his/her research,
- respond articulately to questions regarding his/her research and related fields, and
- exhibit knowledge of recent advances and perspective on the history and philosophy of scientific investigation in his/her field.

Successful completion of the final examination is recorded on a warrant from the Graduate School which is signed by the entire Committee. To receive a M.S. degree, students can receive no more than one dissenting vote from their committee (a missing signature is considered a dissenting vote.) The original warrant is submitted to the Graduate School and a copy of the warrant is kept on file with the Botany Department's Graduate Program Coordinator.

For guidelines on completing a M.S. degree, refer to the Graduate School's "Expecting Your Master's Degree? Procedures to Help"

8) Time Limitation

Normally a Master's degree is completed within **2½ calendar years of residency**. Upon petition, the Academic Advisory Committee may approve one or two additional semesters to complete the degree. If the degree is not completed within four years, ordinarily the student will be dropped from the graduate program.

Degree Requirements for Ph.D. Students

See the "Record of Student Progress, Botany Ph.D. Degree" worksheet for a more concise timeline.

1) Academic Advisory Committee Meeting

All entering graduate students meet with the departmental Academic Advisory Committee (AAC) at **the beginning of the first semester, usually during orientation week**. If a major professor has been selected, he or she may participate in the meeting. The AAC answers questions about the Botany graduate programs and advises the student on making up deficiencies, meeting general course requirements, and formulating a program that will lead to an advanced degree in the time allotted. If a major professor has not been selected, a member of the AAC serves as temporary advisor.

Prior to the AAC Meeting, the Graduate Program Coordinator provides each student with a

- [Graduate Program in Botany](#) policy book
- [Record of Student Progress](#)
- [Academic Advisory Committee Meeting Worksheet](#)
- [Track Worksheet](#), multiple worksheets can be provided if a student has not selected a track
- [Ph.D. Minor Agreement Worksheet](#)
- [Certification Meeting Worksheet](#)

Students enter their prior coursework and grades on the [Academic Advisory Committee Meeting Worksheet](#). If a student is ready to select a track, he/she enters relevant prior coursework and grades on a track worksheet. Students do not need to enter the same course on both worksheets. Students should be prepared to discuss the recommended prior coursework and the track requirements as they relate to their background and future program with the AAC.

A copy of the [Record of Student Progress](#) and complementary worksheets (i.e., [Academic Advisory Committee Meeting Worksheet](#), [Track Worksheet](#), [Ph.D. Minor Agreement Worksheet](#), and [Certification Meeting Worksheet](#)) for each student is kept on file in the Graduate Program Coordinator's office. As requirements are completed, each student is responsible for updating his/her information.

2) Selection of Major Professor, Vice Major Professor, and Ph.D. Committee

Students select a major professor and a vice major professor **as early as convenient within the first year of graduate studies**.

The major professor is primarily responsible for directing the student's coursework in their selected track, supervising the student's research and preparation of their dissertation, and chairing the Ph.D. Committee during the Certification Meeting, Preliminary Exam, annual meetings, and Final Oral Exam. The major professor may specify appropriate requirements in addition to those listed here. The major professor also is responsible for monitoring satisfactory academic progress toward a degree at the end of each semester. The vice major professor assumes the major professor's duties when the major professor is unavailable.

Students form a committee by the end of their first year of graduate study. In most cases, the committee is formed earlier. A Ph.D. Committee consists of at least 5 members: at least 3 Botany Faculty and at least 1 UW Graduate Faculty outside the Botany Department. A majority of the committee members must be Botany faculty. If a Minor Option A is selected, the minor professor will be a member of the Ph.D. Committee. At least 4 committee members must be UW Graduate Faculty. The committee can change in composition, in consultation with the major professor, depending on the student's needs (e.g., the student may find a substitute for a committee member who is not available for the final oral examination.)

3) Selection of a Track in Botany

Students select a track **as soon as possible but no later than the Certification Meeting**. Depending on when the track is selected, students fill out the relevant track worksheet for the Academic Advisory Committee Meeting or Certification Meeting. The AAC or the Ph.D. Committee advises the student on available courses that could fill track requirements. Students can also use the track worksheet to record courses that meet the Botany Department's minimum credit requirement and seminar requirement. A copy of the track worksheet is kept on file in the Graduate Program Coordinator's office. Each student is responsible for updating his/her information.

For more information, see the Course Requirements section of this document.

4) Selection of a Minor Field of Study

Each Ph.D. student completes a program of integrated and related courses in a minor area. Students select a minor field of study **prior to the Certification Meeting and no later than half-way through their minor coursework**. In all cases, the minor plan must be developed and approved in consultation with the student's major professor, minor professor (if applicable), and Ph.D. committee.

Minor options for Ph.D. students in the Botany Department are:

Option A (external): requires a minimum of 9 credits in a single department/major field of study or completion a graduate certificate program (e.g., Bioinformatics). This option requires approval of the minor department or the graduate certificate program and selection of a minor professor who serves on the student's Ph.D. committee. The minor professor suggests and approves courses required for a minor/certificate in the specified program. If available, the other program's minor or certificate agreement form may be used instead of the Botany Department's Ph.D. Minor Agreement Worksheet.

Option B (distributed): requires minimum of 9 credits in one or more departments. This option requires the approval of the Botany Department Chair. Students complete a Ph.D. Minor Agreement Worksheet during the Certification Meeting. Option B has the following stipulations:

- The plan may include a course in Botany or cross-listed with Botany that is outside the student's area of emphasis. For example, an Ecology student might include a course in Plant Physiology or Plant Biochemistry. This course may NOT be counted toward the requirement for 6 graduate level credits in Botany while in residence at UW-Madison but may be counted toward the student's track requirements.
- Up to 3 credits in directed study (e.g. Botany 699) may be counted toward the minor if the work involved is outside the student's area of emphasis.
- No research credits (e.g., Botany 990-996) may be applied toward the minor.
- Graduate level courses (the equivalent of UW-Madison courses at 300 and above level) taken prior to enrollment in the UW-Madison Botany Ph.D. program may be counted toward the minor requirement. However, the Graduate School does not accept coursework taken more than 10 years ago to be applied towards the minor; the Graduate School will accept up to 5 credits of coursework that was completed 5 to 10 years prior to admission to a UW-Madison Ph.D. program.
- **At least one non-seminar course outside of the Botany Department** must be taken while in residence in the Ph.D. program at UW-Madison.

All minor courses must be at the 300 level or above. A cumulative GPA of 3.00 or higher on all minor coursework must be maintained. Courses may not be audited or taken for pass/fail or credit/no credit. Courses with an "S" grade are acceptable. One graduate seminar course outside the student's area of emphasis or outside the Botany Department may count toward both the minor and the external seminar requirement for Ph.D. students.

A copy of the Ph.D. Minor Agreement Worksheet or program-specific form is kept on file in the Graduate Program Coordinator's office. Each student is responsible for updating his/her information.

5) Certification Meeting

Students meet with their Ph.D. Committee **by the end of the first year of study** to determine what courses in addition to major requirements (e.g., courses for the student's selected track, seminar courses, and minimum credits) and minor requirements are required or recommended. These courses are listed on the Certification Meeting Worksheet that the student receives from the Graduate Program Coordinator. A minimum of 4 committee members must be present during the meeting. A copy Certification Meeting Worksheet is kept on file in the Graduate Program Coordinator's office. Each student is responsible for updating his/her information.

6) Completion of Coursework

Prior to earning dissertator status, Ph.D. students must complete a minimum of 32 credits while in residence at the UW, including:

- Courses required for their selected track,
- Six (6) credits within the Botany Department (can also fulfill track requirements),
- Two (2) seminar courses, including one outside the student's track and/or outside the Botany Department,
- Courses to complete the Minor Field of Study
- Courses assigned by the Academic Advisory Committee and/or the student's PhD Committee (usually completed by the end of the second year of study)

The 32 credits can be comprised of coursework, seminar courses, and research credits. **Students, who start or return to their program during or after the Fall of 2014, are required to complete a minimum of 51 graduate degree credits.** More information (e.g., GPA requirements, course levels, etc.) is detailed in the "Course Requirements" section of this document.

Each student is responsible for updating his/her Record of Student Progress as each of the above requirements is completed. A copy is kept on file in the Graduate Program Coordinator's office. Exceptions are subject to approval of the student's Ph.D. Committee.

Dissertators enroll in exactly 3 credits per semester. In each semester, a dissertator may take 1-3 credits of courses or seminars that are **essential** to their research. Dissertators may not audit classes. Dissertators, who are summer RAs, fellows or trainees, or who expect to graduate in summer, enroll in the 8-week general session for 3 credits.

7) Teaching Requirement

At least one semester of classroom teaching experience, at 33% or higher full-time equivalent (FTE) rate, is required of all Ph.D. students while in residence at UW-Madison. Prior teaching experience and grader positions do not count. Additional teaching experience is highly recommended.

New Teaching Assistants are required to attend eight hours of training. The College of Letters and Science and the Botany Department conduct training workshops. Graduate students also are required to attend an equity and diversity training workshop before a third semester as a teaching assistant. International students, whose native language is not English, are required to take a SPEAK test prior to the first semester during which they will be a teaching assistant.

8) Annual Committee Meetings

Each Ph.D. student meets **at least once a year** with at least 3 members of his/her committee to report progress, receive advice and guidance, discuss possible new directions or approaches, and be certified as making adequate progress toward the Ph.D. degree. Students are responsible for documenting meeting dates on their Record of Student Progress.

9) Written Proposal of Research

At least **3 weeks prior to the preliminary oral exam**, a student submits copies of a written research proposal to each member of his/her Ph.D. committee. The proposal begins with a project summary of 200 or fewer words. The body of the proposal contains a clear and reasoned statement of the questions and hypotheses to be addressed, methods and approaches to be used, the

significance of the results expected, and their relationship to ongoing research in the field. The proposal (excluding references) should not exceed eight (8) single-spaced typewritten pages.

10) Preliminary Oral Exam

The preliminary examination consists of two parts: a written proposal of research and an oral examination. Typically the preliminary oral exam immediately follows a presentation of the proposed research by the student. The preliminary exam is administered by at least 5 members of the student's Ph.D. committee, including the major and, if applicable, minor professors. The committee will explore the appropriateness of the proposed research topic and approach, with the objectives of evaluating the student's ability to propose a rigorous and significant research plan and providing advice for improving the research plan.

The oral exam is based on the student's proposal of research and will test the student's ability to:

- analyze biological problems and formulate effective research approaches to such problems,
- integrate and apply knowledge from a variety of related fields to his/her proposed research,
- respond articulately to questions regarding his/her research proposal and related fields, and
- exhibit knowledge of recent advances and perspective on the history and philosophy of scientific investigation in his/her field.

The preliminary exam should be taken by the end of the fourth semester and must be taken by the end of the fifth semester in all but the most exceptional circumstances.

Typically, students schedule their preliminary exam when they have (or will have by the end of the semester in which the preliminary exam is scheduled):

- satisfied the Graduate School's minimum resident credit requirement (32 credits),
- completed all Botany coursework requirements,
- completed all minor coursework requirements,
- cleared all Incomplete or Not Reported grades or Progress grades in non-research courses, and
- satisfied the department's minimum teaching requirement.

Students contact the Graduate Program Coordinator and submit a "Request for Preliminary Warrant" ***at least 3 weeks prior to the scheduled preliminary oral exam.*** The Graduate School issues a warrant authorizing the department to administer the preliminary examination.

The preliminary exam can have one of three outcomes: pass, conditional pass, and fail. A conditional pass signifies that the preliminary exam will continue at a date in the near future when the committee will examine the student on a revised written proposal of research. A fail indicates that the committee recommends, based on the written proposal and/or the oral exam, a student should not be admitted to candidacy for a Ph.D. degree. Students who fail their first attempt at the preliminary examination are entitled to a second chance. Students who fail their second attempt are denied admission to candidacy for a Ph.D. degree.

Successful completion of the preliminary examination is recorded on a warrant from the Graduate School which is signed by the entire Committee. To become a dissertator, students can receive no more than one dissenting vote from their committee (a missing signature is considered a dissenting vote.) The original warrant is submitted to the Graduate School and a copy of the warrant is kept on file with the Botany Department's Graduate Program Coordinator.

11) Admission to Candidacy for Ph.D.

A student is officially admitted to candidacy for the Ph.D. ***at the start of the semester or summer following completion of all DISSERTATOR requirements*** except for the dissertation and final exam. To be eligible for dissertator status, a student must have:

- passed the preliminary examination in the major field,
- satisfied the Graduate School's minimum resident credit requirement (32 credits),
- completed all major and minor coursework requirements,
- cleared all Incomplete or Not reported grades or Progress grades in non-research courses, and
- returned the signed preliminary exam warrant to the Graduate School.

12) Annual Presentation of Research Progress

After achieving dissertator status, each candidate for the Ph.D. degree gives an annual public presentation of their research progress on campus. Presentations may be given as part of the departmental colloquium.

13) Dissertation

A written dissertation based on original research conducted in a formal research course (Botany 990-998) is required. The candidate for the Ph.D. degree provides copies of his/her dissertation to each Ph.D. committee member **at least three weeks prior to his/her final oral examination**. The dissertation is reviewed and approved by the student's Ph.D. Committee.

14) Presentation on Dissertation Research

During the final semester in residence, a candidate for the Ph.D. degree presents a departmental seminar on his/her research. This seminar is treated as a Botany Colloquium with a public announcement distributed to the Botany faculty, staff and graduate students, and any other interested parties at least one week prior to the seminar. The Final Oral Exam typically follows immediately after the candidate's public presentation.

15) Final Oral Examination

All candidates take a final oral examination administered by the student's Ph.D. committee. In most cases, this committee will have the same composition as the committee that administered the preliminary oral examination. A minimum of five committee members, including at least three members of the Botany Faculty and one UW Graduate Faculty outside the Botany Department, administer the final oral exam. If the student has completed an Option A minor, a UW Graduate Faculty from the minor department is included on the committee.

Students contact the Graduate Program Coordinator and submit a "Ph.D. Final Oral Committee Approval Form" **at least 3 weeks prior to the scheduled final oral exam**. The Graduate School issues a warrant authorizing the department to administer the final examination. For guidelines on completing a Ph.D. degree, refer to the Graduate School's "Dissertation Submission for PhD Students."

Successful completion of the final examination is recorded on a warrant from the Graduate School which is signed by the entire Committee. To receive a Ph.D. degree, students can receive no more than one dissenting vote from their committee (a missing signature is considered a dissenting vote.) The original warrant is submitted to the Graduate School during the student's final review, and a copy of the signed warrant is submitted to the Botany Department's Graduate Program Coordinator.

16) Final Review and Depositing Dissertation with the Graduate School

After passing the final oral examination and completing any necessary corrections or revisions to the dissertation, the student **deposits his/her dissertation with the Graduate School**. For guidelines on how to prepare a dissertation for deposit, see the Graduate School's "Dissertation Submission for PhD Students." The Graduate School Office of Admissions and Academic Services will review the dissertation for adherence to the formatting requirements and submit the dissertation for publication. Students schedule an appointment for their final review.

17) Time Limitation

Normally a Ph.D. degree in Botany is completed within **5 calendar years of residency** (four years if the student enters with a Master's degree.) Under exceptional circumstances, a student may petition the Academic Advisory Committee for an extension to complete the degree. The Graduate School allows students 5 years from the date of passing their preliminary examination to take their final oral examination and deposit their dissertation. Failure to complete their degree within this 5-year period may result in the student having to retake the preliminary examination and be re-admitted to candidacy.

Course Requirements for Ph.D. and M.S. Students

1) Selection of a Track within Botany

Course requirements depend upon which track the student chooses. Acceptable courses carry graduate credit (300 and above level) and usually consist of at least three credits. Seminar courses may not be counted. Appendix 1 lists courses that may be counted as fulfilling these requirements. Courses not listed in Appendix 1 may be counted towards completion of the requirements at the discretion of the Academic Advisory Committee or in consultation with the student's major professor and committee. A single course may be used to fulfill only one requirement, even if it can satisfy several. Courses taken at other institutions may be accepted. A grade of A, AB, or B must be earned.

Each student selects one of the following tracks.

General Botany Track

Ph.D. students need one course from each of the following.

M.S. students need one course from at least six of the seven.

- genetics,
- biochemistry, cell or molecular biology,
- plant physiology or plant developmental biology,
- cryptogamic botany,
- plant anatomy or morphology,
- ecology, and
- evolution or systematics

Ecology Track

Ph.D. and M.S. students need a minimum of 5 courses as follows:

- at least 3 courses (minimum of 9 credits) in ecology,
- one course in evolution, and
- one course in any of the following: systematics; cryptogamic botany; biochemistry, cell or molecular biology; plant physiology or plant developmental biology; plant anatomy or morphology; or genetics

Evolution Track

Ph.D. and M.S. students need a minimum of 5 courses, at least one from each of the following:

- evolution,
- systematics or cryptogamic botany,
- population or quantitative genetics,
- ecology, and
- one course in any of the following: biochemistry, cell or molecular biology; plant physiology or plant developmental biology; or plant anatomy or morphology

Molecular, Cellular, and Developmental Biology (MCDB) Track

Ph.D. and M.S. students need a minimum of 5 courses, at least one from each of the following:

- plant anatomy or morphology,
- biochemistry, cell or molecular biology,
- plant physiology,
- plant developmental biology or genetics, and
- one course in any of the following: ecology; systematics; evolution; or cryptogamic botany

Conservation & Restoration Ecology Non-thesis Track (M.S. Degree only)

M.S. students need a minimum of 30 credits (contact the Botany Graduate Program Coordinator for details).

2) Minimum Requirements of the Botany Department

A minimum of **six credits in Botany** at the 300 level or above (not including seminar or research credits) are required while in residence at the UW. These six credits may include courses used to fulfill track requirements. A grade of A, AB, or B must be earned.

M.S. and Ph.D. students take a minimum of **two seminar courses** while in residence at the UW. Ph.D. students take a seminar course outside their chosen track and/or outside the Botany Department, prior to earning dissertator status. **Two additional semesters of seminar courses are strongly recommended for Ph.D. students and may be taken before or after becoming a dissertator.**

Ph.D. students are required to select a **minor field of study** and fulfill the associated coursework (refer to "Degree Requirements for Ph.D. Students" in this document for details).

All Incomplete grades must be removed in the following semester, unless the course has to be repeated. Failure to remove an Incomplete by the deadline is considered unsatisfactory progress.

3) Minimum Requirements of the Graduate School

The Graduate School website <https://grad.wisc.edu/acadpolicy/> should be consulted for details of current Graduate School general requirements for the M.S. and Ph.D. degrees. Several critical requirements are mentioned below.

Minimum Graduate Residence Credit Requirements: The minimum number of graduate-level credits (from courses numbered 300 or above) taken as a graduate student at UW-Madison.

- M.S. 16 credits
- Ph.D. 32 credits, completed prior to earning dissertator status

Minimum Graduate Degree Credit Requirements: The minimum number of credits to complete the degree taken while a graduate student at UW-Madison or through approved prior course work.

- M.S. 16 credits (if started program prior to Fall of 2014)
- M.S. 30 credits (if started or returned to program during or after Fall of 2014)
- Ph.D. 32 credits (if started program prior to Fall of 2014)
- Ph.D. 51 credits (if started or returned to program during or after Fall of 2014)

Minimum Graduate Course Work (50%) Requirement: For students who start or return to their program during or after the Fall of 2014, at least 50% of credits applied toward the program's graduate degree credit requirement must be with courses designed for graduate work. Graduate course work can include UW-Madison courses (including but not limited to online, thesis/research, independent study, and practicum/internship credits) that satisfy one of the following guidelines:

- numbered 700 and above (including research credits);
- numbered 300-699 that are specifically designed for graduate students in a graduate program;
- numbered 300-699 that assess graduate students separately from undergraduate students;
- or
- numbered 300-699 that have a graduate student enrollment >50% in any given semester.

Grades: All graduate courses in which a student receives a grade of A, AB, B, or S will count toward the Graduate School's minimum credit requirement. Courses with grades of BC or C count only if there are equal credits with grades of AB and A respectively in non-research courses to offset the lower grades. Courses with grades of P ("in progress") fulfill the Graduate School's minimum credit requirement only if they are research courses. Courses taken for audit or pass/fail, under the 300 level, or in which a student receives grades of D or F do not count. Students must maintain a cumulative Grade Point Average (GPA) of 3.00 (on a 4.00 scale), excluding research credits.

Course Load: A full-time program is 8 to 15 credits for a semester and 4 to 12 credits for the summer. During the summer, the maximum number of credits equals the number of weeks the student is enrolled in courses. For example, if the student enrolls for the eight-week session, the maximum number of credits the student is permitted to enroll in is 8. Any exception to the maximum credit load must be approved by the Graduate School using the Overload Request process.

Enrollment requirements for **non-dissertators** are as follows. For teaching assistants and project assistants, minimum enrollment for full-time status is 4 credits for a 50% appointment and 6 credits for a 33% appointment for a semester. Research assistants, fellows and trainees need to enroll in 8 credits per semester to maintain full-time status. Summer research assistants, fellows and trainees, and students who expect to graduate in the summer enroll in a minimum of 2 credits during the eight-week summer session. Summer teaching assistants, project assistants and students without appointments are not required to enroll.

Dissertators enroll in exactly 3 credits during the fall and spring semesters. Dissertators who are summer research assistants, fellows or trainees or who expect to graduate in the summer enroll in 3 credits during the eight-week summer session. Dissertators are considered full-time at 3 credits.

It is against university policy to hold an assistantship without being properly enrolled. Minimum enrollment is required to maintain graduate student status. Non-dissertators who do not need to maintain full-time status have a 2 credit enrollment minimum during fall and spring semesters. Non-dissertators who do not enroll in at least 2 credits and dissertators who do not enroll in 3 credits during a semester must apply for re-entry. Courses, which are audited or taken pass/fail or credit/no credit or are under the 300 level, do not apply to this minimum enrollment policy.

Satisfactory Academic Progress

A student's major professor has the primary responsibility for monitoring satisfactory academic progress toward a degree at the end of each semester. The Academic Advisory Committee and the Graduate Program Coordinator also routinely monitor student progress. Satisfactory progress includes fulfilling course requirements, carrying an adequate course load, receiving satisfactory grades, and completing degree requirements on schedule. Graduate students are responsible for keeping the Botany Office copy of their Record of Student Progress and complementary worksheets (i.e., Academic Advisory Committee Worksheet, a track worksheet, Certification Meeting Worksheet, and Ph.D. Minor Agreement Worksheet) up-to-date as requirements are completed.

The student's major professor also has the responsibility for evaluating a research progress each semester. After a student's Ph.D. Committee is formed, a decision that research progress has been unsatisfactory can be made only with the consent of the Ph.D. Committee.

A student, who at the end of any semester has not fulfilled the academic requirements discussed in this document and/or has not completed the degree requirements on schedule, will be placed on probation for the following semester. Eligibility for financial support is not affected during the semester of probation. A student on probation will be returned to normal status if deficiencies from the previous semester are corrected and if the usual academic and degree requirements are met during the probationary semester. A student who does not make up deficiencies from the previous semester or who does not fulfill the criteria for satisfactory progress for two consecutive semesters normally will not be eligible for further financial support and will be dropped from the graduate program. In unusual situations, students may petition the Academic Advisory Committee to delay the decision on satisfactory progress and on continued financial support for an additional semester.

Any decisions about placing students on probation or dropping students from the graduate program is made by the Academic Advisory Committee acting on recommendations from the major professor. Any student has the privilege of appearing before the committee to appeal a decision.

Changes in Graduate Student Degree Status

1) Changing from a Ph.D. to a terminal M.S. program in Botany

The guaranteed support level for graduate students who are admitted as Ph.D. students and given an appropriate support guarantee, but who later decide to work toward a terminal M.S. degree cannot exceed that offered to incoming Master's students (i.e., 5 semesters). As soon as the decision to change to a terminal M.S. degree is made, the student informs the Chair of the Academic Advisory Committee and the Chair of the TA Assignments Committee. The Graduate Program Coordinator sends the student a letter indicating the change in degree status and the modified guaranteed support level. This letter will be signed by the Chair of the Academic Advisory Committee and the Department Chair. If a Ph.D. student has used five or more semesters of support before changing to a terminal M.S. degree student, he/she is no longer guaranteed support.

2) Changing from a M.S. to a Ph.D. program in Botany

Graduate students who were originally admitted as terminal Master's students, but who decide to continue for a Ph.D. with the same advisor apply in writing to the Botany Department's Graduate Admissions Committee for approval to change their degree goal and for an additional three semesters of guaranteed support (if this is desired). The student is responsible for ensuring that his/her advisor provides a letter of support to the Graduate Admissions Committee. Applications are due before November 1st if the student wishes to have the change in effect for the following Spring semester and wishes to be appointed as a Teaching Assistant. Applications are due before February 1st if the student wishes to have the change in effect for the following Fall semester and wishes to be appointed as a Teaching Assistant. Requests that are made after February 1st will be considered during the following year's admissions process, unless the student does not require financial support. It is strongly recommended that M.S. students, who wish to change to a Ph.D. program, apply during their first year in residence.

The Botany Department's Graduate Admissions Committee uses the student's original application file, amended by subsequent grade reports and the advisor's letter to make a decision. The Graduate Program Coordinator sends the student a letter indicating the Graduate Admissions Committee's decision and specifying whether or not additional guaranteed support will be provided. The Committee's decision can be appealed once. The total amount of support that can be guaranteed to a continuing student having the same advisor will not exceed 10 semesters.

Students who complete a M.S. degree in the Department of Botany and then apply for admission as a Ph.D. student with a different advisor or after an intervening period of two or more years will be eligible for five semesters of additional guaranteed support.

Students meet with the Academic Advisory Committee at the beginning of the first semester as a Ph.D. student to review their record and start a new Record of Student Progress.

3) Leave of Absence

Graduate students in Botany are expected to maintain their status as full-time students during their degree program. If a student finds it necessary to take a temporary leave of absence from the graduate program for one or two semesters, a meeting with the major professor and the student's M.S. or Ph.D. committee must be scheduled to discuss the student's future plans. A student submits a Leave of Absence/Continuation of Leave Request form, which includes the anticipated length of absence and is signed by his/her advisor, to the Graduate Academic Advisory Committee. A leave of absence may not exceed two calendar years. The period of leave will stop the progress time clock. Returning students confer with the Graduate Academic Advisory Committee which has the authority to extend the progress time clock if this is deemed advisable.

Note: Dissertators who request a leave of absence must abide by The Graduate School policy.

A student on leave of absence is expected to contact the Academic Advisory Committee in writing each semester while on leave to inform the Committee and major professor of his/her plans and to formally request continuation of the leave of absence if needed for the following semester. A Leave of Absence/Continuation of Leave Request form will be mailed to the student each semester with the TA position announcements. A leave of absence that does not have Department approval, or an extended leave that affects the student's satisfactory academic progress toward a degree, may result in a termination of the student's support guarantee and a possibility of being dropped from the graduate program.

It is the responsibility of a contractual student to notify the Graduate Program Coordinator of his/her intention to return and expectation of continued support by February 1st preceding the academic year of the intended return, regardless of whether re-entry is in the Fall or Spring semester. Without timely notification, financial support cannot be guaranteed.

To apply for readmission, graduate students first contact the Botany Department and then the Graduate School Office of Admissions and Academic Services. Students are required to complete a new online application for admission. The Graduate School website has detailed information on the re-entry process.

Minor in Botany

Graduate students from other departments may complete a minor in Botany. Students are required to take a minimum of 9 graduate credits in Botany, including a seminar course, while in residence at UW-Madison. The student selects a minor professor from the Botany faculty who approves the minor coursework and seminar course. The minor professor is a member of the student's Ph.D. committee and participates in the preliminary and final exams.

The student completes a Botany Minor Agreement Worksheet in collaboration with his/her minor professor and committee. After the worksheet is signed by the student's minor and major professors, a copy is filed with the Botany Graduate Program Coordinator and the student's major department. Any changes to the proposed minor coursework must be approved by the minor professor. The student is responsible for updating the Botany Minor Agreement Worksheet.

Joint Degree

A joint degree consists of one graduate degree with two programs. A student completing a joint degree writes one thesis or dissertation and receives one diploma. Students can earn a joint M.S. or a joint Ph.D. The Graduate School website has detailed information on the requirements and procedures for a joint degree.

Appendix 1: Samples of UW courses previously used to satisfy track requirements in Botany

Courses not listed in this table may be counted for credit at the discretion of the Academic Advisory Committee or the student's degree committee. Courses listed under more than one category (e.g. Genetics 629) may be used to fulfill only one track requirement.

CATEGORY	DEPT & COURSE #	COURSE NAME	TYPICALLY OFFERED IN
Biochemistry, Cell or Molecular Biology	Biochem 501	Intro to Biochemistry	Fall/Spring
	Biochem 601	Protein & Enzyme Structure and Function	Fall
	Biochem 602	General Biochemistry	Spring
	Biochem 621	Plant Biochemistry	Spring (odd)
	Biocore 303	Cellular Biology	Spring
	Botany 860	Plant Cell Biology	Spring (even)
Cryptogamic Botany	Botany 330	Algae	Fall
	Botany 332	Fungi	Spring
	Botany 360	Bryophytes	Occasionally
	MicroBio 303	Biology of Microorganisms	Every semester
Ecology General Botany, Evolution and MCBT Tracks only	Biocore 301	Evolution, Ecology and Genetics	Fall
	Biocore 302	Evolution, Ecology and Genetics Lab	Fall
Ecology All tracks	Botany 455	Vegetation of Wisconsin	Fall, Summer (odd)
	Botany 459	Ecological Techniques for Field Monitoring	Fall (odd) (Summer)
	Botany 460	General Ecology	Fall/Spring Summer (even)
	Botany 461	Primary Production and Autecology	Fall
	Botany 473	Plant-Insect Interactions	Spring (even)
	Botany 505	Plant-Microbe Interactions	Spring
	Botany 651	Conservation Biology	Spring
	Botany 670	Adaptive Restoration Lab	Fall
	Botany 725	Ecosystem Concepts	Spring (odd)
	Botany 801	Advanced Plant Community Ecology	Spring (even)
	Botany 802	Physiological Plant Ecology	Spring (odd)
Botany 879	Advanced Landscape Ecology	Spring (even)	

Appendix 1: Samples of UW courses previously used to satisfy track requirements in Botany

CATEGORY	DEPT & COURSE #	COURSE NAME	TYPICALLY OFFERED IN
Evolution	Botany 410	Evolutionary Biology	Spring
	Genetics 629	Evolutionary Genetics	Fall (odd)
Genetics	Botany 466	General Genetics	Every semester
	Genetics 677	Special Topics	
	Genetics 875	Special Topics	Fall
Population	Botany 645	Modeling Population Genetics and Evolution	Fall (even)
Population or Quantitative	Genetics 629	Evolutionary Genetics	Fall (odd)
Plant Anatomy or Morphology	Botany 300	Plant Anatomy	Fall
	Botany 305	Plant Morphology	Spring (odd)
Plant Developmental Biology	Botany 840	Regulatory Mechanisms in Plant Development	Fall (even)
Plant Physiology	Biocore 323	Organismal Biology	Fall
	Botany 500	Plant Physiology	Spring
Systematics	Botany 400	Plant Systematics	Fall
	Botany 401	Vascular Flora of Wisconsin	Spring (even) Summer (odd)
	Botany 563	Phylogenetic Analysis of Molecular Data	Spring (odd)
	Genetics 629	Evolutionary Genetics	Fall (odd)

Financial support is available to qualified graduate students in the form of teaching, research, and project assistantships, and fellowships. Typically, there are approximately 35 Botany graduate students who hold assistantships or fellowships in a given semester. Students are eligible also for intradepartmental awards and grants.

Graduate students who have a teaching, research or project assistantships with at least a 33.3% appointment for a Fall or Spring term are eligible to receive **remission of full tuition**. Fellowships or traineeships that are payrolled through the university and that carry stipends equivalent to at least a 33.3% research assistantship also qualify for remission of non-resident tuition. Tuition remission is conditionally awarded at the start of the semester based on the expectation that actual earnings during the semester will be at least 33% of the full-time rate.

All students pay **segregated fees**. The only exception is that fellowships paid through the Graduate School have segregated fees waived in addition to tuition. Assistantships and fellowships also provide **eligibility for an excellent health insurance program**, an extremely valuable benefit that provides single or family coverage that is more comprehensive than individuals can usually purchase on their own.

1) Teaching Assistantships

The most common source of support is a teaching assistantship. Historically, stipend rates for teaching and project assistants have been governed by the Teaching Assistant Association (TAA) bargaining unit. In addition to classroom work, 8-12 hours a week are typically required for preparing labs and/or discussion sections, correcting papers and examinations, and counseling students.

Candidates for admission must meet the following requirements to receive a teaching assistantship:

- evidence (usually from the undergraduate transcript) of an appropriate background in the relevant subject matter of the course(s) to which appointment is being considered;
- evidence (usually from letters of recommendation or verbal communication) of the candidate's potential as a teaching assistant;
- an undergraduate GPA of 3.0 or above (admission is occasionally granted to candidates with a lower GPA, but TA appointments specifically require a GPA of 3.0 or above); and
- for international students whose native language is not English, evidence is also required of competence in spoken English through the SPEAK test that is administered by the UW. Usually, a TA appointment is not possible during the first year of graduate study for an international student.

Current students, who apply for their first teaching assistantship, are also subject to the above criteria, as well as their performance as a graduate student, which is based on satisfactory progress in their coursework and research and/or an assessment of the Academic Advisory Committee. Reappointment as a teaching assistant depends upon satisfactory progress as a graduate student, satisfactory performance as a teaching assistant, and completing the Equity/Diversity TA Training.

Teaching assistants may be eligible for a number of the University teaching awards, including the UW-Madison Early Excellence in Teaching Award, UW-Madison Exceptional Service Award, UW-Madison Innovation in Teaching Award, UW-Madison Capstone Ph.D. Teaching Award, and the L&S Teaching Fellow. Information on these awards can be found at:

<http://www.ls.wisc.edu/TA-awards/awardgrid.html>

2) Research or Project Assistantships

Research and Project Assistantships are made possible by funds awarded to individual professors for particular research programs. Recipients are selected by the individual professor concerned.

3) University Fellowships

Advanced Opportunity Fellowships (AOF) are granted to the UW-Madison's Graduate School by the State of Wisconsin and combined with other graduate education funds to support the recruitment and retention of highly qualified underrepresented students in UW-Madison graduate programs. Fellowships are competitive and merit based. Advanced Opportunity funding is intended to increase the racial and ethnic diversity of the graduate student population, as well as to support economically disadvantaged and first generation college students. AOF fellowships are paid through the Graduate School by the College of Letters & Science's Community of Graduate Research Scholars (C-GRS) program.

University Fellowships for the Biological Sciences Division have been discontinued. A few additional fellowships are available from sources within the university and are usually awarded to students who have already started their graduate work at UW-Madison.

4) External Fellowships

Fellowships secured by the student from outside agencies, such as the National Science Foundation, provide another important source of aid for which students may apply either before or after commencing graduate work at UW. Such fellowships can often be supplemented with University funds up to prevailing University fellowship rates, if necessary.

All qualified students who are US citizens, nationals or permanent resident aliens of the US are urged to apply to the National Science Foundation for the pre-doctoral fellowship competition. Students apply directly to NSF; closing date is usually in early November. Please check the NSF website: <http://www.nsf.gov> for the application instructions and deadline.

For more information on funding resources, see the websites for

- Office of Fellowships and Funding Resources at <http://uwoffr.wordpress.com/>
- Grants Information Collection, A Cooperating Collection of the Foundation Center Library Network at <http://grants.library.wisc.edu/index.html>
- The College of Letters and Science Community of Graduate Research Awards at <http://www.ls.wisc.edu/cgrs/index.html>
- Office of Student Financial Aid at <http://finaid.wisc.edu/graduate-and-professional.htm>
- The Botany Department's "Research Funding Opportunities" wiki page

5) Intradepartmental Fellowships

The Botany Department historically has provided fellowships to its graduate students. The number of fellowships offered each year depends on the availability of funds. Typically, a given fellowship can be offered every year or every other year. The following are intradepartmental fellowships that have been offered in the past 5 years.

- The ***O.N. and E.K. Allen Graduate Fellowship*** provides two semesters of RA support and is awarded on the basis of merit and service, typically to students nearing completion of the Ph.D. program. The O.N. and E.K. Allen Graduate Fellowship honors Oscar and Ethel Allen who were international authorities on rhizobial associations.
- The ***Flora Aeterna Fellowship***, which was first awarded in the 2011-12 academic year, provides up to 12 months of support plus research funds to a graduate student whose research has the potential to directly and positively impact the long-term survival of plants native to the United States.

6) Intradepartmental Research and Travel Support

The Botany Department has also provided research and travel support to its graduate students. Support offered each year depends on the availability of funds. The following have been offered in the past 5 years.

- The ***Eldon and Joy Newcomb Research Support*** provides research support comparable to 2-months of a research assistantship during the summer plus flexible research funds. Support is based on merit and identified need of funds for research support. Dr. Eldon Newcomb is a member of the National Academy of Sciences, an eminent authority on plant structure, a distinguished teacher, researcher, and mentor, and past Chair of the Department of Botany. He and Joy have long been active in the life of the University
- The ***Davis Research Support*** provides research support comparable to 2-months of a research assistantship during the summer. Support is based on merit with some preference given to graduate students with substantial teaching service and other service in the department. The Davis Research Support honors John Jefferson Davis, who after retiring from medicine, became curator of the UW Herbarium and was a leading authority on parasitic fungi until his death in 1937.
- ***Davis Travel Support*** provides funding to offset the costs of field studies and travel associated with research. Graduate students in the ecology and systematics sections of the department are eligible to apply. Preference is given to students in their first two years of study.
- ***The Judith Croxdale Scholarships for Women in Science*** are awarded to female graduate students in the Botany Department and are based on merit and need. This scholarship honors the memory of Dr. Judith Croxdale who was a professor in plant morphology in the Department of Botany and a mentor to many female graduate students.
- ***Raper Travel Support*** defrays costs for graduate students to attend national and international scientific meetings. Preference is given to students making presentations. The Raper Fund commemorates the late Dr. Kenneth Raper, Professor of Botany and eminent mycologist.
- The ***Hugh H. Iltis Field Research Support*** provides funding to offset costs of graduate student fieldwork in the area of plant taxonomy. Students are expected to collect and deposit specimens into the Wisconsin State Herbarium. Preference is given to students working in Latin America. Dr. Hugh H. Iltis is a professor emeritus of the Department of Botany and former director of the Wisconsin State Herbarium (1955-1993). Dr. Iltis has devoted his life to land stewardship and conservancy.

- The ***Demeter Research Support*** provides research support comparable to 2-months of a research assistantship during the summer to a graduate student working in the areas of botany or plant ecology at the University of Wisconsin – Madison. The intent of the award is to support student training and research in the areas of plant ecology and biological aspects of conservation. Support is based on merit and identified need of funds for research support.
- The ***Eldon Newcomb Teaching Award*** honors a senior graduate student who has distinguished him/herself as an outstanding Teaching Assistant based on student evaluation scores and history of service.