

PLANT BIOLOGY GRADUATE GROUP
M.S. DEGREE REQUIREMENTS
Revised: 2/23/2015
Graduate Council Approval: April 10, 2015

Master's Degree Requirements

1) Admissions Requirements

For admission into the M.S. degree program, a level of scholastic development equivalent to that of a Bachelor's degree in biological sciences from a recognized college or university is required. An applicant must have a minimum 3.0 GPA to be considered for admission. The applicant must submit one official transcript for each school attended, three letters of recommendation, GRE General Test scores taken within the last 5 years, and an Office of Graduate Studies online application with fee by the stated admission deadline. A GRE subject test is recommended, but not required. TOEFL or IELTS scores are also required if the applicant's native language is not English or if prior instruction has not been in English; applicants must meet the minimum scores required by the Office of Graduate Studies.

a) Prerequisites: In addition to the admission requirements stated above, applications are expected to have passed the equivalent of the following UC Davis courses:

BIS 2A , 2B , and 2C	Biology	3 quarters/2 semesters
CHE 2A , 2B, and 2C	Inorganic Chemistry	3 quarters/2 semesters
CHE 8A and 8B	Organic Chemistry	2 quarters/2 semesters
PHE 7A and 7B	Introductory Physics	2 quarters/2 semesters
BIS 102 and 103	Biochemistry	2 quarters/1 semester
MAT 16A and 16B	Calculus	2 quarters/1 semester
STA 100 or PLS 120	Introductory Statistics	1 quarter/1 semester
BIS 101	Genetics	1 quarter/1 semester
PLB 111 or 112	Intro. Plant Physiology	1 quarter/1 semester
PLB 113 or BIS 104	Cell & Mol. Biology	1 quarter/1 semester
EVE 100	Evolution	1 quarter/1 semester
PLB 105 or PLB 116	Plant Development & Structure	1 quarter/1 semester

b) Deficiencies: Deficiencies can be made up after admission to the graduate program, preferably during the student's first year. The student's Graduate Adviser is responsible for identifying and communicating to the student the courses that must be taken to fulfill deficiencies. Courses taken to fulfill a deficiency cannot be taken S/U unless the courses are approved as exceptions by Graduate Council (there are no current exceptions on file). A course taken to fulfill an undergraduate deficiency cannot be used to complete specific degree requirements.

2) Plans of Study for an M.S. Degree in Plant Biology

Plan I. This plan requires a minimum of 34 upper division (100 level) and graduate (200 level) units of credit, of which 28 must be at the graduate level and 6 can be either at the graduate or upper division level, a written thesis, and an oral presentation of the thesis research. A maximum of 3 units of research (299) may be applied toward the total unit requirement. The oral presentation of the thesis research will be held as a public seminar (also called an exit seminar), and, when scheduling allows, will be given during the student seminar series (PBI 291).

Plan II. This plan requires a minimum of 37 upper division (100 level) and graduate (200 level) units of credit, of which 28 must be at the graduate level and 9 can be either at the graduate or upper division level, a comprehensive final examination, and a written report.

3) Specific Course Requirements

The M.S. degree will be specialized in one of four areas of Plant Biology: (a) Cell and Developmental Biology; (b) Environmental and Integrative Biology; (c) Molecular Biology, Biochemistry and Genomics; or (d) Systematics and Evolutionary Biology. Students are required to choose an area of specialization at matriculation after discussion with their Graduate Adviser, typically at the first quarter meeting. If a student wishes to change his/her specialization area, such a request must be submitted to the Master Adviser in writing or via email and is subject to approval by a Master Adviser. The area of specialization will determine which electives are taken.

a) Core Courses (15 units total for both Plans I and II):

PBI 200A Core Course Series (5 units) – To be taken in the first year

PBI 200B Core Course Series (5 units) – To be taken in the first year

PBI 200C Core Course Series (5 units) – To be taken in the first year

b) Seminar Requirements (10 units for both Plans I and II):

1-3 units of PBI 290A (1 unit each) – This course is to be taken by second year students only. Second year students are expected to enroll in this course all three quarters while enrolled. If coursework is completed by the 4th quarter, only 1 unit of PBI 290A is required.

3 units of PBI 290B (1 unit each) – Student must complete 3 units of PBI 290B, each quarter's course is 1 unit.

3 units of PBI 291 (1 unit each) – Students must complete 3 units of PBI 291, each quarter's course is 1 unit

3 units of PBI 292 (1 unit each) – Student must complete 3 units of PBI 292 within their first year, each quarter's course is 1 unit

Note: Students may request exception to the seminar requirements if there is a scheduling conflict with an especially important specialization course. Such requests are subject to approval by the student's Graduate Adviser and the Master Adviser. If the request is approved, the minimum number of required seminars will also be changed accordingly.

c) Specialization Requirements (6-9 units):

Plan I (minimum 6 units)	Plan II (minimum 9 units)
Two graduate courses (200 level) totaling at least 6 units, chosen from the courses designated in the student's specialization area (see Advising Checklists-Appendix 2A-D).*	Three graduate (200 level) or one upper division (100 level) and two graduate courses (200 level) totaling at least 9 units, chosen from the courses designated in the student's specialization area (see Advising Checklists- Appendix 2A-D).*

**For both plans, other courses may be substituted with the approval of the Graduate Adviser.*

d) Research Unit Requirements (6-9 units):

Plan I (3 units count in unit requirement)	Plan II (3 units count in unit requirement)
PBI 299 (3 units)	PBI 299 (3 units)

The required research units may be taken in one quarter or in multiple quarters. Only 3 units of PBI 299 will count toward the degree requirement. While a student is conducting original research or researching and writing their report, it is expected that he/she will continue to enroll in PBI 299 beyond the 3 units.

e) Coursework Summary:

Plan I	Plan II
Core Courses: 15 units Specialization Courses: 6 units Seminars: 10 units Research Courses: 3 units of PBI 299 (count toward unit requirement)	Core Courses: 15 units Specialization Courses: 9 units Seminars: 10 units Research Courses: 3 units of PBI 299 (count toward unit requirement)
Total minimum units: 34	Total minimum units: 37

Both Plan I and II students: No single course may be used to satisfy more than one degree requirement (for example, the same course cannot be used to fulfill an undergraduate deficiency and satisfy the elective course requirement). All courses taken to fulfill degree requirements for which a letter grade is offered must be taken for a grade (and not Passed/Not Passed or Satisfactory/Unsatisfactory). A grade of C- or better is required to satisfy the degree requirement for an advanced undergraduate level (100) course and a grade of B- or better is required to pass a graduate (200) level course. Please note for a full time student that a minimum course load is 12 units each academic quarter. Per UC regulations, students cannot enroll in more than 12 units of graduate level coursework (200) or more than 16 units of combined upper division and graduate level coursework (100, 200, 300) per quarter.

4) Special requirements:

Plan I	Plan II
In addition to an approved thesis, students must present an exit seminar on their thesis research. This will typically occur in the student seminar series (PBI 291) in the quarter prior to graduation.	In addition to passing the comprehensive examination, students must complete a written report (10 pages minimum, double spaced, 12 pt font, not including references and tables or figures), the subject matter of which must be approved by the program's Master's Comprehensive Examination Committee prior to the writing of the report.

5) Committees:

a) Admissions Committee

Once the completed application, all supporting material, and the application fee have been received by the Office of Graduate Studies, the application will be submitted to the Admissions Committee. The Admissions Committee consists of at least four Plant Biology Graduate Group faculty members and one Plant Biology Graduate Group student. Based on a review of the entire application and consultation with graduate group faculty, a recommendation is made to accept or decline an applicant's request for admission. That recommendation is forwarded to the Dean of Graduate Studies for final approval of admission. Notification of admissions decisions will be sent by the Office of Graduate Studies.

b) Thesis Committee (Plan I)

The student, in consultation with his/her Major Professor and Graduate Adviser, nominates two Plant Biology Graduate Group faculty members in addition to the major professor to serve on the thesis committee. These nominations are submitted to the Office of Graduate Studies for formal appointment in accordance with Graduate Council policy, typically in the student's 5th quarter of study.

c) Comprehensive Examination Committee (Plan II)

The student, in consultation with his/her Graduate Adviser (see Section 6 below), will submit nominations of three faculty members to serve on the Comprehensive Examination Committee to the Master Adviser. Nominations are typically submitted in the 4th quarter. One member on the committee must be from the student's area of specialization. Neither the faculty member who served as the instructor in charge of the 299 units (or the Major Professor), nor others deemed to have a conflict of interest with the student (for example, close collaborators) shall serve on the committee. The Master Adviser, in consultation with the Graduate Advisers, will adjudicate conflicts of interest. A committee member from the student's area of specialization will normally serve as chair.

The Master Adviser may appoint the Comprehensive Examination Committee either:

(i) At the Graduate Adviser Meeting held in **Fall or Winter** Quarter, in conjunction with the PhD QE Committee assignments; or (ii) at any time during the academic year as is necessary, in consultation with the student's Graduate Adviser.

6) Advising Structure and Mentoring

Each student will be assigned a **Graduate Adviser** from the PBGG faculty. The student is expected to meet with the Graduate Adviser before the first quarter during new student orientation, and during the third and fourth quarters. During the first quarter meeting, the Graduate Adviser will assist with coursework and career planning. The purpose of the third quarter meeting will be to evaluate progress (with the aid of the appropriate student checklist, see Appendix 2) and discuss future coursework. The fourth quarter meeting will verify the completion of coursework and will discuss the completion of capstone requirements. Additionally, students will submit nominations for their thesis or comprehensive examination committees during this fourth quarter meeting.

The **Major Professor** is the Thesis Committee Chair, and directs the student's research in 299 coursework (for Plan I students only). The **Master Adviser** is a PBGG faculty member who has been appointed to serve as a resource for other Graduate Advisers, who approves the nomination of thesis committees, and who approves the membership of Masters Comprehensive Examination Committees. The **Graduate Program Staff** assists students and is a resource for information on general program requirements and university policies. The **Mentoring Guidelines** can be found at:
http://pbi.ucdavis.edu/local_resources/downloads/mentoringguidelinesapproved6-24-99.pdf

7) Advancement to Candidacy

Every student must file an official application for Candidacy for the Degree of Master of "Plant Biology" after completing one-half of their course requirements and at least one quarter before completing all degree requirements; this is typically in the 5th quarter of enrollment. The Candidacy for the Degree of Master form can be found online at: <http://www.gradstudies.ucdavis.edu/forms/>. A completed form includes a list of courses the student will take to complete degree requirements. If changes must be made to the student's course plan after s/he has advanced to candidacy, the Graduate Adviser must recommend these changes to the Office of Graduate Studies. Students must have their Graduate Adviser and thesis committee chair sign the candidacy form before it can be submitted to the Office of Graduate Studies. If the candidacy is approved, the Office of Graduate Studies will send a copy to: the appropriate graduate staff person, and the student. The thesis committee chair will also receive a copy, if applicable. If the Office of Graduate Studies determines that a student is not eligible for advancement, the department and the student will be told the reasons for the application's deferral. Some reasons for deferring an application include: grade point average below 3.0, outstanding "I" grades in required courses, or insufficient units.

8) Thesis and Comprehensive Examination Requirements

a) Thesis Requirements (Plan I)

At the time the thesis is submitted, the student must have advanced to candidacy and be registered or on filing fee. The student will conduct original research in the

laboratory of a faculty member who will serve as sponsor for the 299 research units and as chair of the thesis committee, also referred to as the Major Professor.

The thesis committee will determine whether to pass based on the merits of the thesis. The thesis should show the student's ability to identify research questions, develop and test hypotheses, and reach a well-justified conclusion. The research should be of publishable quality as found in a peer-reviewed journal, but does not need to be as extensive as a PhD dissertation.

The student must present an exit seminar on his/her thesis research (usually in the Tuesday student seminar series, PBI 291), typically during his/her last quarter of residence but may be earlier.

b) Comprehensive Examination (Plan II)

At the time of the examination, the student must have advanced to candidacy and be registered or on filing fee. The comprehensive examination is an oral examination that should not exceed three hours in length. The oral exam must cover general plant biology, the student's area of specialization and at least one additional area from those listed in Appendix 1.

In consultation with the student's Graduate Adviser, the student will choose the additional area (see Appendix 1 for suggested topics) and submit it along with suggested faculty members to serve on the examination committee to the Master Adviser. The Master Adviser must approve the additional area.

The results of the examination are submitted to the Office of Graduate Studies using the Master's Report Form. The outcome of the examination is either Pass, Not Pass, or Fail. If the decision is a Not Pass, then the student may be re-examined one additional time, with the approval of their Graduate Adviser. The outcome of the second examination can only be either a Pass or a Fail. A student who receives a Fail on the first or second attempts will be recommended for disqualification by the Dean of Graduate Studies.

9) Normative Time to Degree

The Normative Time to Degree for the M.S. program is six quarters (two years).

10) Typical Time Line and Sequence of Events

Note-1: For a full time student, a minimum course load is 12 units each academic quarter. In addition, per UC regulations, students cannot enroll in more than 12 units of graduate level coursework (200) or more than 16 units of combined upper division and graduate level coursework (100, 200, 300) per quarter.

Note-2: If a graduate-level elective course were taken to fulfil specialization requirements in any of the three quarters in Year 1, it would need to be a 3-unit class. Under rare conditions in which the student's option is limited (for example, the course is not offered every year and it is a 4-unit class), however, a petition for an exception to the "12-unit limit rule" may be prepared by the student, her/his Graduate Adviser and Master Adviser, and submitted to the Office of Graduate Studies for approval. If the petition were not granted by the first day of the quarter, a student might request an exception to the seminar requirements (see p2, Section 3b). Such a request is subject to approval by the student's Graduate Adviser and Master Adviser, and the approval can be made one quarter only. If the request is approved, the minimum number of required seminars will also be changed accordingly.

Plan I:

Year 1	Fall	Winter	Spring
	PBI 200A	PBI 200B	PBI 200C
	PBI 291	PBI 291	PBI 291
	PBI 292	PBI 292	PBI 292
	PBI 290B	PBI 290B	PBI 290B
	PBI 299	PBI 299	PBI 299
	Elective (winter, spring quarter)		
Year 2	Fall	Winter	Spring
	PBI 290A	PBI 290A	PBI 290A
	PBI 290B	PBI 290B	PBI 290B
	PBI 299	PBI 291	PBI 291
	Elective	PBI 299	PBI 299
		Advance to Candidacy	Submission of thesis and exit seminar

Plan II:

Year 1	Fall	Winter	Spring
	PBI 200A	PBI 200B	PBI 200C
	PBI 291	PBI 291	PBI 291
	PBI 292	PBI 292	PBI 292
	PBI 290B	PBI 290B	PBI 290B
	PBI 299	PBI 299	PBI 299
		Elective	Elective
Year 2	Fall	Winter	Spring
	PBI 290A	PBI 290A	PBI 290A
	PBI 290B	PBI 290B	PBI 290B
	PBI 299	PBI 291	PBI 291
		PBI 299	PBI 299
	Elective	Advance to Candidacy	Comprehensive exam

11) Sources of funding.

The graduate group does not generally provide MS students with financial support. MS students may be funded by TAs and/or GSRs.

12) PELP, In Absentia and Filing Fee status.

Information about PELP (Planned Educational Leave), In Absentia (reduced fees when researching out of state), and Filing Fee status can be found in the Graduate Student Guide: <http://www.gradstudies.ucdavis.edu/publications/>