

PROCEDURES FOR GRADUATE STUDENTS IN BIOLOGY

Passed by the faculty on March 19, 2003

(Updated Sept 19, 2005, Nov 30, 2007, Sep 19, 2008)

APPLYING FOR ADMISSION

In applying for admission, applicants must select either the *Master's* or the *Ph.D.* track. A limited number of applicants to the Ph.D. program may be invited to interview at departmental expense. **Applications are due January 1.** All applicants must send the following to the Director of Graduate Studies in Biology:

1. Completed application form.
2. All undergraduate and graduate official transcripts (photocopies are not accepted).
3. Official scores from recent Graduate Record Examinations (within five years), including the aptitude portion; the Biology subject matter test is also required (photocopies of scores are not accepted).
4. International applicants whose native language is not English must additionally submit the TOEFL (Test of English as a Foreign Language) and the TSE (Test of Spoken English) official scores (photocopies of scores are not accepted).
5. Letters of recommendation from three science instructors/ supervisors that address: nature and duration of relationship to applicant; motivation; ability to conceptualize and deal quantitatively with biological problems, and research potential.
6. Cover letter that identifies interests, suggests possible research projects and states career goals.
7. Copies of any research papers (e.g., publications, manuscripts, senior reports, etc.).
8. Written confirmation of a faculty sponsor; applicants **MUST** secure the sponsorship of a Biology faculty member as a condition for admission. The research interests of the applicant and the faculty sponsor should be well-matched. The sponsor will be the major advisor.
9. Application fee of \$50.

Materials submitted in support of an application cannot be released for other purposes or returned to the applicant.

APPLYING TO CHANGE BETWEEN GRADUATE TRACKS

Applicants who were admitted on the Master's track, but wish to change to a Ph. D. track without completing the Master's may apply for admission to the Ph.D. program before the end of their second semester. Letters of support from three U of M Biology faculty, including a major advisor, should be added to the applicant's file. The file must be current. Such applicants will be judged by the same criteria that are applied to other Ph.D. applicants.

DEGREE REQUIREMENTS

All students are required to satisfy **the general requirements** for the appropriate degree that are listed in the **UM Graduate Studies Bulletin**, whether or not these requirements are listed among the Biology requirements.

The Master of Science degree may be attained by either of the two following routes:

M.S. with thesis (a three year program)

Credits: a total of 30 credits are required:

- 24 course credits, including the two semester departmental core course for graduate students and at least one graduate course in statistics. Students are encouraged to take courses from more than one area; they are encouraged to select courses and independent studies that will prepare them for research, as listed under the Ph.D. requirements. No more than nine credits from the independent study series (BIL 671-675) may be used to fulfill the 24 course credits. At times these course numbers are used by professors to teach a new course or a special topics course, in which case the corresponding credits can be counted as a non-independent study credit. Course selection requires committee approval.
- 6 research credits (BIL 710); no more than six M.S. research credits are allowed.
- The minimum acceptable grade average in all coursework towards the degree is a "B (3.0)" and no grade may be below a "C."

Research Proposal: public presentation and successful defense to the committee of a written research proposal.

Admission to candidacy: application is made by recommendation of the committee on a form available in the grad school.

Thesis: A well-written and successfully defended thesis of publishable quality; a defense is successful if all members of the committee sign the grad school form and the signature page of the dissertation.

Other requirements described under "The Master's Degree," including but not limited to:

- a total of at least 30 credits (course credits plus research credits). The Graduate School and the Department concur in requiring at least 24 course credits and exactly six research credits (BIL 710) for a thesis M.S.).
- once a student has completed all required credits, she/he must enroll in "Research in Residence" (BIL 720) status until the degree is granted. This course carries zero credits, but is considered full-time enrollment. Even though no credit is earned, a tuition charge equivalent to one course credit normally applies to this course.

The committee:

- A single committee will combine the responsibilities of the supervisory and thesis committees.
- The supervisory committee will be determined by the student in consultation with his or her advisor. The committee will consist of a minimum of three faculty, one of whom must be from outside the department, and one of whom must be a member of the graduate faculty. There is no sub-disciplinary representation requirement.
- The thesis committee is formed officially when the student is admitted to candidacy. It may be comprised of the same individuals as are on the supervisory committee, or it may be formed anew. The student in consultation with the advisor suggest the membership of the committee to the graduate school. The committee will consist of a minimum of three faculty, one of whom must be from outside the department, and one of whom must be a member of the graduate faculty. There is no sub-disciplinary representation requirement.
- The thesis committee is nominated by the department, but it must be approved and appointed by the Dean of the Graduate School. There is a special form that must be filed with the graduate school.
- Committee meetings are required at least once a year (recommended at least once a semester). The student is responsible for arranging meetings. The student should consult with the committee about major changes in research goals and about problems. Memos summarizing each meeting must be entered into the student's file.

The time table:

- A written thesis proposal is due no later than the middle of the second semester. Please take note of this deadline. The scope of the M.S. thesis should be in line with the time table.
- Admission to candidacy normally occurs after completion of one year or 12 credits of graduate work and successful defense of the thesis proposal.
- Analysis of data and a polished draft of the thesis should be completed and in the hands of the committee by the middle of the sixth semester. Please take note of this deadline. The scope of the M.S. thesis should be in line with the time table.
- Defense of the thesis and its submission to the Graduate School must meet or precede the deadline for graduation immediately following the sixth semester unless an extension has been approved by GAAC upon recommendation of the thesis committee. Notice of the defense must be submitted on a special form to the graduate school in advance of the defense and must be posted publicly in the department.
- The oral defense of the thesis must be given during regular sessions of the Fall or Spring semesters, not during summer sessions, intercessions, reading days or finals weeks.
- No student may receive the degree in the same semester in which she/he is admitted to candidacy.
- The indicated dates form firm deadlines. A student's committee, however, may submit a written petition to GAAC for an extension of time detailing reasons for the request. An extension will only be granted under extraordinary circumstances and will be effective upon written approval by GAAC.
- Proposals to change the schedule for any reason should be preceded by a study of the graduate bulletin sections on leaves of absence, full time student status and recency of credit and explicitly address how

the proposed change of schedule relates to these matters. The memo requesting the change should also address the proposed financial support.

M. S. without thesis (a two year program)

Credits:

- A total of 36 course credits are required by the Biology Department, including the two semester departmental core course for graduate students and at least one graduate course in statistics. Students are encouraged to take courses from more than one core area, listed under the Ph.D. requirements. No more than 9 credits from the independent study series (BIL 671-675) may be used to fulfill the 36 course credits. At times these course numbers are used by professors to teach a new course or a special topics course, in which case the corresponding credits can be counted as a non-independent study credit. Course selection requires committee approval.
- The minimum acceptable grade average in all coursework towards the degree is a "B (3.0)" and no grade may be below a "C."

Admission to candidacy (apply using a form available from the graduate school).

Qualifying exam The student must pass a written comprehensive exam given by the committee.

The committee

- A single committee will generally combine the responsibilities of the initial supervisory and the comprehensive examination committees. The committee will be determined by the student in consultation with her/his advisor. The committee will consist of a minimum of three faculty, one of whom must be from outside the department, and one of whom must be a member of the graduate faculty. There is no sub-disciplinary representation requirement.
- The examination committee is formed officially when the student is admitted to candidacy. It may be comprised of the same individuals as are on the supervisory committee, or it may be formed anew. The student in consultation with the advisor suggest the membership of the committee to the graduate school. The committee will consist of a minimum of three faculty including the student's advisor, one of whom must be from outside the department, and one of whom must be a member of the graduate faculty. There is no sub-disciplinary representation requirement.
- The examination committee is nominated by the department, but it must be approved and appointed by the Dean of the Graduate School. There is a special form that must be filed with the graduate school.
- Committee meetings are required at least once a year (recommended at least once a semester); the student is responsible for arranging meetings; the student should keep the committee advised of major changes in the graduate program plan; memos summarizing each meeting should be in the student's file.

Other requirements described under "The Master's Degree," including but not limited to:

- Note that although the Graduate School requires only 30 credits for an M.S. degree, the Department requires 36 course credits for a non-thesis M.S.

The time table:

- Admission to candidacy normally occurs after completion of one year or 12 credits of graduate work.
- The comprehensive exam must be passed by the end of the fourth semester.
- No student may receive the degree in the same semester in which she/he is admitted to candidacy.
- The indicated dates form firm deadlines. A student's committee, however, may submit a written petition to GAAC for an extension of time detailing reasons for the request. An extension will only be granted under extraordinary circumstances and will be effective upon written approval by GAAC.
- Proposals to change the schedule for any reason should be preceded by a study of the graduate bulletin sections on leaves of absence, full time student status and recency of credit and explicitly address how the proposed change of schedule relates to these matters. The memo requesting the change should also address the proposed financial support.

C. DOCTOR OF PHILOSOPHY

Credits: a total of 60 credits (including both course and research credits) beyond the Bachelor's degree are required:

- At least 18 course credits that are not from the independent study series, including the two semester departmental core course for graduate students and at least one graduate course in statistics. The independent study series is BIL 671-675. However, at times these course numbers are used by professors to teach a new course or a special topics course, in which case the corresponding credits can be counted as a non-independent study credit. Course selection requires committee approval.
- At least 12 research credits (BIL 730). There is no cap on the number of Ph.D. research credits, but once the overall number of required credits (see below) has been reached, there is no need to take additional research credits.
- An additional 30 credits from any combination of graduate courses (500 and 600 level regular courses and independent study courses) and research credits (700 level) to bring the total number of credits beyond the Bachelor's Degree to 60 credits. (One example: 18 required course credits + 12 required research credits + 15 additional course credits + 15 additional research credits = 60 total; another example would be 18 additional course credits and only 12 additional dissertation credits, etc.)
- Students who already have a Master's Degree in the same field may not need as many course credits (consult Graduate School rules on transfer credits), but at least 24 credits must be taken in residence at UM.
- The committee may decide that students with previous graduate level courses may be exempt from some of the course requirements.
- The minimum acceptable grade average in all coursework towards the degree is a "B (3.0)" and no grade may be below a "C."
- **Conceptual areas**: Students are encouraged to take courses and independent studies from at least three conceptual areas and are urged to take courses and independent studies that will prepare them for the comprehensive qualifying exam and for research. Students are encouraged to participate in seminars and study groups. They are also encouraged to take special courses in other departments of UM, at our Coalition for Excellence in Tropical Biology partner institutions, from the Organization for Tropical Studies or other special interdisciplinary courses. Such courses should be appropriate to their course of study and research area as determined by their committees. Conceptual areas offered in our department include: Evolution, Ecology, Behavior, Genetics and Molecular Biology, Cell Biology and Development. Special concentrations in our department and/or in collaboration with other departments include: Tropical Biology, Mathematical Ecology, Neuroscience and Behavior.

A comprehensive qualifying exam should be passed by the end of the third semester.

- A single committee (see number 9 below about the committee membership) will advise the student on both comprehensive and research training. To fulfill the **comprehensive function**, the committee will be responsible for ensuring breadth, significant background and depth in at least 3 conceptual areas (examples include but are not limited to the areas listed above).
- To establish intellectual communication between the committee members and students early on, the committee will begin to work with the student in the first semester. Faculty will suggest reading lists, courses and/or independent study, as needed, to prepare the student with sufficient background for the comprehensive examination which will include 3 areas, one of which is the research area. The committee and student will interactively define the scope of comprehensive training and thus of the comprehensive examination in these 3 areas.
- The comprehensive examination will be held in the third semester. The committee will designate a chair other than the student's advisor to administer the examination. The written part of the exam will not be open book and it will be administered on campus for two discrete periods of time (up to 4 hours each within two consecutive days) by the examination chair. All members of the committee will grade all the questions. There will be an oral exam about one week later, after the committee has read the written answers, for the purpose of further exploring the student's grasp of the subject matter.

- Each committee member will decide on a pass/fail grade based on the total picture (written plus oral). For the student to pass the examination, 3 of the 4 examiners must vote a grade of pass. An oral and written summary of the committee's evaluation must be prepared by the chair of the examination committee and given to the student and to GAAC. If the student does not pass the examination, there will be a chance to retake it the following semester. In the case of failure a second time, s/he will be terminated from the program.

Research proposal: A public presentation of a research proposal and defense of a written research proposal to the **complete research committee** (see below) should be completed by the middle of the fourth semester. Students are encouraged to follow the format of a grant proposal to a major funding agency. At the proposal defense, the student will receive either a pass or a fail. A grade of pass will be recorded if no more than one member of the complete research committee (see below) votes to fail the student. If the student fails the proposal defense, she/he will be given a second chance to defend no later than the sixth week of the fifth semester. If the defense is failed a second time, the student will be terminated from the program.

Admission to candidacy: (application is made on a form available in the grad school and in the department). This normally will occur at the end of the fourth semester. Requirements are passing the comprehensive examination and successfully defending a written research proposal.

Teaching: All students on the Ph. D. track in Biology are required to serve satisfactorily at least one semester as a teaching assistant in one of the courses offered as part of the Department's training program.

Grants: Submission of a grant proposal to a major funding agency (e.g., NSF, NIH, National Geographic, World Wildlife Fund, etc.). All students are required to seek outside funding for their research. This must be a research project proposal. Application for an NSF pre-doctoral fellowship does not meet this requirement, but application for an NSF dissertation improvement grant does qualify.

Ph. D. Dissertation: A well-written and successfully defended dissertation containing an original contribution to the field and of quality appropriate for publication in a scientific journal; a defense is successful if all members of the committee sign the grad school form and the signature page of the dissertation. A public dissertation seminar is also made at the time of the defense.

Other requirements described under "Doctor of Philosophy," including but are not limited to:

- a total of at least 60 credits (course credits plus research credits).
- Once a student has completed all required credits, s/he should enroll in "Research in Residence" (BIL 750) status until the degree is granted. This course carries 0 credits, but is considered full-time enrollment. Even though no credit is earned, a tuition charge equivalent to 1 course credit normally applies to this course.

Committee A single committee will advise the student on both gaining comprehensive knowledge and research training. The committee will be responsible for ensuring breadth, significant background and depth in at least 3 conceptual areas (examples include but are not limited to the areas listed above). The research function of the committee is to advise the student on research, including preparation, training, project choice, project design, implementation and evaluation of the research. The committee will go through several phases and its membership will be determined by the advisor and student together, contingent upon approval of GAAC and/or the Graduate School, as appropriate at each phase:

- The initial committee will consist of at least four faculty, two appointed to ensure breadth of training (from two areas outside the research area) and two from the research area. It will be formed to help the student choose courses during the first few weeks of the first semester. This committee will decide whether students having a M.S. in biology (botany, zoology, etc.) from another institution can substitute a graduate level course taken elsewhere for a departmental course requirement; it will also decide which additional courses should be taken for both research and breadth. The choice of areas will be briefly outlined in a memo to GAAC.
- The initial committee of at least four faculty will be responsible for preparing and administering the comprehensive examination. The chair of the examination committee must be someone other than the student's advisor.
- The complete committee of at least four faculty including one from outside the department, should be formed by the end of the third semester; all four members should participate in the proposal evaluation which will take place in the fourth semester. The committee will consist of a minimum of four faculty, which includes the committee chair, who must be a member of the Graduate Faculty. Of the remaining members, it is also required that two shall be from the Graduate Faculty.

- The dissertation committee (of four) is formed officially when the student is admitted to candidacy. It will usually be comprised of the same individuals as are on the complete research committee, or it may be formed anew. The student and advisor consult on the membership of the committee, and the department nominates the committee to the graduate school. The committee will consist of a minimum of four faculty, which includes the committee chair who is the advisor, who must be a member of the Graduate Faculty. Of the remaining members, it is also required that two shall be from the Graduate Faculty and one from outside the department of concentration. The dissertation committee is nominated by the department, but it must be approved and appointed by the Dean of the Graduate School. There is a special form that must be filed with the graduate school.
- Committee meetings are required at least once a year (recommended at least once a semester in the early phases). The student is responsible for arranging meetings; the student should consult with the committee about any major changes in research goals and any problems; memos summarizing each meeting should be in the student's file.

Time table:

- The written comprehensive qualifying examination must be passed by the end of the third semester.
- A polished, written dissertation proposal must be defended to the committee in the fourth semester together with a public presentation of the proposal. This must take place by mid-April of the spring semester or mid-November of the fall semester.
- Admission to candidacy normally occurs after the comprehensive qualifying exam and proposal defense are passed upon the recommendation of the committee and the approval of the Graduate School. Application for admission to candidacy is made to the graduate school on a special form.
- Analysis of data and a polished draft of dissertation should be completed and in the hands of the dissertation committee no later than the middle of the tenth semester.
- Defense of the dissertation and its submission to the Graduate School must meet or precede the deadline for graduation immediately following the tenth semester unless an extension has been approved by GAAC upon recommendation of the dissertation committee. Notice of the defense and of the public seminar must be submitted on a special form to the graduate school in advance of the defense and must be posted publicly in the department.
- The oral defense of the dissertation must be given during regular sessions of the Fall or Spring semesters, not during summer sessions, inter-sessions, reading days or finals weeks.
- No student may receive the degree in the same semester in which she/he is admitted to candidacy.
- The indicated dates form firm deadlines. A student's committee, however, may submit a written petition to GAAC for an extension of time detailing reasons for the request. An extension will only be granted under extraordinary circumstances and will be effective upon written approval by GAAC.
- Proposals to change the schedule for any reason should be preceded by a study of the graduate bulletin sections on leaves of absence, full time student status and recency of credit and explicitly address how the proposed change of schedule relates to these matters. The memo requesting the change should also address the proposed financial support of the student beyond the 10 semesters of normal departmental support.

Public presentations must be during regular semesters. The public presentation associated with the defense of the proposal and the public seminar associated with the defense of the dissertation must be given during regular sessions of Fall or Spring semesters, not during summer sessions, inter-sessions, reading days, or finals weeks.

IMPLEMENTATION

All Graduate students will be reviewed each fall semester by GAAC.

- The advisor will review the student's progress to date.
- The student will provide updates for a student progress database every October.
- The student will provide written evidence that the advisor and committee have reviewed her/his progress and plans.

- Each student will receive a letter summarizing the results of the discussion concerning his/her progress.
- All graduate students shall have the right to respond to GAAC, and, if necessary, the graduate faculty in matters pertaining to the review.
- Possible outcomes of the review:
 - Student is making satisfactory progress
 - Student is not making satisfactory progress; recommendations are made for improvement
 - Student is not making satisfactory progress; his/her tenure is terminated

FINANCIAL SUPPORT

- The Department intends to support all doctoral students in good standing for up to 10 semesters. Support beyond 10 semesters is contingent upon GAAC approval.
- Students who do not provide annual updates for the student progress database will be ineligible for continued funding. Students who will be off-campus are still responsible for making sure that GAAC receives the data.
- Students holding full fellowships or research assistantships will not normally be given teaching assignments, nor will students be permitted to hold fellowships and research assistantships simultaneously. Exceptions require GAAC approval.