Doctoral Degree Program Guidelines
Biological Sciences (rev. 12/2016)

For questions, contact the program either by phone or E-mail.

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414-229-5137

There are a number of general Graduate School regulations and requirements for the Doctoral Degree that are described on the Graduate School website. The student’s program is governed by the rules in the Graduate School's Academic Policies & Procedures issued the year in which the student enrolled in the graduate program. Current regulations and procedures as they apply to the Ph.D. program in Biological Sciences are set forth below.

I. GENERAL REQUIREMENTS

A. RESEARCH
The Doctoral degree is a RESEARCH degree. The most important requirement is that you must make an original, publishable contribution to your field of study. Ph.D. students are required to have submitted or published at least one primary authored manuscript in a peer-reviewed journal prior to graduation.

B. MAJOR PROFESSOR
Upon acceptance into the program the student will be notified of his/her initial advisor. Any questions may be addressed to the advisor, or to the Graduate Director of the Department of Biological Sciences. A student may change major professors if the advisor assigned initially is not in a research area appropriate for the student. If the decision to change advisors is made, the student must obtain the permission of his/her prospective advisor and submit a Change of Advisor form (available in the Graduate Program Office) to the Graduate Director for approval. The Graduate School will then be notified of the change.

C. DOCTORAL STUDENT STATUS

1. DOCTORAL STUDENT
The Department considers students admitted to the doctoral program with a BS, BA or MS degree to be doctoral students. However, the Graduate School considers as doctoral students only those in the Ph.D. program that already have a MS degree or those who have completed 24 credits of graduate work.

2. DOCTORAL CANDIDATE
A doctoral candidate must complete The University residence, formal course, and language/data analysis proficiency requirements, and pass the entire Ph.D. Preliminary Examination (see below).

D. ADMISSION REQUIREMENTS
Upon acceptance to the program, you will be notified of any curricular pre-requisites that must be completed as perceived by your advisor/committee. Extra programmatic requirements (physics, organic chemistry and calculus) will be determined by the student's dissertation advisory committee. All basic requirements must be remedied by the end of your first year.
E. RESIDENCE REQUIREMENTS.
A PH.D. STUDENT MUST BE ENROLLED IN A GRADUATE PROGRAM OF RESEARCH, COURSEWORK, AND RELATED ACADEMIC ACTIVITIES FOR AT LEAST ONE CONTINUOUS ACADEMIC YEAR. Students holding Graduate Assistantships can meet this requirement by completing at least six (6) credits in each of three consecutive semesters, exclusive of summer sessions. In special cases, a portion of a student's program may be spent away from the University. A student who wishes to earn off-campus residence credit must obtain written approval from his/her advisor, the Biological Sciences Graduate Director, and the Graduate School.

F. COURSE REQUIREMENTS

1. CREDITS
Beyond the bachelor’s degree, you must earn a minimum of 54 graduate credits. If you enter the Program with a MS degree, up to 27 credits can apply toward the 54 credits required (24 if your MS degree is from UWM). Your committee must approve the transfer credits and a Doctoral Transfer Credit Approval Form must be submitted to the Graduate Program Director by the end of your first year. The form can be obtained from the Graduate Program Assistant.

- 30 (of 54) credits must be earned in Biological Sciences
- 27 (of 54) credits must be earned in formal courses and seminars (i.e., not research, colloquium, or independent study)
  
  Note: the Bio Sci 934, 935, and 936 “Research Advances” seminars DO NOT count as graduate credit.
- 4 (of 30) credits must be in Colloquium
- 9 (of 54) credits must fulfill your secondary area of concentration (see below).

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2. SECONDARY AREA OF CONCENTRATION
By the end of the first year, the student (in consultation with his/her advisor) shall select courses and seminars in a secondary area of concentration consisting of a minimum of 9 credits. This information must be recorded on the Plan of Study, signed by the student and advisor (see below). The secondary area of concentration is typically an area of biology other than the student's primary area of interest.

3. LANGUAGE/DATA ANALYSIS PROFICIENCY
THE STUDENT MUST DEMONSTRATE PROFICIENCY IN EITHER A FOREIGN LANGUAGE OR IN DATA ANALYSIS.

a. The student can demonstrate proficiency in data analysis by presenting 12 credits at the 200 level or above in any combination of mathematics, statistics, or computer science courses, including courses taken as an undergraduate.

b. Foreign language proficiency can be demonstrated by formal coursework (e.g., 12 college credits of a single language), by satisfactory completion of the appropriate ETS language
proficiency examination (e.g., ≥ 50th percentile), or by satisfactory completion of a timed translation of a scientific paper(s). The student's Ph.D. Advisory Committee in consultation with the student and the appropriate Language Department determine the appropriate alternative. (Acceptable foreign languages are French, German, Russian, Spanish, Italian or another language demonstrably appropriate to the student's research program.)

4. GRADES
Continuation in the Ph.D. program is at the discretion of the Graduate School, the departmental Graduate Committee, and the major professor. A 3.0 (4.0 basis) average or better is required in all work taken as a graduate student. Students receiving a grade of less than a "B" in Biological Sciences coursework or an overall GPA < 3.0 will receive a letter of warning from the Graduate Director. GRADES OF D OR F ARE UNSATISFACTORY AND DO NOT COUNT IN MEETING DEGREE REQUIREMENTS. Poor performance will result in the student's dismissal from the Biological Sciences Graduate Program.

II. PROCEDURES TO FOLLOW AND DEADLINES TO MEET

A. TIMELINE FOR Ph.D. PROGRAM

Year 1: Form Ph.D. Advisory Committee
Remedy basic coursework requirements
Submit Doctoral Transfer Credit Approval Form (Departmental)
Identify area of secondary concentration
Submit Progress Report (Student and Committee) and Plan of Study (Departmental)

Year 2: Complete course work
Submit Application for Doctoral Dissertation Proposal Hearing (Milestones)
Complete Dissertation Research Proposal
Submit Doctoral Thesis Proposal Hearing Form (Departmental)
Submit Progress Report (Student and Committee) and Plan of Study (Departmental)

Year 3: Submit Application for Doctoral Preliminary Exam (Milestones)
Take Prelim 1--written exam; Take Prelim 2--oral exam
Submit Doctoral Preliminary Examination Form with attached Prelim Exam Questions (Departmental)
Submit Application for Dissertator Status (Milestones)
Submit Progress Report (Student and Committee) and Plan of Study (Departmental)

Year 4: Dissertation Research
Submit Progress Report (Student and Committee) and Plan of Study (Departmental)

Year 5: Submit Application for Graduation (PAWS)
Present departmental Colloquium
Dissertation Defense
Graduation

B. THE Ph.D. ADVISORY COMMITTEE

1. THE COMPOSITION AND FUNCTION OF THE COMMITTEE
The Ph.D. Advisory Committee (hereafter called the Committee) plays a major role in the development of a student's program. The Committee must consist of at least five members, including the major professor and a faculty member representing the student's secondary area of concentration. At least four committee members must be UWM Graduate Faculty or in special cases Category B Academic Staff and recommended by the department or programmatic unit. At least two committee members must be voting members of the Department of Biological
Sciences. The advisor, major professor, or committee chair for a doctoral student must be a member of the UWM Graduate Faculty or the UWM Category B Research Academic Staff, holding the title of Scientist, and recommended by the department or programmatic unit. The departmental Graduate Committee must approve any non-UWM Committee Members. Submit a cover letter and Curriculum Vitae to the Graduate Program Director. Teaching Assistant support will be given on a priority basis to graduate students under the direction of voting members of the Biological Sciences Faculty.

The Committee will meet with the student to construct a formal plan of required and advised course work. The Committee is also responsible for approval of the student's written dissertation proposal. The Committee will administer the Preliminary Examination, read, and evaluate the dissertation and administer the final oral examination (dissertation defense) by the student (see below). The Committee shall meet at least once a year (more often if necessary) to monitor the student's research and academic progress, and must approve the Progress Report and Plan of Study documents once a year signed by the student and Ph.D. Advisory Committee members. The student's eligibility for financial aid is contingent upon the filing of this document with the Graduate Director by January 15 each year (see below).

2. PROCEDURE FOR ESTABLISHING THE COMMITTEE

Shortly after beginning the first semester, the student and the advisor begin preparing a plan for the complete program of doctoral studies. The Committee must be established by the end of the first year of enrollment. Consult the proposed Committee members and obtain their consent to serve.

C. PROGRESS REPORTS AND PLANS OF STUDY

1. You must file a signed Plan of Study and Graduate Student Annual Progress Report and Advisory Committee Annual Progress Report by May 15 of your first year. File the original Plan of Study with the Biological Sciences Graduate Director.

2. You must update your Plan of Study and file both Progress Reports (Student and Committee) by January 15 each subsequent year you are in the graduate program. You and your major professor can include separate comments on your Progress Reports. File these yearly plans with the Biological Sciences Graduate Director.

STUDENTS WHO DO NOT FILE A COMPLETED PROGRESS REPORT AND PLAN OF STUDY IN ANY YEAR ARE NOT MAKING SATISFACTORY PROGRESS AND WILL BECOME INELIGIBLE FOR DEPARTMENTAL AND UNIVERSITY-WIDE FINANCIAL AID (RAs, PAs, TAs, FELLOWSHIPS) AND RISK DISMISSAL FROM THE PROGRAM.

D. DISSERTATION PROPOSAL

The doctoral student must prepare a formal, written Dissertation Proposal outlining the objectives and methodologic approach of his/her research project. The proposal should be in NIH/NSF format, with Literature Review, Introduction, Aims/Hypotheses, Methods, References, etc. It must be thorough and of the highest quality. The proposal should show the student's understanding of the project by providing an Introduction containing sufficient, referenced background to justify the research, and a Methods section that a) asks the critical questions that the research is intended to answer; b) shows how anticipated results of experimentation will advance knowledge in the research field; and c) demonstrates a knowledge of the techniques that will be used to address the research questions. A typical proposal is 10-plus pages in length, exclusive of references. The Dissertation Proposal must be submitted to and approved by the student's Ph.D. Advisory Committee before the student can take Parts I and II of the Preliminary Examination (see below). It is recommended that the student have a committee meeting to make an oral presentation of the proposal to the Ph.D.
Advisory Committee. After the proposal has been approved the student must submit the Doctoral Dissertation Proposal Hearing Application available at Online Doctoral Milestones System and file the signed departmental Doctoral Thesis Proposal Hearing Form with the Biological Sciences Graduate Director.

E. PRELIMINARY EXAMINATION
The Doctoral Preliminary Examination is administered in two parts. Parts I and II of the Preliminary Examination are designed to test the student's academic and scientific preparedness to continue in the Ph.D. program.

At the beginning of the semester that the Doctoral Preliminary Examination will be taken, the student must file the Application for Doctoral Preliminary Examination Form available at Online Doctoral Milestones System. From this form the Graduate School determines the eligibility of the student to take the preliminary exams.

After an initial written Dissertation proposal is presented to, and approved by, the student's Committee, Parts I and II of the examination can be administered. Part I is a written examination and Part II is an oral examination. Parts I and II of the exam MUST be taken before the end of the third year of full time enrollment. FAILURE TO MEET THESE DEADLINES WILL RESULT IN DISMISSAL FROM THE PROGRAM.

The student may petition the Graduate School to take only one credit during the semester that he/she intends to take Parts I and II of the Preliminary Examination, even while receiving financial support as a TA, PA, RA, or fellow, by submitting a Request for Exception form. Such a petition will be granted only once during the student's tenure to this point in the Ph.D. program. The Examining Committee is usually the same as the Ph.D. Advisory Committee, but may be any three appropriate UWM graduate faculty or Ph.D. committee members approved by the latter.

1. PART I: THE WRITTEN EXAM
Members of the student’s Committee will decide on the format of the exam; a single full grant proposal, two “mini-grant” proposals or essays answering questions in their field. The major advisor in consultation with the student’s advisory committee will determine which of these options are available to the student. The committee will then identify areas of research for which the student will prepare full or "mini-grant" proposals, or write essays answering questions in their field. The written exam differs considerably from the student's Dissertation Research proposal. Questions selected for the examination shall be approved by the Advisor and prepared in writing, with each question listed under the appropriate field. On the date scheduled for the administration of Part I of the Preliminary Examination, the student's major advisor will give the questions/paragraphs to the student. A copy of the written questions/paragraphs MUST be placed in the student's file. At its discretion, the Examination Committee may request that the student provide an outline(s) of the material to be considered in the proposal(s), allowing the student one week to prepare all of the outlines. The student will have six weeks from the time he/she receives the questions (or alternatively, from the date of approval of the outlines) to write the exam. The written portion for each topic should not exceed 10-12 pages of single-space type (exclusive of references) for a full proposal or 5 pages each for 'mini-grant' proposals and must address issues raised in the questions. If the student follows the proposal option, answers must follow the format of proposals submitted to national granting agencies such as NSF or NIH (outlined below). The student is STRONGLY advised to procure appropriate examples of grant proposals prior to writing to the exam.

   a. Background and Significance: The result of a search of the literature, this section provides the background and rationale for the proposed research. This section should be a critical
review of the literature, and should make clear why the proposed research is justified.

b. **Specific Aims/Hypotheses**: This is a statement of specific goals, or questions that the proposed research will answer.

c. **Methods**: This section should outline the methods (including statistical) that will be used to address each experimental question, and should show reasonable familiarity with techniques. Expected and alternative outcomes of experiments and their implications should be discussed. Anticipated pitfalls/problems should be covered.

d. **References**: Include in alphabetical order or in numerical order of citation complete literature citations referenced in the previous sections. Cite author(s), title of article, source (journal; book, volume number and editors), inclusive pages, and date of publications. For books, provide publisher and location.

Members of the student's Ph.D. advisory committee must grade the proposals by one week after the date that they are due for submission to the student's advisor. Students who do not pass Part I of the Preliminary Examination may (with the permission of their Committee) retake part or all of the written examination. After passing the written examination, the student and the Committee should administer Part II (the oral exam) of the Preliminary Examination within two weeks.

2. **PART II: THE ORAL EXAM**

All members of the Ph.D. Advisory Committee may participate in Part II of the Preliminary Examination.

The content of the Dissertation Proposal and the questions/topics of the written examination will be explored in further detail during the oral examination. The final decision concerning the outcome of Parts I and II of the Preliminary Examination will be made by a majority of the Advisory Committee. Once the student has passed the oral exam he/she must file the signed departmental *Doctoral Preliminary Examination Form* with the Biological Sciences Graduate Director.

If a student fails the oral or written, or both parts of the exam, the student’s Ph.D. advisory committee will decide if the student can retake part or all of the exam for a second time. If the student fails a second time, a retake is not allowed. For students retaking any part (or all) of the Preliminary Examination for the second time, failure of any part (or all) of the examination will result in dismissal from the Graduate Program. The student’s graduate committee may appeal to the departmental Graduate Committee to allow a student to retake the exam for the third time. Direct appeals from the student to the departmental Graduate Committee will not be considered.

The student must pass Parts I and II before applying for Dissertator Status.

F. **ADMISSION TO CANDIDACY AND DISSERTATOR STATUS**

To obtain dissertator standing, the student must file the Application for Doctoral Dissertator Status available at Online Doctoral Milestones System. This form should be filed before the semester that dissertator status is sought. Once all the approvals are obtained through the online milestones system, the student will be admitted to formal candidacy for the Ph.D. degree and is given "Dissertator" status.

A doctoral student in Dissertator status must register each semester for three (3) graduate level credits (at a reduced Dissertator rate).

G. **DISSERTATION RESEARCH**

Dissertation research is initiated and conducted with the major professor. A student must be registered for Dissertation Research credits in order to use the facilities of the University for research. A grade of pass or fail is recorded for all research credits. The Dissertation should be of such caliber and be written in a style and format appropriate for publication in a peer-reviewed
Ph.D. students are required to have submitted or published at least one primary authored manuscript in a peer-reviewed journal prior to graduation. The candidate must file an Application for the Doctoral Dissertation Defense and Graduation with the Graduate School early in the semester in which graduation is anticipated. After reviewing the candidate's records to determine eligibility, the Graduate School will complete Part II and forward the approved application to the Biological Sciences Graduate Director. Once your defense date has been set, Graduate Program Assistant returns the application to the Graduate School. By the week before your defense, the Graduate School sends a Warrant for the final oral examination (defense of the Dissertation) to the Graduate Program Assistant. On the day of the defense bring this form for your committee to sign. The completed warrant must be returned to the Graduate School within 10 working days of the defense.

H. FINAL ORAL EXAMINATION
The final oral examination is a defense of the Dissertation but may also cover the general fields of the primary and secondary areas of study. The examination may not be taken until all other degree requirements are satisfied. Before your defense, you must have completed the Application for Doctoral Dissertation Defense and Graduation Form and received the Warrant for Doctoral Defense form from The Graduate School. This form will be signed by the Advisory Committee and the Biological Sciences Graduate Program Director following the successful completion of the final exam. A majority of the Committee must approve the Dissertation in order for the student to pass. The final oral examination must be taken within five years after passing the Preliminary Examination. Candidates who exceed this time limit may be required to retake the Preliminary Examination and be admitted to candidacy a second time. All components of the Ph.D. program MUST be completed within 10 years of matriculation.

Ph.D. students are required to present a Colloquium in the Department of Biological Sciences prior to graduation.

I. THE FINAL SEMESTER BEFORE GRADUATION
In the semester when the Dissertation is to be completed there are important application deadlines that must be met. Please refer to the Graduation Dates and Deadlines and Thesis and Dissertation Instructions for more information (available from the Graduate School).

J. GRADUATION
By signing the Final Examination Warrant, the candidate's Committee makes a recommendation to the Dean of the Graduate School concerning the merit and acceptability of the Dissertation. The Graduate School further reviews the Dissertation to ensure that all specifications regarding style and format have been met. Dissertation format requirements are found at Thesis and Dissertation Instructions. The Graduate School holds a workshop on formatting and graduation requirements every semester. The successful Ph.D. candidate is one who has met all requirements and specifications of the degree program. Attendance at graduation ceremonies is optional, but students are urged to attend. On the platform, each candidate and advisor are presented to the Dean of the Graduate School and the Chancellor and hooded at the platform by his/her major professor or proxy. Dates for ordering graduation attire are set by the Office of the Secretary of the University.