

**GUIDELINES FOR THE Ph.D. DEGREE PROGRAM
IN THE DEPARTMENT OF BIOCHEMISTRY AND MOLECULAR BIOLOGY
UNIVERSITY OF LOUISVILLE SCHOOL OF MEDICINE**

I. GENERAL INFORMATION

These guidelines represent the policies of the Department of Biochemistry & Molecular Biology regarding the doctoral (Ph.D.) program. The doctoral program is administered by the Graduate Executive Committee (GEC). This committee is responsible for reviewing the progress of the students, administering the qualifying exams and recommending changes in the program for approval by the faculty. In addition, the Department Chair, GEC, and all members of the faculty are available to assist students in their progress towards successful completion of the Ph.D. degree and in obtaining outstanding research positions following graduation.

Students are expected to read and be familiar with all of the policies and requirements outlined herein. These guidelines are not meant to supersede the academic policies of the University as outlined in the [Graduate School Catalog](#). Students are expected to familiarize themselves with the [Graduate School Catalog](#), the policies on academic standing, the statement of student ethics, and the requirements for obtaining graduate degrees at the University of Louisville.

II. THE GRADUATE EXECUTIVE COMMITTEE (GEC)

- A. GEC is responsible for the administration of the academic program for Biochemistry and Molecular Biology (BMB). The committee is charged with implementing changes in BMB curriculum and student policies upon request of faculty, the department Chair, or students. Any changes in the policies of the graduate program are made to reflect the current goals of the BMB Graduate Program. All changes must be approved by BMB faculty vote and the Chair.

B. Composition and Duties

Director of Graduate Studies: Serves as Director of GEC and manages matters pertaining to the BMB graduate program. Responsible for informing the faculty and students of policies related to the BMB graduate program and School of Interdisciplinary Graduate Studies (SIGS). Revises policies related to graduate program based upon request of faculty or department Chair. Serves as an advisor for all graduate students.

Director of Admissions: Responsible for screening applications and presenting candidates to GEC and IPIBS for approval. Acts as the liaison between applicants and GEC.

Director of Curriculum and Exams: Responsible for managing and monitoring the Exam I process. Works with course directors upon request of the departmental Chair to assist in course curriculum changes. Revises policies related to curriculum and exams based on faculty input.

Joint Faculty Representative: Serves as the liaison between joint faculty and the BMB department. Responsible for providing input on BMB policy.

Student Representative: Serves as the liaison between BMB students and GEC.

The members of GEC work as a team and all have a vote.

C. STUDENT ADVISORS

1. The Director of Graduate Studies (DGS) for Biochemistry and Molecular Biology (BMB).

The DGS will serve as the advisor for all incoming graduate students for the first year in the program until a Dissertation Advisor is selected. The DGS serves as the liaison between the graduate students and the department, unit, and school. All student progress is monitored and approved by the DGS, the Graduate Executive Committee and Chair. The DGS is responsible for approving course registration, including drop/add, each term throughout the duration of the program, and lab rotation and advisor selection requests. He/she is also responsible for notifying the School of Interdisciplinary Graduate Studies (graduate school) on student progress, e.g., advancement to PhD candidacy, MS degree application, and degree completion. It is the student's responsibility to keep the DGS informed their progress. This is best accomplished through scheduled annual advisory meetings.

2. Dissertation Advisor

a. How to pick a lab and an advisor?

Laboratory Rotations: All students are required to complete a minimum of 2 lab rotations and may take up to 3 rotations. During the first year all incoming students will meet with all eligible faculty to discuss research projects. This can be scheduled short research presentations by the faculty to the student group and one-on-one meetings. After consultation with the faculty member and the DGS, the student will select a laboratory and submit the completed **Rotation Director Request Form** to the DGS for approval by GEC.

The lab rotation is a 1 credit course. Students are expected to spend a minimum of 40 hours in the lab learning laboratory techniques and approaches focusing on a research problem. At the end of the rotation, students present their work to the Department in a 15 minute research conference format. They will be expected to understand the background of the work, the specific goals of the project, and have an understanding of the methodological approaches and interpretation. A short written summary of the work is also required. The course is graded as P/F.

It is strongly recommended that a student complete a rotation within the laboratory(ies) that they are considering for their dissertation research. This allows the student to become familiar with the laboratory and research projects before they commit to a laboratory and Dissertation Advisor.

The student is expected to select a Dissertation Advisor by the end of Summer term of the 1st year. Once the Advisor has been selected, the student must submit the completed **Dissertation Advisor/Lab Request** form to the DGS for approval by GEC and the Chair.

b. Role of the Dissertation Advisor (Mentor)

The Dissertation Advisor serves as the primary mentor for the student throughout the duration of the program. The major responsibility of the Mentor is for research training and professional development.

The Mentor also must approve all courses taken in year 2 and beyond, including any Drop/add courses.

The Mentor is responsible for submitting written progress reports to the DGS and GEC after the student completes Dissertation Research Approval meeting (see Appendix B) and after the annual Dissertation Advisory Committee Meetings.

3. DISSERTATION COMMITTEE

Doctoral dissertation committees shall be composed of a minimum of five qualified members with one of the members from outside the program of the student.

Once an advisor has been selected and the research project is underway, the advisor in consultation with the student will submit to the GEC names of five faculty members willing to serve on the student's Dissertation Committee. Since this dissertation committee must approve the student's research proposal, the committee should be appointed as soon as possible. Committees must be approved by GEC, the Chair of the Department and the Dean of the Graduate School. The student will submit the Thesis/Dissertation Advisory Committee Appointment form signed by the Dissertation committee to GEC for approval. The form should be completed during the meeting required for Dissertation Research Approval (see Appendix B).

The role of the Dissertation Committee is to help advise students on their research, evaluate research progress, and approve the final dissertation.

III. REQUIREMENTS FOR THE Ph.D. DEGREE IN BIOCHEMISTRY & MOLECULAR BIOLOGY

A. To complete a Ph.D. degree a student must fulfill to following:

1. A minimum of 24 h of coursework, of which 17 credit hours must be in BIOC courses.
2. A minimum of two laboratory rotation
3. Two seminar presentations
4. Present annual research conferences after year 2

5. Complete Exam I (Ph.D. qualifying exam) by the end of year 2.
6. Complete the formal Dissertation Research Approval Committee Meeting in the fall of year 3 (5th semester)
7. Publish a minimum of one manuscript
8. Write a doctoral dissertation that is acceptable by the dissertation committee and School of Interdisciplinary Graduate Studies
9. Successfully defend their dissertation research

B. Courses

1. The 24 h course credit requirement will be partially fulfilled by the core IPIBS course Cell Biology and the required courses for all BMB students; Biochemistry I and II, Adv. Techniques in BMB Methods, Molecular Biology & Genetics, and The Scientific Writing and Methods course. These courses total 21 h. Credit for research, rotations or seminars does not apply to the 24 h minimum course requirement.
2. The selection of courses to complete the credit requirements should be made in consultation with the students dissertation advisor and require approval of the DSG.
3. All classes should be taken before the end of the students second year and must be taken before the student enters Ph.D. candidacy. For students with previous graduate training, documented graduate level courses may be accepted to fulfill credit requirements. This requires approval by the Graduate Executive Committee when the student is admitted.
4. Students are expected to maintain B (3.0) averages in their course work. A student who fails to maintain a B average will be placed on academic probation for one semester and will be subject to dismissal from the program after a second semester with an average below 3.0.
5. BMB Course Listing
Require 24 h classroom instruction, * indicates IPIBS core courses, bold indicates BMB required courses.

<u>Fall Semester:</u>	Course No.	Credit Hours	
Biochemistry	645*	(4)	Biochemistry I
	611*	(4)	Advanced Techniques in BMB Methods I
	668	(4)	Molecular Biology/ Genetics
	603	(1-4)	Special Topics in Biochemistry
	613	(1-4)	Lab Rotation
<u>Spring Semester:</u>			
Microbiology	667*	(3)	Cell Biology (fulfills the IPIBS elective requirement)
Biochemistry	647	(4)	Biochemistry II
	612	(2)	Advanced Techniques in BMB Methods II
	603	(1-3)	Special Topics in Biochemistry
	675	(4)	Biochemistry of Cancer
	660	(2)	Molecular Endocrinology
	680	(2)	Biomolecular Interactions
	661	(3)	Molecular Toxicology
	630	(1)	Responsible Conduct of Research
	606	(1)	Seminar
	613	(1-4)	Lab rotation

C. Additional Requirements

1. Seminar presentations

BIOC 606 (Seminar) is required during the second and third year. The two seminars will be graded. *Only one seminar may be on a topic related to the student's research.* Attendance is required at all Biochemistry Seminars and Research Conferences.

2. Teaching

All Ph.D. students are required to assist in teaching 4-5 hours per week for one semester during their 2nd or 3rd years. The 2nd year is preferable. This requirement is normally met by serving as a teaching assistant in BIOC 645, BIOC 647 or BIOC 611.

3. Ph.D. qualifying exam (Exam I).

The purpose of this exam is to evaluate the student's ability to interpret literature, independently develop a research plan, integrate material from the graduate curriculum, write clearly, organize a proposal, and orally defend their ideas. It will help the student to develop the skills necessary for preparation and defense of their doctoral dissertations. Successful completion of Exam I will be a strong indicator for successful completion of the Ph.D. The details and guidelines for Exam I are in **Appendix A**

4. Dissertation Research Proposal Approval.

The purpose of this formal step is for the Dissertation Committee to determine whether the proposed project is appropriate for Ph.D. research and to examine the student's ability to develop and defend a research project. The details and guidelines for **Dissertation Research Proposal Approval** are in **Appendix B**.

5. DISSERTATION AND DEFENSE

A dissertation consists of a complete and coherent body of work resulting in a significant, substantial, and novel contribution to the field of biochemistry and molecular biology. It is expected that the work will result in first author, peer-reviewed publications. At a minimum, one peer reviewed, first author publication should result from a student's dissertation.

The writing and defense of a Doctoral Dissertation is the final requirement for the Ph.D. degree. Dissertation committee members must have had at least two weeks to read a student's Dissertation before a defense can be scheduled. The dissertation must present data of sufficient quality and quantity so as to convince the Dissertation Committee that the student possesses the ability to pursue independent and original research. The student must defend the research protocol, results, and conclusions at an oral Dissertation Defense. To satisfactorily pass the dissertation defense, a student may not receive more than one unfavorable vote from a member of the Dissertation Committee.

The absence of a publication will require a specific review by the Dissertation committee addressing why a publication has not resulted from the work and confirming that the dissertation indeed represents a significant advance of the field. This review must be approved by the Chair of the Department in consultation with the Graduate Executive Committee. The Dissertation Committee and Chair of the Department must receive a completed copy of the dissertation at least two weeks prior to the expected date for the defense. The chair of the Department must approve the dissertation and scheduling of the final defense. In order to officially schedule the defense of the dissertation, a student must receive approval from the Department Chair.

For the format of the dissertation, consult the current "Standards for the Preparation of Theses and Dissertations," published by the Graduate School. A copy is available online at the Graduate School's web site.

The department will cover the cost of binding 3 copies of the dissertation.

D. CHANGE IN GUIDELINES

When requirements change, a student has the option of satisfying either the requirements in effect when he/she entered the program or the current requirements.