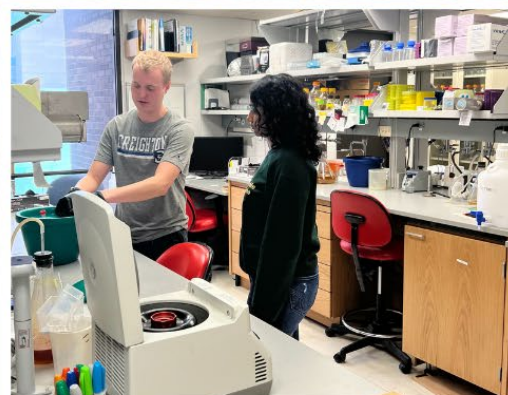
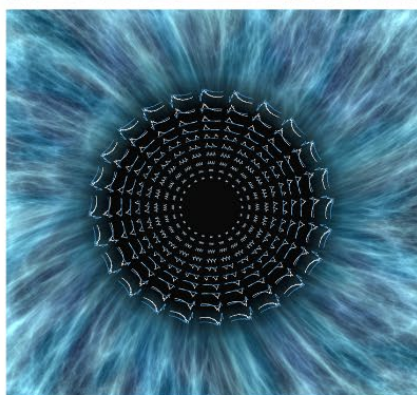
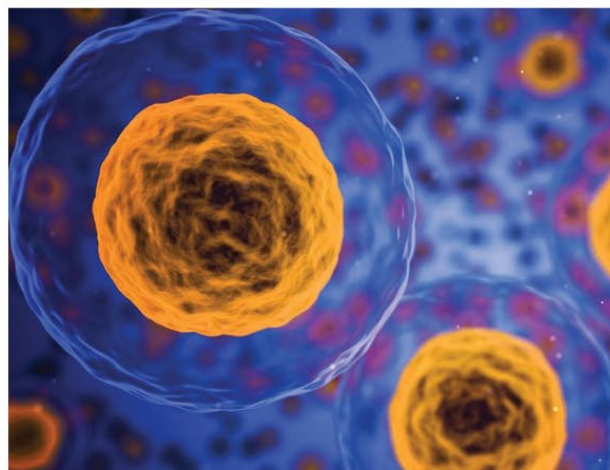
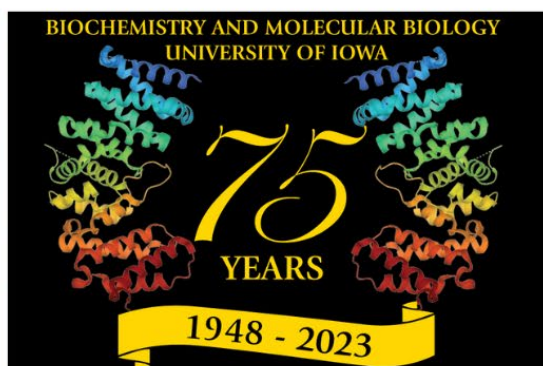


GRADUATE STUDENT MANUAL

PhD – MS – MD/PhD

Biochemistry and Molecular Biology

February 2025



IOWA

Carver College
of Medicine

Table of Contents

Introduction	4
Scientific Background of Students	4
Orientation	4
Finding Housing	5
Health Insurance	5
The PhD Program	5
The First Year	5
Other Training	7
Laboratory Rotations and Assignment to a Laboratory	7
The Laboratory Rotation Advisory Committee	8
Laboratory Rotation Presentations	8
Promotion to the Second Year	9
Selection of Dissertation Advisor	9
English Proficiency Certification Examinations	10
The Second Year	10
Selection of the PhD Dissertation Committee	11
The PhD Dissertation Research Proposal, Individual Development Plan (IDP), and First Dissertation Committee Meeting	13
Page Limitations and Content Requirements	15
The Comprehensive Examination	15
Preparation for the Comprehensive Examination	18
Originality of Examination Proposal for the Comprehensive Examination	18
The Written Examination Proposal for the Comprehensive Examination	18
Passing the Oral Portion of the Comprehensive Examination	19
Subsequent Years	20
Oral Presentations	20
The Third Year and Fifth-Semester Seminar	20
The Fourth Year Workshop	20
The Fifth Year Retreat	21
Teaching Experience	21
Course Registration after the Plan of Study is Completed	21
Annual Meetings with the PhD Dissertation Committee	22
Final Examination for the PhD	23
Preparation of the Dissertation	24

Submission of the Dissertation	24
Entrance to the PhD Program with Advanced Standing	25
Students with a Master's Degree	25
U2G Fast Track PhD Students	26
MD/PhD Students (MSTP)	26
Master's Degree Program	27
Formal Master of Science Degree	27
The First Year	28
The Second Year	29
Interim Master of Science Degree	30
The Master's Research Proposal, Individual Development Plan (IDP), and First Dissertation Committee Meeting	31
Page Limitations and Content Requirements	33
Final Examination for the Master's Degree	33
Other Information	34
Primary Financial Support	34
Paid Leave	34
Sick Leave	35
Unpaid Leave of Absence	36
Departmental Equipment	36
Departmental Conference Rooms	36
Ethics	36
Sexual Harassment	37
Departmental Committees	37
Student Recourse	37
Safety and Accidents	38
Security	38
University Policies	38
Changing Graduate Programs	38
Timeline Figure	41

Introduction

The University of Iowa Department of Biochemistry and Molecular Biology (BMB) comprises approximately 100 individuals including faculty, postdoctoral fellows, graduate, and undergraduate students, and supporting office and technical staff. Faculty laboratories and offices are located on the fourth floor of the Bowen Science Building, on the third floor of the Medical Education Research Facility, and the third floor of the Pappajohn Biomedical Discovery Building. These buildings are located on the University's health sciences campus on the west side of the Iowa River. The department offers graduate training leading to the Master of Science (MS) and Doctor of Philosophy (PhD) degrees in Biochemistry and Molecular Biology. The MS degrees can be non-thesis (only coursework) or with a research thesis, while the PhD degree requires a dissertation on a research topic. Students usually work towards the PhD degree without first completing the MS degree.

Scientific Background of Students

The curriculum leading to both the MS and PhD degrees has been designed with the assumption that students have had appropriate academic preparation, including organic chemistry, calculus, biology, biophysical chemistry and at least one course in biochemistry before starting graduate school. Those who do not have sufficient knowledge should remedy this deficiency before enrolling in the graduate program or master this material on their own.

Orientation

All first-year students should arrive on campus at least one week before classes start (international students should arrive at least two weeks before and in time for international student orientation) in order to move into housing, take care of formal administrative details at the Department of Biochemistry and Molecular Biology main office (4-403 Bowen Science Building), and get acquainted with the faculty and other graduate students. New students should talk with the Director of Graduate Studies (DGS), Dr. Ernesto Fuentes, who acts as the general advisor for first-year students and can be consulted concerning any aspect of graduate study. Later, a Dissertation Advisory Committee of five faculty members will be formed to provide additional advice and mentorship.

Students should see the Biochemistry and Molecular Biology Departmental Administrator (Rosemary Stratton) to complete the forms necessary to receive the stipend, for which proper identification is required. The stipend will begin upon arrival and the first paycheck will cover a portion of August to be paid on September 1st. A full month stipend will occur on the first business day of October.

Finding Housing

Information on housing may be found on the University of Iowa's Graduate Admissions webpage under the [Housing](#) subsection or the University [Off-campus Housing Services](#) site. Other online sources include [The Daily Iowan](#) and the [Iowa Press-Citizen](#). Monthly rent for apartments in the Iowa City area will vary depending upon the location and amenities.

Health Insurance

Foreign students are required to carry health insurance and will be informed about options by the office of [International Students and Scholars Services](#). All graduate students may use the University's Student Health Service, for which the department pays the "Student Health Service Fee and Mental Health Fee." Graduate students are also eligible for the Student Health Insurance Policy (SHIP) or the UI GRADCare plan. The [University Human Resources](#) office may be helpful if you are having difficulty determining which plan is best for you and directing you on how to enroll. You can contact them directly at benefits-students@uiowa.edu. Students should choose the plan when their appointment in Biochemistry and Molecular Biology begins. The student contributes a nominal amount per year to either plan, and the department pays the remainder. Your insurance coverage begins the first day of the month following the first day of employment.

The PhD Program

The First Year

Students entering the PhD program in Biochemistry and Molecular Biology can tailor their curriculum to take courses that enhance their educational goals. They are expected to take a combination of graduate level courses that include a first-year laboratory research rotation course, seminar courses and topic-based courses that have been divided into one-hour modules. Currently, 34 hours of coursework plus 38 hours of research credit are required prior to completion of the PhD degree. A student will enter probationary status if their UI Cumulative GPA is below 3.00 over the first 9 semester hours of graded (A, B, C, D, F) graduate work. Failure to increase the GPA to at least 3.00 can lead to dismissal from the PhD Program.

Twenty hours of coursework for all students includes:

- 3 hours of biophysical chemistry
- 8 hours of Research Techniques
- 4 hours of molecular or cellular biology (typically students take 6-8 hours)
- 5 hours of Biochemistry and Molecular Biology seminar
- Principles of Scholarly Integrity/ Responsible Conduct of Research

BIOCHEMISTRY AND MOLECULAR BIOLOGY GRADUATE STUDENT MANUAL

An additional 14 hours of coursework (for a total of 34 hours) is chosen from current course offerings in the Department of Biochemistry and Molecular Biology and other departments across campus. An example of typical first year curriculum is shown below.

First Semester		
<i>Course</i>		<i>Semester Hours</i>
BMB:5261	Research Techniques	4
BMB:5282:0A02	Biochemistry and Mol Biology Seminar	1-2
BMED:5207	Principles of Molecular & Cellular Biology	3
MMED:6220	Mechanisms of Cellular Organization	3
BMB:7292	Research Biochemistry (if needed)	
		12

Second Semester		
<i>Course</i>		<i>Semester Hours</i>
BMB:5261	Research Techniques	4
BMB:5241	Biophysics and Advanced Chemistry	3
BMB:5282:0A02	Biochemistry and Mol Biology Seminar	1
MMED:6227	Cell Fate Decisions	1
MMED:6226	Cell Cycle Control	1
BMB:7292	Research Biochemistry (if needed)	1
	Additional Electives	4
		12

The following courses are tailored to Biochemistry and Molecular Biology graduate students.

<i>Course</i>		<i>Semester Hours</i>
BMB:4310	Computational Biochemistry	3

*This course is only offered every other spring.

The following courses qualify to meet the molecular and cell biology requirement. Other courses not listed below may qualify, it is best to consult with the DGS about their suitability.

<i>Course</i>		<i>Semester Hours</i>
MMED:6226	Cell Cycle Control	1
MMED:6227	Cell Fate Decisions	1
MMED:6260	Methods for Molecular/Translational Med	
MMED:6220	Mechanisms of Cellular Organization	3
PCOL:6211	Steroid & G Protein-Coupled Receptors	1
PCOL:6225	Growth Factor Receptor Signaling	1
PCOL:5204	Basic Biostatistics & Experimental Design	1

Other Training

It is expected that students will continue to develop their speaking skills by participating in laboratory group meetings and in journal clubs. These programs are an important aspect of a student's training and can be very useful for developing proposals for the Comprehensive Examination.

Graduate students should budget their time between regular course work and laboratory work. Performance in both aspects is important in judging the progress of first-year students.

Students are expected to attend departmental seminars (Thurs, 10:30 AM) and workshops (Tues, 12:30 PM) throughout their entire graduate career.

Laboratory Rotations and Assignment to a Laboratory

Graduate students rotate through three different laboratories during their first academic year unless they have satisfied this requirement in part by previous equivalent research experience. The course number and title for the laboratory rotations is **BMB:5261 (Research Techniques)**. The laboratory rotations are approximately ten weeks each. They serve to help the student learn how to do research, experience a wide range of experimental methods and techniques, and explore different areas of biochemical research. Most importantly, rotations allow students to identify a prospective dissertation laboratory.

Students will be assigned to their first laboratory rotation based on their choice of laboratory and the availability of faculty. Students will be polled for their choices for the first rotation before arrival at the University. Assignment to the first rotation will be made by the Director of Graduate Studies, the Department Chair, and participating faculty. During the first few weeks of the fall semester, there will be opportunities for new students to attend faculty and student presentations in which to learn more about the research being pursued in a faculty member's laboratory. During the first six weeks of the semester, each student should meet with several members of the faculty to discuss possible research projects for the second and third rotations. By the end of the sixth week, students will be asked to submit to the Director of Graduate Studies a list of at least five faculty members in whose labs they would like to complete their schedule of rotations. The DGS, the Department Chair, and participating faculty will then determine the laboratory assignments. These assignments will be based on educational objectives including diversity of training in different areas of biochemistry and molecular biology, student preference, availability of space, and faculty teaching loads. The assignments will be made in time for all three faculty members to attend the rotation advisory committee meeting at the end of the first rotation. If the student wishes to change preferences after assignments are made, the request will be accommodated if possible.

The Laboratory Rotation Advisory Committee

The Rotation Advisory Committee is composed of the faculty members in each student's first-year laboratory rotation schedule. The Director of Graduate Studies may substitute for one of the laboratory advisors at committee meetings if an advisor is unavailable. Each of these faculty members will serve, in turn, as research advisor and chairperson of the Rotation Advisory Committee during the tenure of the student in their laboratory. This committee evaluates a student's performance during laboratory rotations and makes a recommendation for promotion to the second year. At the end of each laboratory experience, the student will meet with the Rotation Advisory Committee to present the research and training completed during that rotation. The Rotation Advisory Committee will write a short evaluation of the student's performance and assign a grade for the laboratory work. This evaluation will become part of the student's departmental record and will be used to assign a grade for the course **BMB:5261 (Research Techniques)**.

Laboratory Rotation Presentations

At the end of each laboratory rotation, the student will prepare a written report and present an oral summary of the research project to the Rotation Advisory Committee. The Graduate Program Coordinator will schedule this meeting on behalf of students. **The student should discuss the scope and format of the report and presentation with their rotation advisor.** Prior to the meeting, the student should provide a written report to the Rotation Advisory Committee (see below). Rotation meetings consist of the student providing a brief (~30 mins) oral summary of the research project.

The written document should include:

- Title page with rotation faculty signature
- An introduction.
- The experimental design used in carrying out the project.
- The experimental techniques learned.
- A general description of the experiments pertinent to the solution of the problem.
- A summary of the overall conclusions and how these relate to the original problem.
- Approximately 5-10 pages in length (double spaced) including Figures and Tables.

The faculty will question students about the experimental and theoretical significance of the laboratory experiences, including the interpretation of their data and the limitations of the techniques used.

The student report is usually organized in the form of a manuscript (title, abstract, introduction, methods, results, discussion, references, tables, and figures). **Typically, the rotation research report will be 5-10 pages of written, double-spaced text (not including figures, figure legends and references). The figures used in the written report can also be used in the oral presentation (and vice versa).**

The report should be provided to the rotation committee at least **four calendar days before** (confer with the DGS and/or Graduate Program Coordinator with any questions) the committee meeting, keeping in mind that much of the written report can be prepared while laboratory experiments are still ongoing. The written report will be submitted via ICON and analyzed by plagiarism software. ICON can be found on MyUI. The Graduate Program Coordinator can help with uploading the report. **You are also required to submit a paper version signed by your rotation advisor (this indicates that the advisor has read and approved the report) to each of your committee members by the due date.** A copy of the report will be placed in the student's file. No grade will be assigned for the semester until the reports are deposited.

Committee meetings may be requested by the student or any member of the committee at any time.

Promotion to the Second Year

At the end of the first academic year, the student's Rotation Advisory Committee will recommend to the department whether the student should continue as a PhD candidate. Promotion to the second year is the decision of the Biochemistry and Molecular Biology faculty based on the performance in rotations, the recommendation of the Rotation Advisory Committee, academic coursework, scholarly potential, matching with a lab, and an expectation that the student will perform well on the Comprehensive Examination. Dismissal from the PhD program by the Biochemistry and Molecular Biology faculty may be due to poor performance in one or more of the above areas or the inability to match with a faculty lab.

Selection of Dissertation Advisor

Near the end of the third rotation (middle of April), students should submit a list of three preferences for dissertation advisor to the Director of Graduate Studies. This choice is an important step in one's career and should be given very serious consideration. Thus, students should discuss possible projects with faculty members in which they are interested in pursuing dissertation research. They should consider as many dimensions as possible including the definition of the dissertation project, prospects for the research, the scientific approach, and the Advisor's mentorship style. The laboratory chosen may be one of those involved in the

rotations or another laboratory in the Department.

Assignment of the Dissertation Advisor is subject to the constraints of laboratory space, financial support, acceptance by the professor, and approval by the Department Chair. The Department Chair and the Director of Graduate Studies will consult with the faculty members involved prior to final placement of the student. Occasionally, a fourth rotation period is recommended to help identify the best possible training opportunity for the student.

English Proficiency Certification Examinations

The Graduate Program in Biochemistry and Molecular Biology requires doctoral students to complete one semester of teaching assistant (TA) experience. The University of Iowa requires all students for whom English is not a first language and who have first-time appointments as TAs to take the ESPA test to assess their effectiveness in speaking English before they are assigned assistantship responsibilities. The test, administered by the University's Teaching Assistant Preparation in English Program (TAPE), assesses students' language and comprehension skills for teaching in a typical American university classroom situation. Students who take the ESPA/ELPT receive a report indicating their teaching classification, for example, either taking full responsibility of the course or simply conducting office hours. The specific teaching classifications can be found at <https://clas.uiowa.edu/esl/tape/espa-test-english-speaking-proficiency-assessment>.

The Second Year

In the second year, students take BMB:5282:A02 (Seminar) for 2 hours and electives that contribute to their scientific development. The goal of the BMB:5282:A02 course is mentored completion of the doctoral dissertation proposal in time for the student to have their first dissertation committee meeting. **The faculty dissertation research advisor (henceforth Advisor) is responsible for the course.** Although there are many ways to structure the course it is generally useful for the student and Advisor to arrange a weekly meeting to review the field, design the proposal and edit the proposal. It is often helpful to establish dates where progress can be assessed. Simultaneously, the student will take the "Introduction to Grant Writing" (MICR:6265) course, that provides instruction on basic aspects of a scientific proposal. Course electives can be chosen from 1-hour modules, special topic courses, or graduate courses offered by other departments that will enhance a student's capacity to complete their degree. The electives chosen should be in consultation with the student's research advisor and discussed with the Director of Graduate Studies.

BIOCHEMISTRY AND MOLECULAR BIOLOGY GRADUATE STUDENT MANUAL

A typical second year curriculum might include:

First Semester		
<i>Course</i>		<i>Semester Hours</i>
BMB:5282:oA02	Biochemistry Seminar/Doctoral Thesis Proposal	2
BMB:7292	Research Biochemistry	5-8
MICR:6265	Introduction to Grant Writing	2
BMED:7270	Scholarly Integ/Resp Conduct of Rsrch I	0
	Electives	As many as needed to 12 s.h.*

*all 34 hours of graded coursework should be completed before comps are taken

Second Semester		
<i>Course</i>		<i>Semester Hours</i>
BMB:5282:oA02	Biochemistry Seminar	1
BMB:7292	Research Biochemistry	5-8
BMED:7271	Scholarly Integ/Resp Conduct of Rsrch II	0
	Electives	As many as needed to 12 s.h.*

*all 34 hours of graded coursework should be completed before comps are taken

These courses receive normal grading except BMB:7292 and the third seminar of BMB:5282, section oA02, which are graded as "satisfactory/unsatisfactory" (abbreviated S/U).

Selection of the PhD Dissertation Committee

Before the start of fall semester of the second year, the PhD student, and their PhD Dissertation Advisor, along with the advice of the Director of Graduate Studies and approval of the Department Chair, identify possible faculty members for the five-person PhD Dissertation Committee. A typical committee is made up of four Biochemistry and Molecular Biology faculty members with the fifth member from a department other than Biochemistry and Molecular Biology at the University of Iowa. The committee chair must be a member of the Biochemistry and Molecular Biology faculty. Secondary faculty members of Biochemistry and Molecular Biology are also possible options for committee members. In special cases the student may request a Dissertation Committee composed of three Biochemistry and Molecular Biology faculty members and two non-Biochemistry and Molecular Biology Department faculty members. In exceptional cases, the outside member could be from another institution. However, this requires clear justification and approval of the Director of Graduate Studies, the Department Chair and Graduate College.

The student's Dissertation Advisor is not a member of the Dissertation Committee; however, the Advisor may attend the student's dissertation meetings as an observer.

The Dissertation Committee should be composed of faculty members who are able to evaluate the dissertation research and include members with expertise in diverse areas. Because the student and the student's Advisor should know who could best help the student with the dissertation, they should have a primary and initial role in nominating members for the committee. **Dissertation Committee members should be chosen in compliance with university standards regarding conflict of interest.**¹

The selection procedure is as follows. Before the start of the fall semester of the second year, the student should submit to the Director of Graduate Studies a list of at least eight faculty members in order of preference to serve on the student's Dissertation Committee. The student need not ask members of the Biochemistry and Molecular Biology faculty if they would be willing to serve; however, the student should make the request of potential members outside the department. When a committee cannot be composed with faculty on the student's list, the Director of Graduate Studies may discuss alternatives with the student. Taking these preferences into account, the Director of Graduate Studies and Department Chair will compose the committees and appoint one person to be chairperson. To achieve equitable distribution and to maintain the diversity that can accommodate and facilitate evolving research objectives, the committee may include members who are not among the first eight faculty members suggested. A faculty member should decline the invitation if there is a conflict of interest. The committee membership should be finalized by October 1st in preparation for the first Dissertation Committee meeting near the end of the fall semester of the second year.

¹ University of Iowa Graduate College policy on faculty and student conflict of interest ([COI](https://opsmanual.uiowa.edu/community-policies/conflicts-commitment-and-interest)) (<https://opsmanual.uiowa.edu/community-policies/conflicts-commitment-and-interest>) states: No member of the instructional staff, non-academic staff member, or student may participate in a decision in which he or she has an obvious COI. University policy directs that anyone with a COI must be removed from the decision-making process and must refrain from influencing those who are responsible for the decision. An individual who may have a COI is responsible for reporting it to the DEO, who is then responsible for making certain appropriate procedures are followed.

It is a COI for a faculty or staff member or a student to participate in decisions affecting anyone related to him or her by blood, adoption, or marriage or anyone with whom he or she has a current or former relationship that would compromise or appear to compromise objectivity (e.g. an amorous relationship or a business relationship).

The PhD Dissertation Research Proposal, Individual Development Plan (IDP), and First Dissertation Committee Meeting

During the fall semester of the second year, the student, in collaboration with their research Advisor, will prepare a detailed proposal that describes the proposed research to be conducted for the PhD dissertation as part of BMB:5282:A02 and MICR:6265 (Introduction of Grant Writing). The form of this proposal should follow the guidelines given in the next section. This PhD Dissertation proposal and Individual Development Plan (IDP) should be submitted to the student's PhD Dissertation Committee **7 calendar days** prior to the student's meeting with his/her committee. The meeting is scheduled near the end of the fall semester of the second year.

The IDP is envisioned as a bottom-up tool, meaning that the trainee is responsible for

The proposal and IDP will be submitted online via ICON & a paper version will be distributed to committee members by the student one week in advance of the meeting.

completing the plan. The trainee's Advisor is engaged through the discussion of the goals with the student. It is not a contract; rather, it should serve to develop goals, identify areas of strength and weakness, and find practical strategies to prepare for the future. This is also a good time to assess career goals with your research Advisor. To encourage regular reviews of the plan, both the student and advisor should sign-off and date the document. Biochemistry and Molecular

Biology Graduate Students are required to submit an updated IDP at their yearly committee meetings. Please contact the Graduate Program Coordinator to obtain an IDP template.

The PhD Dissertation Advisor is required to sign the first page of the student's PhD Dissertation proposal to signify that they have read the final version of the document. The first dissertation committee meeting is not meant to be an examination; rather, it is an opportunity for the committee to make suggestions and offer advice, and for the student to explain any unclear details. It is also an opportunity for the student to get feedback on their written proposal in preparation for their comprehensive exam.

The PhD Dissertation Advisor may choose to attend dissertation committee meetings as an observer. The Advisor should **NOT participate** in the committee meetings except to provide points of clarification when asked and to discuss the student's progress after the student has left the meeting. The committee will write a short description of the meeting for the student's file. Students will also receive a copy of this report.

Format for Biochemistry and Molecular Biology Doctoral Research and Comprehensive Exam Proposal

Font

- Use 11- or 12-point Arial, Helvetica, or Times, or Times New Roman font.

Paper Size and Page Margins

- Use standard size (8 ½" x 11") paper.
- Use at least ¾ inch margins (top, bottom, left, and right) for all pages. No information should appear in the margin except for page numbers.

Page Formatting

- Use only a standard, single-column format for the text.
- The proposal must be single-sided and double-spaced (three lines/inch).
- Consecutively number pages throughout the application. Do not use suffixes (e.g., 5a).

Figures, Graphs, Diagrams, Charts, Tables, Figure Legends, and Footnotes

- 10 or 11-point font is acceptable.
- All images should be legible without digital enlargement.

Copies & Submission

- Each committee member should receive a printed copy and an electronic version will be submitted via ICON.

Grantsmanship

- Use English and avoid jargon.
- If terms are not universally known, spell out the term the first time it is used and note the appropriate abbreviation in parentheses. The abbreviation may be used thereafter.

Page Limitations and Content Requirements²

Section	Page Limit	Content
Cover page		Title, Name, Advisor, Committee Members, Date and Room # for Meeting
Research Proposal-Abstract/Description	1	Succinct and accurate description of proposed work
Introductory Statement and Specific Aims	2	
Background, Experimental Approach, Possible Outcomes, Problems, and Future Directions	20	Text including all figures and tables
References	As needed	
Addendum	Up to 2 papers	Key papers related to proposal included in the submission.

The Comprehensive Examination

The Comprehensive Examination has two parts: a written proposal that is prepared during spring semester of the second year and an oral defense of the proposal that is administered near the end of the spring semester. Before attempting the Comprehensive Examination, students must submit a Plan of Study to the Graduate College via the Director of Graduate Studies and Graduate Program

The Comprehensive Examination **must** be taken before June 30 of the second year.

Coordinator who will make sure that all course requirements are listed. Students and their advisors may make additions to this plan, and it may be modified to correct deficiencies following the outcome of the Comprehensive Examination. The Graduate College requires a minimum of 72 semester hours of graduate work, including acceptable transfer credit and research hours. **Students should be registered in BMB:7292 Research Biochemistry for 1 s.h. during the semester in which they take the exam.**

The Comprehensive Examination will be administered by the student's Dissertation Committee. The Dissertation Committee chair will also chair the comprehensive examination. The Director of Graduate Studies will meet with all eligible students in the fall semester of their second year to explain how the examination will be administered and to summarize the expectations of the examining committee.

² Adapted from the instructions found for Ruth L. Kirschstein National Research Service Award Individual Fellowship Application (PHS 416-1)

The oral portion of the examination is about two hours in length and based in part on the written proposal submitted by the student. Importantly, the examination is not limited to the subject of the proposal; in part, it tests a student's knowledge of important background material or subject matter needed for a full interpretation of the experiments proposed. In this sense, the examination is comprehensive in the spirit of the description found in the University of Iowa's [*Manual of Rules and Regulations of the Graduate College*](#).³ For Biochemistry and Molecular Biology, this means that a student should, at a minimum, possess knowledge of graduate-level biochemistry and molecular biology and demonstrate the ability to use this information to devise and defend original experiments aimed at solving an important biological problem.

On **February 1** of the second year, each eligible student will provide their Dissertation Committee with an updated dissertation proposal (updated proposals are only needed if the Dissertation Committee requested this or there are substantial changes since the 1st Committee meeting) that has been prepared by the student in collaboration with the research Advisor. This will be submitted via ICON⁴ and a paper version will be distributed by the student with a cover sheet signed by their research Advisor. The student also has the **option** of suggesting one to three general topics for the written proposal to the examination committee; however, this is not required. The topics can be related or unrelated to their dissertation proposal. Each suggested topic should be no more than a short paragraph (similar to the Thesis Proposal abstract) detailing the general area of inquiry, the gap in knowledge, and proposed aims. The committee may or may not select these topics for the examination.

On **March 1**, the Dissertation Committee will present the student with two potential topics for the examination proposal. One topic will be related but not identical to the student's dissertation proposal and one will be unrelated. The student will have **6 weeks** (until **April 15**) to prepare a written proposal on one of the two assigned topics. The student will prepare a Specific Aims page for the committee (by **March 14**), and the committee will provide feedback in one week (**March 21**). This feedback will help direct the student's efforts on the proposal. The final proposal will be examined by the committee and a determination to approve or disapprove will be completed within one week of its receipt (by **April 22**). The proposal will be determined unsatisfactory if a majority of the committee feel that it has significant factual errors or such a limited scope that it will be difficult for the student to defend in the oral exam. If the proposal is unsatisfactory, the chair of the committee will communicate the deficiencies

³ "This examination, administered only on campus, is intended to be an inclusive evaluation of the candidate's mastery of the major and related fields of study, including the tools of research in which competence has been certified."

⁴ All ICON submissions are analyzed by plagiarism software.

to the student in writing and the student will have two weeks (until **May 7**) to revise the proposal. The revised proposal will then be distributed to the committee and the exam examination is as follows:

Timetable for the Comprehensive Examination

February 1 of second year: Each student gives their dissertation/examination committee a copy (printed copy and electronic copy submitted via ICON) of their written PhD Dissertation proposal signed by the thesis advisor. The student may also choose to suggest one to three general examination topics to the committee.

March 1: Each student is assigned two possible examination topics by the committee.

March 14: The student provides draft of specific aims page to committee.

March 21: The committee provides feedback on the specific aims page.

April 15: The student gives the committee a written proposal (see following section for details) on one of the two topics. The student is required to provide a paper copy to each committee member and upload it to ICON.

April 22: The committee informs each student on the suitability of the proposal. If the proposal is unsatisfactory, the student has two weeks to revise the proposal.

A date between May 15-June 7: Oral examination is taken on a date scheduled by the Department.

All deadlines are at 5 pm on the indicated day. If the deadline occurs on a weekend, the deadline is extended to **9 am on the following Monday. Failure to meet any of these deadlines constitutes FAILURE of the Comprehensive Examination.**

In special cases (for example, MSTP students), a similar schedule of deadlines can be established at an alternative time during the year or in the fall semester.

Preparation for the Comprehensive Examination

The purpose of the Comprehensive Examination is to allow students to demonstrate their ability to:

- Develop a well-defined original problem in experimental biochemistry and molecular biology and propose how it might be solved.
- Present the background, methods, and goals for the proposed research in written form.
- Answer questions concerning the feasibility and importance of the proposed research as well as questions dealing with basic concepts in biochemistry and molecular biology.
- Explain and apply the basic concepts of biochemistry and molecular biology to the solution of a research problem
- Interpret possible results in terms of the hypotheses to be tested.

Originality of Examination Proposal for the Comprehensive Examination

The Dissertation Committee assigns each student two possible proposal topics and the student selects one topic for the examination proposal. No part of the examination proposal may be based on information contained in the proposals of other students or based on proposals of faculty or staff. That is, the proposal must be an original idea developed solely by the student. Ideas for the research proposal can come from several sources: for example, reading the literature, course work, journal clubs, departmental seminars, background reading during a rotation, meeting with departmental seminar speakers for lunch, etc. However, it is **NOT** appropriate to use a term paper that has been submitted as a course requirement and critiqued by the instructor(s) of the course as the basis of the proposal.

The Written Examination Proposal for the Comprehensive Examination

The form and length of the examination proposal should follow the same guidelines as those for the written PhD Dissertation proposal (details above). Briefly, the proposal should have a cover page followed by no more than 20 pages. The **cover page** should show the title for the proposal, the name of the student, name of advisor, committee members, date and room number for the exam and the words "Proposal for the PhD Comprehensive Examination in Biochemistry and Molecular Biology". The **Specific Aims, Background & Significance,**

Research Design & Methods, Literature Cited, and Addendum should follow the same guidelines described for the PhD Dissertation proposal. The addendum should include two key papers related to the proposal.

The written report will be submitted via ICON. You are also required to submit a printed version (including the two key papers) to your committee by the due date.

Passing the Oral Portion of the Comprehensive Examination

To pass the oral Comprehensive Examination, a student must perform satisfactorily in both the

Questions during the oral examination may come from the examination proposal, the PhD Dissertation proposal or other general areas of biochemistry and molecular biology.

defense of the written proposal and in answering questions during the oral examination. The questions can be germane to the proposal (i.e., experimental protocols or interpretation of the proposed experiments) or general about biochemistry, molecular biology, biophysics, or other relevant fields. There are three possible outcomes per the [Graduate College Manual](#): satisfactory, reservations or unsatisfactory. If the committee decides that the performance during the oral examination was satisfactory, the student will receive a **"Satisfactory"** on the exam. If the committee decides that the performance was unsatisfactory, the

student receives an **"Unsatisfactory"** on the exam. An exceptional performance on one part of the examination cannot rectify an unsatisfactory performance on another part. A report of **"Reservations"** will be given if deficiencies displayed by the student were modest and can be easily rectified. In the event of a vote of Reservations, the actions required of the student (by the committee) that are necessary to correct the deficiencies must be recorded and submitted to the Graduate College with the examination report form. Copies of the written statement of necessary actions should be kept by the appropriate departmental executive, the chair of the examination committee, and the student. The statement must specify the time allowed for completion of the recommend actions. The language describing the actions must be specific. If the reservation is satisfied (as determined by the Dissertation/Examination Committee), the report will be changed to "Satisfactory". Otherwise, the report will indicate "Unsatisfactory".

If the student receives an "Unsatisfactory" on the examination, the Dissertation Committee will recommend to the faculty of the Department of Biochemistry and Molecular Biology if the student should be allowed to take the examination a second time. The second examination cannot occur sooner than four months after the first examination and is typically completed within six months of the initial exam. The second examination is usually on a different topic than the original exam. The relative timeline of this examination is similar to that of the first exam, but the specifics should be discussed with the Director of Graduate Studies.

Subsequent Years

Oral Presentations

Graduate students will have many opportunities to present their research. These opportunities include the fifth-semester seminar, workshops, and retreat presentations. Students should avail themselves to these opportunities.

The Third Year and Fifth-Semester Seminar

In the fall semester of the third year, the fifth semester, the student will update the written PhD Dissertation proposal prepared during the previous fall semester (prior to the Comprehensive Exam) and present a seminar on their dissertation research to the department as part of the weekly Biochemistry and Molecular Biology Workshop series. The student should prepare a 30 to 45-minute presentation for the seminar. The seminar and the updated dissertation proposal should describe the background and specific aims of the research, the relevant research already completed, and the experiments required to achieve the stated goals. An updated Individual Development Plan (IDP) should also be submitted at this time. The updated dissertation proposal and IDP must be submitted to the Dissertation Committee and the Graduate Program Coordinator at least one week before the seminar. The IDP template can be obtained from the Graduate Program Coordinator.

After the workshop presentation, the student will meet with their Dissertation Committee to discuss their research progress. Similar to the first committee meeting, this meeting is not meant to be an examination over the proposal; rather, it is an opportunity for the committee to make suggestions and to offer advice, and for the candidate to explain any remaining unclear details. The Dissertation Advisor may attend and observe this committee meeting or subsequent meetings. The committee will write a short description of the meeting for the student's file.

The Graduate Program Coordinator will schedule the fifth-semester seminar committee meeting.

The Fourth Year Workshop

In the fall or spring of the fourth year, the student will be asked to present at one of the Biochemistry and Molecular Biology's weekly Workshops on Tuesdays at 12:30 PM. This presentation should be based on your research and be a minimum of 45 minutes. The Graduate Program Coordinator will work with each student to schedule the fourth-year Workshop.

The Fifth Year Retreat

The Department of Biochemistry and Molecular Biology holds a yearly retreat where students and faculty present their current research. Students in their fifth year may be asked to give an oral presentation (length will vary) at the retreat.

Teaching Experience

The Biochemistry and Molecular Biology graduate program believes that teaching is an important component of the training of graduate students. Thus, graduate students will participate in the formal teaching programs of the department for at least one semester. First-year students and students who are within a year of receiving the PhD degree usually are not asked to teach. Teaching may take a variety of forms, including tutoring, leading discussions, and laboratory groups, correcting examinations, preparing teaching materials and lecturing. The commitment should not exceed 20 hours/week averaged over the course of a semester. Teaching assistants will be evaluated by the faculty, and their performance must be judged at least "Satisfactory". An "Unsatisfactory" assessment will require an additional TA assignment. After a satisfactory TA assignment, graduate students may request additional TA assignments. Graduate advisors are expected to support such requests. The Biochemistry and Molecular Biology Department will support a portion of the stipend of graduate students who elect to serve as TAs beyond one semester. To prepare for the TA position, graduate students will be required to attend the [New TA Orientation](#), presented by the UI Office of Teaching, Learning & Technology, the summer before their assignment begins.

Course Registration after the Plan of Study is Completed

After completing the courses on the Plan of Study and passing the Comprehensive Examination, a student should register for GRAD:6002 Doctoral Continuous Registration, while continuing research*. The department will continue to pay the tuition and mandatory fees as long as normal progress toward degree is made. For support beyond five years, the Dissertation Committee will recommend whether financial support will continue.

*If taking a course for requirements of MSTP, T32, or other fellowship program, such as a seminar series, students will need to register for BMB:7292 Research Biochemistry instead. Per the Graduate College, GRAD:6002 cannot be used when a student is registered for other courses.

Annual Meetings with the PhD Dissertation Committee

Students **must meet annually** with their PhD Dissertation Committees. Meetings should be scheduled near the completion of the third and subsequent academic years. The final dissertation defense may serve as one of these meetings. These meetings are intended to inform the committee of the student's research progress. The Graduate Program Coordinator

will schedule these meetings; however, the student may request a meeting with their committee at any time. **One week before each meeting the student should provide the committee and Graduate Program Coordinator with a written report detailing the progress made since the previous meeting, an updated IDP, a recent CV, and a timeline to graduation.** It is the responsibility of the Dissertation Committee Chair to summarize the outcome of the committee meeting in a written report distributed to the student, the committee, the student's research advisor, DGS, and the Graduate Program Coordinator.

The guidelines below should enhance the success of the committee meeting:

- Committee meetings should be held **at least once a year, or more frequently if requested by your committee.** Meeting with your committee will help to assure that “satisfactory progress”, required for continued stipend support, can be documented, and will help focus your research efforts.
- The student should **talk to both their Dissertation Advisor and Committee Chair** several weeks prior to the meeting to discuss what progress and problems need to be brought to the attention of the committee. This discussion should also include specific objectives of the meeting (e.g., determine readiness to defend dissertation and plan for defense date, etc.)
- **In consultation with your Dissertation Advisor and Dissertation Committee Chair, prepare a written report describing your project goals and progress.** Include a brief background, progress and the topic(s) that will be discussed at the meeting. Any changes in the research plan should be clearly described. The document should be 10-15 pages in length double-spaced including figures and have the same format as the dissertation proposal.
- Include an updated CV, IDP and a timeline to graduation.
- The student should include a Dissertation Outline (if within 1-2 years of defending) and copies of manuscripts in progress, submitted, or published. These documents should be distributed to your committee at least **one week prior** to the meeting.
- The timeline to graduation can be a bulleted list or a formal timeline embedded in your progress report; or annotations within your dissertation outline indicating expected dates of completion for individual projects or chapters. Consult with your Dissertation Advisor and Dissertation Committee Chair for specifics.
- In addition to the written report, the student typically presents a summary of their research progress either at the Committee Meeting, or prior as part of a departmental

seminar (e.g., Fifth Semester Seminar). The oral summary should address the main points in the written document.

The written progress report, updated IDP and timeline to graduation should be sent to the committee and Graduate Program Coordinator at least one week before the scheduled meeting.

Final Examination for the PhD

The five-member PhD Dissertation Committee serves as an advisory body for preparation of the dissertation. This committee meets with the student to review the material that is expected to be incorporated into the dissertation. Although meetings of the PhD candidate with the committee should occur yearly, the candidate, Dissertation Advisor, or the committee can request a meeting at any time. The committee with input from the Dissertation Advisor will advise the student as to the suitability of the research accomplished for a dissertation. This is conveniently done by scheduling a committee meeting approximately four to six months before the final examination. This is an important step and can avoid issues after the dissertation has been written. The student, however, makes the final decision as to when the dissertation should be written and presented to the committee. **The final draft must be given to all members of the committee two weeks before the final examination.** The student should contact their committee members about supplying a printed or an electronic copy of the dissertation. Failure to meet this deadline will require re-scheduling the final examination so that all committee members have at least two weeks to read the dissertation. **Students should register for 1 s.h. of GRAD: 6003 Doctoral Final Registration during the semester in which they graduate.**

The final PhD examination takes the form of a seminar presented to the department. This presentation is announced according to the [Graduate College Policy](#). Questions, comments, and discussion will follow. After the seminar, the candidate will meet with the committee for the final dissertation defense. The PhD degree is not awarded until the dissertation is approved by the Committee via the [ProQuest Committee Verification](#) system. In some cases, extensive revisions may be required. The candidate should work with the Dissertation Chair and Committee to complete the revisions.

Preparation of the Dissertation

In addition to Graduate College requirements, the Department of Biochemistry and Molecular Biology requires the following items in the dissertation document (see Thesis Preparation link below for full details):

- Table of contents.
- A list of all abbreviations and their definitions.
- A unified bibliography for the complete dissertation (in contrast to a list of references at the end of each chapter). Although the format for references can assume several common styles used by peer reviewed journals, at minimum, the references should include: all authors (exception-if the # of authors exceed 10 on a publication, list the first 10 authors followed by et al.); year of publication; title of publication, journal, volume, and page numbers.
- Proper attribution of work in tables and figures is required. Tables or figures not the direct work of the student need to be attributed appropriately and cited in the figure legend. This issue comes up when the student is one of the authors on a multi-author publication.
- Compatible with the format used for the comprehensive exam, the following fonts would be acceptable: Arial, Helvetica, and Times, or Times New Roman.
- Headings format will be: Major (primary) headings (all Caps-Left Justified), Secondary headings (Bold, Left Justified), Tertiary Headings (Italicized-Left Justified)

Dissertation/Thesis Resources

- [Graduate College Thesis Manual](#)
- [Graduate College Deadlines for Thesis Deposit](#)
- [Graduate College Thesis Preparation and Formatting Tips](#) (including Word templates)

Departmental funds cannot be used for preparation of the dissertation/thesis or figures in the thesis; however, grant funds can be used for preparation of the dissertation/thesis.

Submission of Dissertation

In Fall 2019, the Graduate College shifted to electronic committee verification of all theses and dissertations submitted via [ProQuest](#). Committee members will no longer need to sign the "Report of Thesis Approval" form to verify the dissertation/thesis prior to deposit with the Graduate College. Instead, committee members will now receive an email that provides a link to the final version of the dissertation/thesis document and directs them to verify of the final

version. At the time of deposit, your dissertation must be complete and in final form. Your dissertation must include all edits or changes your Dissertation Committee requested at your defense. It is best to work closely with your Dissertation Committee on these edits, so the final verification is a mere formality.

Final PhD examination process:

1. Student defends dissertation
2. Student works closely with committee to finalize the dissertation
3. Student submits dissertation to the Graduate College for review
4. Upon completion of dissertation review, committee verification via the ProQuest online system is requested

More information about dissertation submission is available at:

<https://grad.uiowa.edu/academics/thesis-and-dissertation>.

Entrance to the PhD Program with Advanced Standing

Students with a Master's Degree

Students who enter the Graduate Program with a Master of Science in Biochemistry or similar experience usually will have met some of the requirements for the PhD program and may be able to enter with advanced standing.

After consideration of the student's background, achievements, interests, and performance on placement examinations (if indicated), the Director of Graduate Studies will suggest a tentative plan of study. This program may include rotations through one or more research laboratories. As soon as is advisable, the student will select an Advisor, start dissertation research, and take the Comprehensive Examination. The student and the Advisor in consultation with the Director of Graduate Studies will formulate the final plan of study and schedule the Comprehensive Examination.

U2G Fast Track PhD Students

The [*U2G Fast Track PhD*](#) program in the Department of Biochemistry and Molecular Biology allows high-achieving students to take PhD coursework early and have the potential to

accelerate the progress of students toward the completion of the PhD. Fast Track admits are considered full members of the Biochemistry and Molecular Biology PhD program. During the student's senior undergraduate year, they will complete research rotations in three distinct Biochemistry and Molecular Biology laboratories (refer to page 7) as well as consult with the Directors of Undergraduate and Graduate Studies to determine coursework that completes their undergraduate requirements and gives the student a head start on PhD requirements. The Graduate College allows 6-12 (no more than 12) coursework credits to be cross listed for both undergraduate and graduate degrees. U2G students will be placed in a research laboratory prior to their first full year of graduate school and at which time they will be on the same schedule with 2nd year graduate students.

MD/PhD Students (MSTP)

Students in the combined MD/PhD training program ([MSTP](#)) will normally begin full-time graduate study after the first two years of medical school. Students will have the opportunity to tailor their curriculum to take courses that enhance their educational goals. They are expected to take a combination of graduate level courses, seminar courses, and topic-based courses that have been divided into one-hour modules. Thirteen hours of the coursework for all MD/PhD students includes:

Three hours of Biophysical Chemistry:

Course	Semester Hours
BMB:5241 Biophysics and Advanced Chemistry	3

Three semesters of graduate seminar:

Course	Semester Hours
BMB:5282:0A01 Biochemistry Seminar	1
BMB:5282:0A02 Biochemistry Seminar	2

Four to six hours of Molecular or Cellular Biology:

Course	Semester Hours
MMED:6225 Growth Factor Receptor Signaling	1
MMED:6226 Cell Cycle Control	1
MMED:6227 Cell Fate Decisions	1
MMED:6220 Mechanisms of Cellular Organization	3
PCOL:6211 Steroid & G Protein-Coupled Receptors	1
PCOL:5204 Basic Biostatistics & Experimental Design	1

The 13 hours of non-research-based coursework, including the courses needed to meet the requirements listed above, are chosen from current course offerings in the Department of Biochemistry and Molecular Biology and other departments across campus.

Also, students must register for the seminar course, MSTP:8512 MSTP Clinical Connections for four semesters. Since the research component of the combined program should be completed in three years, the Comprehensive Examination should be taken at the end of the second semester, but no later than the start of fall semester of the second year of graduate study. Although not required, it is recommended that students participate in laboratory rotations even if they are abbreviated. These are scheduled in consultation with the Director of Graduate Studies and the Director of the MD/PhD program. These students should participate in the research programs offered the summer before starting medical school and in the summer between their first and second year of medical school.

The following list of pre-clinical courses from the MD curriculum will be included on the PhD Plans of Study of MSTP students. The courses constitute a total of 32 semester hours.

Course		Semester Hours
MED:8123	Foundations of Cellular Life	5
MED:8124	Mech of Health & Disease I	8
MED:8133	Mech of Health & Disease II	7
MED:8224	Mech of Health and Disease Keystone	7
ACB:8101	Medical Gross Human Anatomy	5
		32 hr

Master's Degree Programs

Candidates for the Master of Science Degree may enter the program in two ways. A student may choose to take the MS degree without a declared intention to pursue the PhD degree (formal MS degree), or a student may withdraw from the PhD degree program to complete the MS (interim MS degree).

Formal Master of Science Degree

The Biochemistry and Molecular Biology Department offers a two-year research-oriented program and a non-thesis program for the Master of Science in Biochemistry. To enter the MS program, the student must find a faculty sponsor who will agree to provide laboratory space and stipend support. No teaching assistant duties will be required of the MS student and any tuition or stipend support must be paid either by the student or from the research grant of the faculty sponsor. In contrast to the PhD program, no formal comprehensive examination or laboratory rotations are required for the MS degree. A minimum of 30 semester hours, final

BIOCHEMISTRY AND MOLECULAR BIOLOGY GRADUATE STUDENT MANUAL

examination, and a thesis are required for the research-oriented degree. The non-thesis option requires completion of the 30 semester hours of coursework. For either degree, a minimum of 24 (of the 30) semester hours must be completed under the auspices of The University of Iowa after admission to a graduate department/program. More specific information on the Master's degree can be found in the [Graduate College Manual](#).

The First Year

- Three hours of Biophysical Chemistry (typically Biochemistry and Molecular Biology students take 6 hrs)
- Eight hours of Biochemistry Research
- Four hours of Molecular or Cellular Biology (typically Biochemistry and Molecular Biology students take 6-8 hrs)
- Three hours of Graduate Seminar
- Principles of Scholarly Integrity/Responsible Conduct of Research

Additional hours of coursework are chosen from current course offerings in the Department of Biochemistry and Molecular Biology and other departments across campus. An example of a typical first year curriculum is shown below:

First Semester		
Course		Semester Hours
BMB:5261	Research Techniques*	4
BMB:5282:0A02	Biochemistry and Molecular Biology Seminar	1-2
BMED:5207	Principles of Molecular & Cellular Biology	3
BMB:7292	Research Biochemistry	0-1
Electives		
		12

* This applies only to MS students who were began in the PhD program.

Second Semester		
Course		Semester Hours
BMB:5261	Research Techniques*	4
BMB:5282:0A02	Biochemistry and Molecular Biology Seminar	1-2
BMB:5241	Biophysics and Advanced Chemistry	3
MMED:6227	Cell Fate Decisions	1
MMED:6226	Cell Cycle Decisions	1
Electives		4-5
		12

BIOCHEMISTRY AND MOLECULAR BIOLOGY GRADUATE STUDENT MANUAL

* This applies only to MS students who were began in the PhD program.

The following courses qualify to meet the Molecular and Cell Biology requirement. Other courses not listed below may qualify, it is best to consult with the DGS about their suitability.

Course		Semester Hours
MMED:6225	Growth Factor Receptor Signaling	1
MMED:6226	Cell Cycle Control	1
MMED:6227	Cell Fate Decisions	1
MMED:6220	Mechanisms of Cellular Organization	3
PCOL:6211	Steroid & G Protein-Coupled Receptors	1
PCOL:5204	Basic Biostatistics & Experimental Design	1
BMED:5205	Practical Bioinformatics	1

The Second Year

A typical second year curriculum might include:

First Semester		
Course		Semester Hours
BMB:5282:0A02	Biochemistry Seminar/Master Thesis Proposal	2
MICR:6265	Introduction to Grant Writing	2
BMED:7270	Scholarly Integ/Resp Conduct of Rsrch I	0
Electives		8
BMB:7292	Research Biochemistry	to 12
		12

Second Semester		
Course		Semester Hours
BMB:5282:0A02	Biochemistry and Molecular Biology Seminar	1
Electives		3-5
BMB:7292	Research Biochemistry	to 12
BMED:7271	Scholarly Integ/Resp Conduct of Rsrch II	0
Students with 30 s.h. of coursework do not require classes.		12

Progress in the program will be monitored at least annually by a Thesis Committee of three members, at least two from the Biochemistry and Molecular Biology faculty, not including the student's research advisor. One committee member may be from another department within the University of Iowa. The student should submit a list of at least five names of faculty members to the Director of Graduate Studies by midterm of the spring semester so that a committee can be constituted, and an advisory meeting held before the fall of the second year

(by October 1st). The research for the MS thesis ideally should be completed during the second year. The final MS examination takes the form of a seminar presented to the Thesis Committee (and potentially the department), followed by a private meeting with the Thesis Committee. No examination is required for the non-thesis MS degree.

Interim Master of Science Degree

This program is for the graduate student who elects or is advised by an Advisory or Comprehensive Committee to prepare a MS thesis. The decision to enter this program should be made no later than the end of the fourth semester of graduate work. The interim Master of Science candidate will defend the MS thesis before a committee of three members, selected in the same manner as the PhD committee. If the student begins the MS program at the end of the first year, the committee should be appointed before the start of the next fall semester. The expectation is that the student will complete the requirements for the interim MS degree within approximately 12 months. At the conclusion of the MS thesis defense, the committee will determine if the requirements for a MS degree have been met and recommend to the Biochemistry and Molecular Biology faculty whether the student should continue in the PhD program. ***If the student enters the PhD program after obtaining an interim MS degree, the student should take the Comprehensive Examination as soon as possible.*** During the second year of study and while working toward an interim MS degree, the student should satisfy the course requirements for the MS and is advised to take other courses so that the course requirements for the PhD are met by the end of the fourth semester.

The Master's Research Proposal, Individual Development Plan (IDP), and First Dissertation Committee Meeting

During the fall semester of the second year, the student, in collaboration with their research Advisor, will prepare a detailed proposal that describes the proposed research to be conducted for the PhD dissertation as part of BMB:5282:Ao2 and MICR:6265 (Introduction of Grant Writing). The form of this proposal should follow the guidelines given in the next section. This PhD Dissertation proposal and Individual Development Plan (IDP) should be submitted to the student's PhD Dissertation Committee **7 calendar days** prior to the student's meeting with his/her committee. The meeting is scheduled near the end of the fall semester of the second year.

The proposal and IDP will be submitted online via ICON & a paper version will be distributed to committee members by the student one week in advance of the meeting.

The IDP is envisioned as a bottom-up tool, meaning that the trainee is responsible for completing the plan. The trainee's Advisor is engaged through the discussion of the goals with the student. It is not a contract; rather, it should serve to

develop goals, identify areas of strength and weakness, and find practical strategies to prepare for the future. This is also a good time to assess career goals with your research Advisor. To encourage regular reviews of the plan, both the student and advisor should sign-off and date the document. Biochemistry and Molecular Biology Graduate Students are required to submit an updated IDP at their yearly committee meetings. Please contact the Graduate Program Coordinator to obtain an IDP template.

The PhD Dissertation Advisor is required to sign the first page of the student's PhD Dissertation proposal to signify that they have read the final version of the document. The first dissertation committee meeting is not meant to be an examination; rather, it is an opportunity for the committee to make suggestions and offer advice, and for the student to explain any unclear details. It is also an opportunity for the student to get feedback on their written proposal in preparation for their comprehensive exam.

The PhD Dissertation Advisor may choose to attend dissertation committee meetings as an observer. The Advisor should **NOT participate** in the committee meetings except to provide points of clarification when asked and to discuss the student's progress after the student has left the meeting. The committee will write a short description of the meeting for the student's file. Students will also receive a copy of this report.

Format for Biochemistry and Molecular Biology Master's Thesis Proposal

Font

- Use 11- or 12-point Arial, Helvetica or Times, or Times New Roman font.

Paper Size and Page Margins

- Use standard size (8 ½" x 11") paper.
- Use at least ¾ inch margins (top, bottom, left, and right) for all pages. No information should appear in the margin except for page numbers

Page Formatting

- Use only a standard, single-column format for the text.
- The proposal must be single-sided and double-spaced (three lines/inch).
- Consecutively number pages throughout the application. Do not use suffixes (e.g., 5a)

Figures, Graphs, Diagrams, Charts, Tables, Figure Legends, and Footnotes

- 10 or 11-point font is acceptable
- All images should be legible without digital enlargement

Copies & Submission

- Each committee member should receive a printed copy and an electronic version will be submitted via ICON.

Grantsmanship

- Use English and avoid jargon
- If terms are not universally known, spell out the term the first time it is used and note the appropriate abbreviation in parentheses. The abbreviation may be used thereafter.

Page Limitations and Content Requirements

Section	Page Limit	Content
Cover page		Title, Name, Advisor, Committee Members, Date and Room # for Meeting
Research Proposal-Abstract/Description	1	Succinct and accurate description of proposed work
Introductory Statement and Specific Aims	2	
Background, Experimental Approach, Possible Outcomes, Problems, and Future Directions	12	Text including all figures and tables
References	As needed	
Addendum	Up to paper	Key paper related to proposal included in the submission.

Final Examination for the Master's Degree

The three-member Master's Dissertation Committee serves as an advisory body for preparation of the dissertation. This committee meets with the student to review the material that is expected to be incorporated into the dissertation. Although a meeting of the Master's candidate with the committee should occur yearly, the candidate, Dissertation Advisor, or the committee can request a meeting at any time. The committee with input from the Dissertation Advisor will advise the student as to the suitability of the research accomplished for a dissertation. This is conveniently done by scheduling a committee meeting approximately four to six months before the final examination. This is an important step and can avoid issues after the dissertation has been written. The student, however, makes the final decision as to when the dissertation should be written and presented to the committee. **The final draft must be given to all members of the committee two weeks before the final examination.** The student should contact their committee members about supplying a printed or an electronic copy of the dissertation. Failure to meet this deadline will require re-scheduling the final examination so that all committee members have at least two weeks to read the dissertation. **Students should register for 1 s.h. of GRAD: 6001 Master's Final Registration during the semester in which they graduate.**

The final Master's examination can take the form of a public seminar presented to the department or a private seminar presented to the dissertation committee. This presentation is announced according to the [Graduate College Policy](#). Questions, comments, and discussion will follow. After the seminar, the candidate will meet with the committee for the final dissertation defense. The Master's degree is not awarded until the dissertation is approved by the

Committee via the [ProQuest Committee Verification](#) system. In some cases, extensive revisions may be required. The candidate should work with the Dissertation Chair and Committee to complete the revisions.

Other Information

Primary Financial Support

Normally, all PhD students are supported by a yearly stipend that is paid monthly. Tuition is also paid. Any student not supported will be clearly informed during the correspondence before admission. Students will be supported for the time required to finish the PhD degree; however, support beyond five years is contingent upon evidence of satisfactory progress on the dissertation research. **Continuation of funding beyond the fifth year requires a written recommendation to the Chair of the Department (with a copy to the Departmental Administrator) by the Dissertation Committee, and the approval of the majority of faculty members.** Compliance will be monitored by the Departmental Administrator. In cases of unsatisfactory progress, the department may reduce the level of support or even terminate the candidacy.

Although students are appointed as half-time Research Assistants, it is expected that students will devote full-time to course work and research. Students should not be employed in other jobs. If a student faces financial hardship, the Graduate Student's Advisor, Director of Graduate Studies, and Department Chair should be informed so that special arrangements can be made. In accordance with the University's policy on Conflict of Interest for faculty and staff, a student may consult, or engage in activities related to the profession, for up to nine days per year. These activities should be reported to the Departmental Administrator.

Paid Leave

PhD students are entitled to University-designated holidays and up to (15) working days per fiscal year of absences without pay deduction. All paid leave must be scheduled with approval of the Graduate Student's Advisor (Advisor).

PhD students may be absent for the University-designated holidays unless the Advisor specifically requires the PhD student to work. At such time, the Advisor and the PhD student shall schedule alternate paid time off. Advisors will make an effort to minimize holiday work for PhD students and if they require work on a holiday, shall provide PhD student(s) with no less than thirty (30) days written notice, whenever feasible.

University-Designated Holidays:

- New Year's Day
- Dr. Martin Luther King, Jr.'s Birthday
- Memorial Day
- Independence Day
- Labor Day
- Thanksgiving Day
- Friday after Thanksgiving Day
- Christmas Day
- A day before or after Christmas Day

Monday will be recognized as a holiday for all holidays occurring on a Sunday and Friday for all holidays occurring on a Saturday. Any further vacation time should have the additional approval of the Department Chair and the Director of Graduate Studies, which will be granted without financial support.

Sick Leave

PhD students may be absent due to illness without loss of pay not to exceed (18) days during a twelve-month appointment.

If a PhD student has exhausted paid sick leave due to illness, they may request an unpaid leave of absence which will be granted at the sole discretion of the Director of Graduate Studies and Advisor, and subject to any relevant policies of the Graduate College.

Family Illness Leave-PhD students may use available sick leave for care of and necessary attention to ill or injured members of the immediate family or for parental leave including birth and adoption.

Bereavement Leave-PhD students may use available sick leave for three workdays when a death occurs in the employee's immediate family.

PhD programs may grant additional paid leave-Such leaves may be granted provided the Director of Graduate Studies and Advisor determine that the PhD student is able to meet the time and effort obligations reflected in the percentage of appointment over the full term of the student's appointment.

Unpaid Leave of Absence

A PhD student may be granted an unpaid leave of absence during the term of their appointment, upon request to and at the sole discretion of the Director of Graduate Studies and Advisor. The Program and Advisor shall authorize leave requests in accordance with the provisions of the Family Medical Leave Act of 1993 for qualifying individuals.

Departmental Equipment

Several pieces of equipment owned by the Department are available for use by students, staff, and faculty. Faculty, staff, or students familiar with these items of equipment provide training for their use. Report any equipment failures to the faculty member in charge, or the Departmental Administrator so that repairs may be made. Much of the equipment and materials in the department have been procured through grants funded for specific purposes. Students must consult with the responsible faculty member when they wish to use instruments and/or facilities not clearly identified as departmental property.

Departmental Conference Rooms

The Department has the Biochemistry Reading Room and Heath Conference Room available for use. If you would like to reserve either of these conference rooms, please contact the Graduate Program Coordinator to be added to the schedule. The Biochemistry Reading Room is available on a 24-hour basis and is accessed by ID card. Food is not allowed in the reading room. The Heath Conference Room is typically used during normal business hours as the entrances are in the main office and locked core. Students may reserve the rooms for a variety of reasons such as practice talks, interviews, lab meetings, etc.

Ethics

Policy on authorship of publications (taken from Virginia Commonwealth University, Dean S. G. Bradley). To merit authorship, an individual should: contribute significant ideas and experimental design to the project, take part in the actual experimentation and data analysis, and be able to present and defend the work at a scientific meeting (exceptions may be made when one author has carried out a unique, sophisticated study or analysis). In general, the principal author is the first author, and the laboratory director is listed last. Other authors are listed in descending order of their contributions to the research being reported. The submitting author is usually the first or last author listed. Students should also read, "Ethical Obligations of Authors" in *Accounts of Chemical Research* 18(12), pp. 356-357 (1985).

Academic misconduct. Any form of cheating or plagiarism with respect to curricula requirements is grounds for dismissal. Plagiarism is taking another's ideas, words, or creative works and presenting them as your own, or presenting them without proper attribution (giving credit to the original source).

Responsible Conduct of Research. All students must complete the Collaborative Instructional Training Initiative (CITI) web-based training during their first semester on campus. Modules in this training include research misconduct, data management, authorship, peer review, mentoring, conflicts of interest, etc. The Graduate Program Coordinator will provide information on enrollment in this training.

Sexual Harassment

The University of Iowa has clearly stated guidelines and regulations pertaining to sexual harassment. Refer to the [*University of Iowa Operations Manual-Chapter 4-Sexual Harassment*](#). This is required reading for all incoming students. In addition, you are required to successfully complete an approved sexual harassment prevention education course. The Graduate Program Coordinator will provide more information for enrollment in this training.

Departmental Committees

Graduate Students select representatives to attend Graduate Students Senate meetings as well as spearhead student committees (Graduate student recruitment weekend, and student-invited seminar committees).

Student Recourse

If a student is failing to meet departmental standards, the department will notify the student in writing and specify the deficiencies. If the student does not remedy the deficiencies within a reasonable specified time, the student may be dismissed. If the student believes that this or any other departmental action is improper, the student has a right to request a review. If the student wishes to appeal the decision, the Chair of the Department should be contacted to arrange the appeal process following the rules of the Graduate College. The [*Office of Graduate and Postdoctoral Studies*](#) has a document that covers the procedures for [*Reporting Grievances*](#) for Carver College of Medicine-affiliated programs, including BMB. A more general document on [*Academic Grievance Procedure*](#) is available through the Graduate College.

Students are responsible for checking your University of Iowa email at least once a day (during working hours) and respond to information requests from the Biochemistry and Molecular Biology administrative staff in a timely manner.

Safety and Accidents

As soon as students are assigned to a laboratory, they should become familiar with the location and use of fire extinguishers, safety showers, fire blankets, and fire hoses. Students should seek advice concerning hazardous reactions or procedures. Safety goggles, safety shields, lab coats, disposable gloves, and other personal protection devices should be used when appropriate.

Laboratory accidents resulting in injuries requiring treatment must be reported at once to the Departmental Administrator, Rosemary Stratton. If the injury is not reported promptly, it may be difficult to receive compensation for the costs of treatment. See the Departmental Administrator for details about the University policies on safety and accidents.

Security

All members of the department share the responsibility for keeping laboratories secure against accidents (to people who may wander into a research area) and against pilferage. The core laboratory doors are locked 24/7. If you need access, please ask the staff in the Biochemistry and Molecular Biology Main Office (4-403) for assistance.

University Policies

A booklet outlining what is expected of a student at The University of Iowa can be obtained from the Office of Student Accountability. It is titled [*Policies and Regulations Affecting Students*](#). The Graduate College posts on their website the [*Manual of Rules and Regulations of the Graduate College*](#) which contains information about registration and examinations.

Changing Graduate Programs

A student wishing to change their PhD Department should follow the steps outlined below, in the sequence in which they are presented, as relevant. Note that the final step is completing a "Request for Change of Graduate College Status" form from the Graduate College.

- First, the student should have a discussion with the DGS and their research Advisor. The student should have a clear, compelling rationale for the proposal to change programs. "Compelling rationale" could include a strong realization and conviction that the student prefers a different field of biomedical science or has convincing career opportunities in a different field of biomedical science. Such rationale will **not** include unhappiness with program requirements, difficulties with the comprehensive exam, or debate about the relative merits of different program requirements. The student

should obtain permission from the Biochemistry and Molecular Biology DGS and the DGS of the new program.

If such permission is not granted, and the student wishes to continue pursuing the request to change programs, the student's request will be evaluated by the Graduate College, and a final decision will be rendered.

- For students who are still in the first-year rotation phase of their training, the student should have a discussion with the relevant DGSs/Directors (both Biochemistry and Molecular Biology and the program the student would like to join) about what will be counted for lab rotations, what remains to be completed for lab rotations, and the optimal time for the program change.

In the case of first-year rotation students, there may be funding implications of changing programs – e.g., the slot allocation for the student/program may be affected, the student may be on a training grant, etc. Such financial implications should be discussed amongst the relevant DGSs/Directors and the Graduate College, and a consensus should be reached.

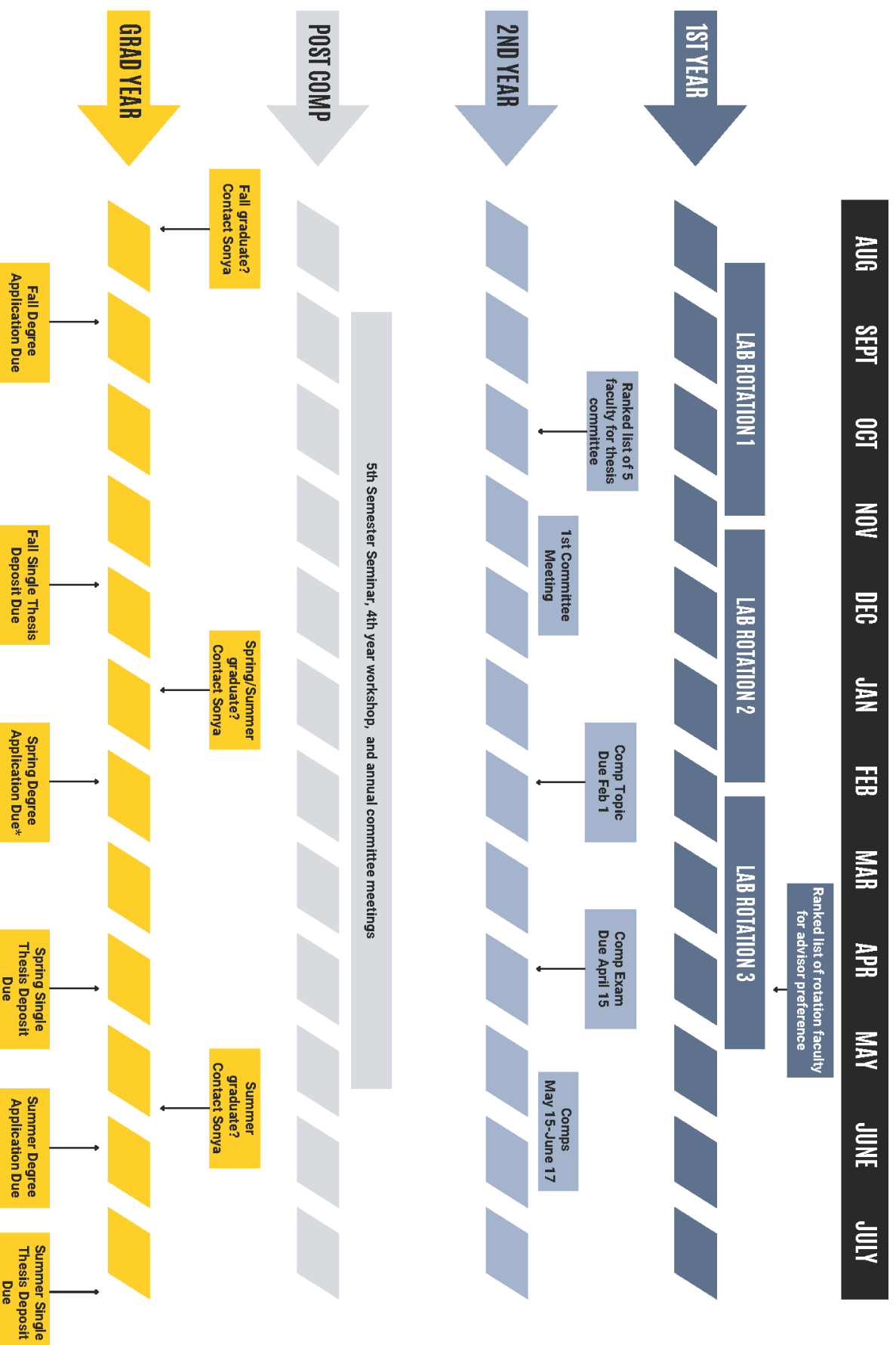
Note: The policies articulated herein for a change in program are not meant to address or otherwise cover situations where students are having difficulty affiliating/adjusting to a lab home.

- When relevant (for students who are already affiliated with a PI/lab), the student should obtain permission from their research Advisor. The student may be staying in the same lab with the same Advisor or may be changing Advisor/lab. In either case, the student should inform all relevant parties and obtain permission from all relevant parties.

Per Biochemistry and Molecular Biology policies, the Chair and DEO is required to approve lab affiliations. If a change of programs implies a change of the responsible DEO, the new DEO should be informed of the change, give permission for the change (if the DEO approves), and accepts responsibility for financial backstopping of the student (per standard Office of Graduate and Postdoctoral Studies (OGPS) policy). As previously stated, situations where relevant permissions are not granted should be taken to the Executive Committee of the relevant program(s), and then to the Graduate College if the matter remains unresolved.

- The student should obtain permission and approval from the Graduate College.

- The student should obtain a "Request for Change of Graduate College Status" form from the Graduate Admissions Office (115 Calvin Hall). The form should be completed by the student and then submitted to the relevant programs for approval.



*Summer graduates may submit their degree application by the Spring deadline if wanting to "walk" in the Spring commencement ceremony.