PhD Biomedical Science (Biochemistry)
MS Biomedical Science (Biochemistry)
MD/PhD Biomedical Science (Biochemistry)
# Table of Contents

Scientific Background of Students ................................................................. 4  
Finding Housing ................................................................................................. 5  
Health Insurance ............................................................................................... 5  
The First Year ..................................................................................................... 5  
Other Training .................................................................................................... 7  
Laboratory Rotations and Assignment to a Laboratory .................................... 7  
The Laboratory Rotations Advisory Committee .............................................. 8  
Laboratory Rotation Presentations ................................................................. 8  
Promotion to the Second Year .......................................................................... 10  
Selection of Thesis Advisor ............................................................................... 10  
English Proficiency Certification Examinations ............................................... 10  
The Second Year ............................................................................................... 11  
Selection of the PhD Dissertation Committee ................................................ 12  
The PhD Dissertation Research Proposal, Individual Development Plan (IDP), and First Dissertation Committee Meeting ......................................................................................... 13  
Format for Biochemistry Doctoral Research and Comprehensive Exam Proposals ................................................................. 14  
Page Limitations and Content Requirements .................................................. 15  
The Comprehensive Examination ...................................................................... 15  
Time Table for the Comprehensive Examination ............................................ 17  
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  
The Fifth-Semester Seminar ............................................................................. 19  
The Fourth-Year Workshop ............................................................................... 20  
The Fifth-Year Retreat ....................................................................................... 20  
Teaching Experience ........................................................................................... 21  
Registration after the Plan of Study is Completed .......................................... 21
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual Meetings with the PhD Dissertation Committee</td>
<td>21</td>
</tr>
<tr>
<td>Final Examination for the PhD</td>
<td>24</td>
</tr>
<tr>
<td>Preparation of the Dissertation</td>
<td>24</td>
</tr>
<tr>
<td>Submission of the Dissertation</td>
<td>25</td>
</tr>
<tr>
<td>Students with Master Degrees</td>
<td>26</td>
</tr>
<tr>
<td>U2G Fast Track PhD Students</td>
<td>26</td>
</tr>
<tr>
<td>MD/PhD Students (MSTP)</td>
<td>27</td>
</tr>
<tr>
<td>Formal Master of Science Degree</td>
<td>28</td>
</tr>
<tr>
<td>The First Year</td>
<td>29</td>
</tr>
<tr>
<td>The Second Year</td>
<td>30</td>
</tr>
<tr>
<td>Interim Master of Science Degree</td>
<td>31</td>
</tr>
<tr>
<td>Format for Biochemistry Master's Thesis Proposal</td>
<td>31</td>
</tr>
<tr>
<td>Primary Financial Support</td>
<td>33</td>
</tr>
<tr>
<td>Paid Leave</td>
<td>33</td>
</tr>
<tr>
<td>Sick Leave</td>
<td>34</td>
</tr>
<tr>
<td>Unpaid Leave of Absence</td>
<td>34</td>
</tr>
<tr>
<td>Departmental Equipment</td>
<td>35</td>
</tr>
<tr>
<td>Departmental Reading Room</td>
<td>35</td>
</tr>
<tr>
<td>Ethics</td>
<td>35</td>
</tr>
<tr>
<td>Sexual Harassment</td>
<td>36</td>
</tr>
<tr>
<td>Departmental Committees</td>
<td>36</td>
</tr>
<tr>
<td>Student Recourse</td>
<td>36</td>
</tr>
<tr>
<td>Safety and Accidents</td>
<td>36</td>
</tr>
<tr>
<td>Security</td>
<td>37</td>
</tr>
<tr>
<td>University Policies</td>
<td>37</td>
</tr>
<tr>
<td>Changing Graduate Subprograms</td>
<td>37</td>
</tr>
</tbody>
</table>
Introduction

The University of Iowa Department of Biochemistry comprises approximately 150 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 adjacent Medical Education and Research Facility, the Eckstein Medical Research Building, and in the Pappajohn Biomedical Discovery Building. These buildings are located in 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. These degrees require a thesis (MS) or a dissertation (PhD) 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 once 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 main office (4-403 Bowen Science Building), and get acquainted with the faculty and other graduate students. New students should talk with the Director Graduate Studies (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.

Students should see the Biochemistry Departmental Administrator (Rosemary Stratton) to complete the forms necessary to receive the stipend, for which proper identification is required. The stipend will begin after arrival and the first paycheck, covering a portion of August, will be on the first business day of September with a full month stipend 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](mailto:benefits-students@uiowa.edu). Students should choose the plan when their appointment in Biochemistry 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. For most students, this will be September 1st.

**The PhD Program**

### The First Year

Students entering the PhD program in Biochemistry, a subprogram of the Biomedical Science Program at the University of Iowa Roy J. & Lucille A. Carver College of Medicine, can tailor their curriculum to take courses that enhance their educational goals. They are expected to take a combination of graduate level courses that includes 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.
An additional 14 hours of coursework (for a total of 34 hours) is chosen from current course offerings in the Department of Biochemistry and other departments across campus. An example of typical first year curriculum is shown below.

### First Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Course Title</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOC:5261</td>
<td>Research Techniques</td>
<td>4</td>
</tr>
<tr>
<td>BIOC:5241</td>
<td>Biophysical Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>BIOC:5282:A01</td>
<td>Biochemistry Seminar</td>
<td>2</td>
</tr>
<tr>
<td>BMED:5207</td>
<td>Principles of Molecular &amp; Cellular Biology</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12</td>
</tr>
</tbody>
</table>

### Second Semester

<table>
<thead>
<tr>
<th>Course</th>
<th>Course Title</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOC:5261</td>
<td>Research Techniques</td>
<td>4</td>
</tr>
<tr>
<td>BIOC:5242</td>
<td>Biophysical Chemistry II*</td>
<td>3</td>
</tr>
<tr>
<td>BIOC:5282:A01</td>
<td>Biochemistry Seminar</td>
<td>2</td>
</tr>
<tr>
<td>MMED:6227</td>
<td>Cell Fate Decisions</td>
<td>1</td>
</tr>
<tr>
<td>MMED:6226</td>
<td>Cell Cycle Decisions</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12</td>
</tr>
</tbody>
</table>

*This course can be taken as individual one-hour modules (BIOC:5244, 5246, 5248)
The following courses are tailored to Biochemistry graduate students and offered by the Biochemistry Department.

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOC:3310</td>
<td>Practical Data Science 3</td>
</tr>
<tr>
<td>BIOC:4310</td>
<td>Computational Biochemistry 3</td>
</tr>
</tbody>
</table>

The following courses qualify to meet the Molecular and Cell Biology requirement.

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMED:6215</td>
<td>Transcription RNA 1</td>
</tr>
<tr>
<td>MMED:6225</td>
<td>Growth Factor Receptor Signaling 1</td>
</tr>
<tr>
<td>MMED:6226</td>
<td>Cell Cycle Control 1</td>
</tr>
<tr>
<td>MMED:6227</td>
<td>Cell Fate Decisions 1</td>
</tr>
<tr>
<td>MMED:6220</td>
<td>Mechanisms of Cellular Organization 3</td>
</tr>
<tr>
<td>PCOL:6208</td>
<td>G Proteins &amp; G Protein-Coupled Receptors 1</td>
</tr>
<tr>
<td>PCOL:5204</td>
<td>Basic Biostatistics &amp; Experimental Design 1</td>
</tr>
</tbody>
</table>

### 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.

### 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 **BIOC: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 Director, 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, student preference, availability of space, and faculty teaching loads. The assignments will be made in time for all three faculty members to attend the 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 Rotations Advisory Committee**

The 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 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 Advisory Committee to present the research and training completed during that rotation. The 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 **BIOC: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 Advisory Committee. The student should first discuss the scope of the report and presentation with their rotation advisor. Prior to the meeting, the student should provide a written report to the Advisory committee (see below).
Rotation meetings begin with the student giving a brief (~30 mins) oral summary of the research project.

**The oral summary should include:**

- 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

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 **4 business days before** 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 Administrative Services Coordinator (Abby Johnson, abby-t-johnson@uiowa.edu) 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 Advisory Committee will recommend to the department whether the student continue as a potential PhD candidate. Promotion to the second year is the decision of the biochemistry faculty based on performance in rotations and the recommendation of the Advisory Committee, academic coursework, scholarly potential, and an expectation that the student will perform well on the Comprehensive Examination. Dismissal from the PhD program by the Biochemistry faculty may be due to poor performance in one or more of the above areas.

Selection of Dissertation Advisor
Near the end of the third rotation, 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 any faculty members in which they are interested and familiarize themselves with the faculty laboratories. They should consider as many dimensions as possible including the definition of the dissertation project, prospects for the research, and the scientific approach. 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 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 BIOC:5282:A02 (Seminar) for 1 hour and electives that contribute to their scientific development. The course BIOC:5282:A02 has, as a goal, the mentored completion of the doctoral dissertation proposal that is due at the end of the semester 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. The elective can be chosen from the 1-hour module list, 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.

A typical second year curriculum might include:

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOC:5282:A02</td>
<td>1</td>
</tr>
<tr>
<td>Electives</td>
<td>As many as needed*</td>
</tr>
<tr>
<td>BIOC:7292</td>
<td>5-8</td>
</tr>
<tr>
<td>BMED:7270</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>12</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Course</th>
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<tr>
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</tr>
<tr>
<td>Total</td>
<td>12</td>
</tr>
</tbody>
</table>

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

These courses receive normal grading except BIOC:7292 and the third seminar of BIOC:5282, section A02, 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 Graduate Program Director and approval of the Department Chair, identifies possible faculty members for the five-person PhD Dissertation Committee. A typical committee is made up of four Biochemistry faculty members with the fifth member from a department other than Biochemistry. The committee chair must be a member of the Biochemistry faculty. (In special cases the student may request a Dissertation Committee composed of three Biochemistry faculty members and two non-Biochemistry Department faculty members.) 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 thesis 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 students 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 faculty if they would be willing to serve; however, the student should make the request of potential members outside the department. Taking these preferences into account, the Director of Graduate Studies and Department Chair will compose the committees. 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. When a committee cannot be composed with faculty on the student’s list, the Director of Graduate Studies will discuss alternatives with the student and the student’s committee and will ask one person to be chairperson of the committee. A faculty member should decline the invitation if there is a

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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) 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).
conflict of interest. The committee membership should be finalized by October 1\textsuperscript{st} in preparation for the first Dissertation Committee meeting near the end of the fall semester of the second year.

**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 the thesis advisor, will prepare a detailed thesis proposal that describes the proposed research to be conducted for the PhD dissertation as part of BIOC:5282:A02. The form of this proposal should follow the guidelines given in the next section. This PhD Dissertation proposal should be submitted to the student’s PhD Dissertation Committee \textbf{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 Individual Development Plan (IDP) should also be submitted at this time.\textsuperscript{2} 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 or fellow. It is not a contract; rather, it should serve as a way to develop goals, identify areas of strength and weakness, and find practical strategies to prepare for the future. To encourage regular reviews of the plan, both the student and advisor should sign-off and date the document. Biochemistry Graduate Students will submit an updated IDP at their yearly committee meetings. Please contact the Administrative Services 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 proposal writing in preparation for their comprehensive proposal.

\textsuperscript{2} In 2013, the NIH made the following announcement, “the NIH encourages grantees to develop an institutional policy requiring an Individual Development Plan (IDP) for every graduate student and postdoc supported by any NIH grant, regardless of the type of NIH grant that is used for support.” An IDP template is available from the Administrative Services Coordinator. In addition, an online IDP tool is available through the journal Science (MyIDP), which may be an additional helpful tool for organizing career plans.
The PhD Dissertation Advisor may choose to attend dissertation committee meetings as an observer. The thesis 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 Doctoral Research and Comprehensive Exam Proposals**

**Font**
- Use 11 points or larger Arial, Helvetica, Palatino Linotype, or Georgia 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

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

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 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 BIOC:7292 Research Biochemistry for 1 s.h. during the summer 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

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3 Adapted from the instructions found for Ruth L. Kirschstein National Research Service Award Individual Fellowship Application (PHS 416-1)
second year to explain how the examination will be administered and to summarize the expectations of the examining committee.

The oral portion of the examination is about two hours in length and based in part on the written examination 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*. For Biochemistry, this means that a student should, at a minimum, possess knowledge of graduate-level biochemistry 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 thesis proposal (an updated proposals generally only needed if the Committee requested this or there are substantial changes since the 1st Committee meeting) that has been prepared by the student in collaboration with the thesis advisor. This will be submitted via ICON® 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 to the examination committee one to three general topics for the examination proposal; however, this is not required. Each suggested topic should be no more than two sentences. 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 thesis 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 feels 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 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 scheduled. The oral exam will

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4 "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."

5 All ICON submissions are analyzed by plagiarism software.
be scheduled approximately 2-3 weeks after the proposal is accepted (typically between May 15 and June 7). A summary of the deadlines and time of the examination is as follows:

**Timetable for the Comprehensive Examination**

**February 1 of second year:** Each eligible student gives the 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 eligible student is assigned two possible examination topics by the committee.

**March 14:** Specific aims page draft provided to committee.

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

**April 15:** The student gives the committee a written examination proposal (see following section for details) on one of the two topics. This will be submitted via ICON as well as the student distributing a paper copy to the committee.

**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 assigned by the Department of Biochemistry.

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 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
- Explain and apply the basic concepts of biochemistry 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 a number of sources; for example, reading the literature, course work, journal clubs, departmental seminars, background reading during a rotation, etc. However, it is NOT appropriate to use as the basis of the proposal a term paper that has been submitted as a course requirement and critiqued by the instructor(s) of the course.

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 (SEE ABOVE FOR DETAILS). 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”. The **Specific Aims, Background & Significance, Research Design & Methods, Literature Cited, and Addendum** should follow the same guidelines described above for the PhD Dissertation proposal. The addendum should include 2 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 2 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 both in defense of the examination proposal and in answering questions of general biochemistry that are germane to the proposal, or that are important for a full understanding of the proposed experiments and their interpretation such as general biochemistry, molecular biology or biophysical principles. There are three possible outcomes: satisfactory, reservation or unsatisfactory per the [Graduate College Manual](#). If the committee decides that the performance during the oral examination 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 the other part. A report of “Reservation” will be given if deficiencies displayed by the student where modest and can be easily rectified. If the reservation is satisfied (as determined by the Dissertation 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 whether 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 typically completed by six months of the initial exam. The second examination is usually on a different topic than the original exam. The timeline of this examination is similar to that of the first but 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 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 thesis research to the Department as part of the weekly Biochemistry Workshop series. The student should prepare a 30 to 45 minute presentation for the seminar. The seminar and the updated thesis proposal should describe the background and specific aims of the thesis research, the relevant research already completed, and the experiments required to achieve the stated goals. An updated Individual Development Plan should also be submitted at this time. This updated thesis proposal and IDP must be submitted to the Dissertation Committee and the Administrative Services Coordinator at least one week before the seminar. The IDP template can be obtained from the Administrative Services 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 Administrative Services Coordinator will schedule 5th semester seminar committee meetings. **This is the only committee meeting that will be scheduled by the Administrative Services Coordinator. All other meetings are the responsibility of the student.**

**The Fourth-Year Workshop**

In the fourth year, fall or spring, the student will be asked to present at one of the Biochemistry’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 Administrative Services Coordinator will work with each student to schedule the fourth-year Workshop.

**The Fifth-Year Retreat**

The Department of Biochemistry 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 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 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 Center for Teaching, the summer before their assignment begins.

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.

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 conferences are intended to inform the committee of the student’s research progress. It is the responsibility of each student to schedule these meetings. Instructions on how to schedule the committee meetings is described below. One week before each meeting the student should provide the committee and Administrative Services Coordinator with a written report detailing the progress made since the previous meeting, an updated IDP, a recent CV, and a timeline to graduation. The committee chair should prepare a short, written description of each meeting with the student and communicate the results of the meeting to that student and the advisor. A copy of this written description will be kept in the student’s file in the Biochemistry Main Office (4-403 BSB). Arranging a committee meeting takes planning and perseverance. The
guidelines below should make the process as efficient as possible and enhance the success of the 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.

- You should **talk to both your Dissertation Advisor and your Committee Chair at least one month** before you would like to have the meeting. These discussions should include what progress and problems need to be brought to the attention of the committee.

- **Establish the dates and time that your committee chairperson will be able to attend the meeting.** Working on availability over a two-week time span is recommended. Please take into consideration that there may be large blocks of time—such as a week or more—when your chair or members of your committee may be off campus and unavailable.

- **Set up a Doodle poll (doodle.com) using the following criteria:**
  - Omit Seminar (Thurs 10:30-11:30 AM)
  - Omit Workshop (Tues 12:30-1:30 PM)
  - Omit times that the Dissertation Chair and Advisor cannot attend. Attendance of the advisor is optional.
  - Poll the remainder for the committee for two-hour time segments over a one- or two-week interval (make the number of possible times manageable)
  - Send the poll to the Administrative Services Coordinator for review **before** sending it to the committee
  - Once approved by Administrative Services Coordinator, send the poll to the committee
  - When you have a time that works for everyone, let Administrative Services Coordinator know and she will reserve you a room and send a confirmation to your committee

- **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. Include an updated CV and a timeline to graduation. You might also consider a Dissertation
Outline 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.

- Prepare an Individual Development Plan (IDP) for your committee. Contact the Administrative Services Coordinator to obtain a template.

- 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.

The documents above should be sent to the committee and Administrative Services Coordinator at least one week before the scheduled meeting.

**Example text for contacting the Committee:**

Dear Dissertation Committee,

I would like to schedule a dissertation committee meeting to discuss the progress made on my doctoral work since our last meeting on (date of the last meeting). I have spoken with Dr. X (my Dissertation Advisor) and Dr. Y (Dissertation Chair) and would like to know your availability for a meeting over the following dates and times. I have included a link to a Doodle poll for your convenience (link below).

Sincerely,

Your name

It is the responsibility of the Dissertation Chair to summarize the consensus of the committee in a written report to the student, with copies of the report for the student’s file and the student’s research advisor. If a student fails to schedule an annual meeting, the Director of Graduate Studies will ensure that a meeting is scheduled promptly.
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 thesis. 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 thesis. 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 signed. 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 requires the following:

- 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 exceeds 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, Palatino Linotype, Georgia, Times New Roman,
and Cambria.

• Headings format will be: Major (primary) headings (all Caps-Left Justified), Secondary
headings (Bold, Left Justified), Tertiary Headings (Italicized-Left Justified)

Thesis Resources

• Graduate College Thesis Manual
• Graduate College Deadlines for Thesis Deposit and Graduation
• Graduate College Thesis Preparation and Formatting Tips (including Word templates)

Departmental funds cannot be used for preparation of the thesis or figures in the thesis;
however, grant funds can be used for preparation of the 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 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 thesis and directs them to verify the manuscript. Committee verification will
now follow the Graduate College format review. Verification is a required step in the thesis
approval process. 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 as a
result of your defense. It is best to work closely with your Dissertation Committee on these
edits, so the final verification is a mere formality.
More information about dissertation submission is available at

**Entrance to the PhD Program with Advanced Standing**

**Students with Master Degrees**
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 a thesis advisor, start thesis research, and take the Comprehensive Examination. The student and the thesis 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 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 PhD program. During the student's senior undergraduate year they will complete research rotations in three distinct Biochemistry laboratories (refer to pg 4) as well as consult with the Directors of Undergraduate and Graduate Studies to determine coursework that completes their undergrad 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-credited 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

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOC:5241</td>
<td>Biophysical Chemistry I*</td>
</tr>
<tr>
<td>BIOC:5242</td>
<td>Biophysical Chemistry II*</td>
</tr>
</tbody>
</table>

*This course can be taken as individual one-hour modules (BIOC:5244, 5246, 5248)*

Three semesters of graduate seminar

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOC:5282:A01</td>
<td>Biochemistry Seminar</td>
</tr>
<tr>
<td>BIOC:5282:A02</td>
<td>Biochemistry Seminar</td>
</tr>
</tbody>
</table>

Four hours of Molecular or Cellular Biology

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMED:6225</td>
<td>Growth Factor Receptor Signaling</td>
</tr>
<tr>
<td>MMED:6226</td>
<td>Cell Cycle Control</td>
</tr>
<tr>
<td>MMED:6227</td>
<td>Cell Fate Decisions</td>
</tr>
<tr>
<td>MMED:6220</td>
<td>Mechanisms of Cellular Organization</td>
</tr>
<tr>
<td>PCOL:6208</td>
<td>G Proteins &amp; G Protein-Coupled Receptors</td>
</tr>
<tr>
<td>PCOL:5204</td>
<td>Basic Biostatistics &amp; Experimental Design</td>
</tr>
</tbody>
</table>
The thirteen hours of nonresearch-based coursework, including the courses needed to meet the requirements listed above, are chosen from current course offerings in the Department of Biochemistry 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 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.

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MED:8123</td>
<td>Foundations of Cellular Life 5</td>
</tr>
<tr>
<td>MED:8124</td>
<td>Mech. of Health &amp; Disease I 8</td>
</tr>
<tr>
<td>MED:8133</td>
<td>Mech of Health &amp; Disease II 7</td>
</tr>
<tr>
<td>MED:8224</td>
<td>Mech of Health and Disease Keystone 7</td>
</tr>
<tr>
<td>ACB:8101</td>
<td>Medical Gross Human Anatomy 5</td>
</tr>
</tbody>
</table>

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 Department offers a two-year research-oriented program for the Master of Science degree (formally through the Biomedical Science Program). 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 examination, and a thesis are required. Of the minimum of 30 semester hours required for the degree, at least 24 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 students take 6 hrs)
- Eight hours of Biochemistry Research
- Four hours of Molecular or Cellular Biology (typically Biochemistry 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 other departments across campus. An example of a typical first year curriculum is shown below:

<table>
<thead>
<tr>
<th>First Semester</th>
<th></th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIOC:5261</td>
<td>Research Techniques</td>
<td>4</td>
</tr>
<tr>
<td>BIOC:5241</td>
<td>Biophysical Chemistry I</td>
<td>3</td>
</tr>
<tr>
<td>BIOC:5282:A01</td>
<td>Biochemistry Seminar</td>
<td>2</td>
</tr>
<tr>
<td>BMED:5207</td>
<td>Principles of Molecular &amp; Cellular Biology</td>
<td>3</td>
</tr>
</tbody>
</table>

12

<table>
<thead>
<tr>
<th>Second Semester</th>
<th></th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIOC:5261</td>
<td>Research Techniques</td>
<td>4</td>
</tr>
<tr>
<td>BIOC:5242</td>
<td>Biophysical Chemistry II*</td>
<td>3</td>
</tr>
<tr>
<td>BIOC:5282:A01</td>
<td>Biochemistry Seminar</td>
<td>2</td>
</tr>
<tr>
<td>MMED:6227</td>
<td>Cell Fate Decisions</td>
<td>1</td>
</tr>
<tr>
<td>MMED:6226</td>
<td>Cell Cycle Decisions</td>
<td>1</td>
</tr>
<tr>
<td>Elective</td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

12

*This course can be taken as individual one-hour modules (BIOC:5244, 5246,5248)
The following courses qualify to meet the Molecular and Cell Biology requirement.

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMED:6216</td>
<td>Chromatin Structure and Disease</td>
</tr>
<tr>
<td>MMED:6225</td>
<td>Growth Factor Receptor Signaling</td>
</tr>
<tr>
<td>MMED:6226</td>
<td>Cell Cycle Control</td>
</tr>
<tr>
<td>MMED:6227</td>
<td>Cell Fate Decisions</td>
</tr>
<tr>
<td>MMED:6220</td>
<td>Mechanisms of Cellular Organization</td>
</tr>
<tr>
<td>PCOL:6208</td>
<td>G Proteins &amp; G Protein-Coupled Receptors</td>
</tr>
<tr>
<td>PCOL:5204</td>
<td>Basic Biostatistics &amp; Experimental Design</td>
</tr>
<tr>
<td>BMED:5205</td>
<td>Practical Bioinformatics</td>
</tr>
</tbody>
</table>

**The Second Year**

A typical second year curriculum might include:

**First Semester**

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOC:5282:A01</td>
<td>Biochemistry Seminar/Doctoral Proposal</td>
</tr>
<tr>
<td>Electives</td>
<td>3</td>
</tr>
<tr>
<td>BIOC:7292</td>
<td>Research Biochemistry</td>
</tr>
<tr>
<td>BMED:7270</td>
<td>Scholarly Integ/Resp Conduct of Rsrch I</td>
</tr>
</tbody>
</table>

12

**Second Semester**

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electives</td>
<td>3</td>
</tr>
<tr>
<td>BIOC:7292</td>
<td>Research Biochemistry</td>
</tr>
<tr>
<td>BMED:7270</td>
<td>Scholarly Integ/Resp Conduct of Rsrch I</td>
</tr>
</tbody>
</table>

12

Progress in the program will be monitored at least annually by a Thesis Committee of three members of the Biochemistry faculty, not including the student’s research advisor. The student should submit a list of at least four names of faculty members to the Graduate Student Advisor by midterm of the spring semester so that a committee can be constituted, and an advisory meeting held before the end of the second year. 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 department, followed by a meeting with the Thesis Committee.
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 five members, selected in the same manner as the PhD committees. 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 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.
Format for Biochemistry Master’s Thesis Proposal

Font

- Use 11 points or larger Arial, Helvetica, Palatino Linotype or Georgia 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.
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 Thesis 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 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 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 work days 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 maybe granted an unpaid leave of absence during the term of their appointment, upon request to and at the sole discretion of the 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.6

**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 Reading Room**

This room is available on a 24-hour basis and is accessed by ID card. There is no librarian, so please return books to their correct place immediately after use. No books or journals maybe removed from the library at any time except for photocopying. Food is not allowed in the reading room.

**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).

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**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 Administrative Services 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. Administrative Services 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. A document on *Academic Grievance Procedure* is available in the departmental office and in the Graduate College, 205 Gilmore Hall.

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 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. If the injury is not reported promptly, it may be difficult to receive compensation for the costs of treatment. See the Biochemistry 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 Biochemistry 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 Subprograms**

A student wishing to change subprograms or PhD Department should follow the steps outlined below, in the sequence in which they are presented, as relevant. Note that the final step, completing a Request for Change of Graduate College Status form for the Graduate Admissions, must be completed with approval and oversight from the Office of Graduate and Postdoctoral Studies (OGPS).

- The student should have a discussion with the DGS/Director of the subprogram the student is proposing to leave. The student should have a clear, compelling rationale for the proposal to change subprograms. “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 subprogram requirements, difficulties with the comprehensive exam, or debate about the relative merits of different
subprogram requirements. The student should obtain permission from the DGS/Director (of the subprogram the student is leaving) to change subprograms.

If such permission is not granted, and the student wishes to continue pursuing the request to change subprograms, the student’s request will be evaluated by the subprogram’s Executive Committee. The Executive Committee will render a decision. If the issue remains unresolved, the student’s request will be evaluated by the CCOM Associate Dean of Graduate and Postdoctoral Studies, and a final decision will be rendered.

- The student should have a discussion with the DGS/Director of the subprogram the student is joining and should obtain permission from that DGS/Director to join that subprogram.

If such permission is not granted, and the student wishes to continue pursuing the request to join that subprogram, the student’s request will be taken up by the destination subprogram’s Executive Committee. If the Executive Committee upholds the decision to not grant permission to the student to join the subprogram, the student will not be permitted to join that subprogram.

- 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 (the one for the subprogram the student is leaving and the one for the subprogram the student is joining) about what will be counted for lab rotations, what remains to be completed for lab rotations, and the optimal time for the subprogram change.

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

Note: The policies articulated herein for changed subprogram’s in the BSP are not meant to address or otherwise cover situations where students are having difficulty affiliating with a lab home. The responsibility for placing students in a lab home lies with the subprogram into which the student initially matriculated. Changing subprograms should not be used as a mechanism to solve lab placement problems. Subprograms have the prerogative to place students in labs of PIs outside the
subprogram, with appropriate agreements, co-advising arrangements, and full understanding by all relevant parties (so-called “subcontracting”). Such placements need not require the student to change subprograms.

- When relevant (for students who are already affiliated with a PI/lab), the student should obtain permission from the student’s 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 Office of Graduate and Postdoctoral Studies (OGPS) and Biomedical Science Program (BSP) policies and the DEO of the supervising faculty member is required to approve lab affiliations. If a change of subprograms 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 OGPS/BSP policy). As previously stated, situations where relevant permissions are not granted should be taken to the Executive Committee of the relevant subprogram(s), and then to the CCOM associate Dean of Graduate and Postdoctoral Studies if the matter remains unresolved.

- The student should obtain permission and approval from the CCOM Associate Dean of Graduate and Postdoctoral Studies.

- 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 OGPS office for approval. OGPS approval is required prior to submitting the form to the subprogram the student is transferring into, and then submitted to Graduate Admissions per instructions on the form.