Graduate Student Handbook
2016-2017

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1. The Department

The Department of Microbiology provides a variety of facilities and resources for graduate students. Since the University of Illinois is a very large university with complex layers of administration, the Department is always the first place the student should go with administrative problems or questions. Deb LeBaugh is the Administrative Assistant for the Department. She will assist you with any registration, payroll or other administrative problems. The staff in the main office, located in room B103 CLSL, will also handle your departmental reimbursements and travel arrangements. The School of Molecular and Cellular Biology (MCB) administrative office is located in room 393 Morrill Hall. Their role is to assist you in business matters, such as purchase orders for research supplies and externally-funded fellowships.

Professors Peter Orlean, Joanna Shisler, and Rachel Whitaker are the Department Graduate Advisors. The Graduate Advisors act as ombudsmen to resolve any questions or problems related to a student’s graduate program. Professor John Cronan, the Head of the Department of Microbiology, is also available to discuss any academic or research problems with students, if necessary.

2. Degree Requirements

2.1 M.S. Degree Requirements

Candidates for the M.S. degree must complete the following.

Graduate College Requirements:

• Credit applied toward the degree must be earned at the University of Illinois or in other locations approved by the Graduate College for graduate credit.

• At least 32 credit hours must be completed, and all hours must be at the 400-level or greater. At least 12 credit hours must be in 500-level courses, and MICR 590 research credit may count towards these 12 credit hours. Eight of these 12 credit hours in the 500-level courses must be in the major field.

• All requirements for a degree must be completed within 5 calendar years of initial registration in the Graduate College.

Microbiology Department Requirements:

• An overall grade point average of at least 3.0 in all 400- and 500-level courses presented for the degree.

• A grade point average of at least 3.0 in MCB courses.
• Eight credit hours of 400- or 500-level of MCB courses that have an emphasis in microbiology-related topics, and are exclusive of MICR 590 research credit.

• At least four credit hours of MICR 590.

• Completion of one of the following and approval by the research advisor and the Head of the Department:
  1. A research thesis.
  2. Submission of a manuscript for publication with the candidate as a first author and to which the candidate has made the major contribution. Under special circumstances, and after careful evaluation by a student’s committee, a co-first author publication may be considered to meet a given student’s publication requirement. The guidelines that the student’s committee will adhere to are described in section 12.1.
  3. The successful passing of the departmental Preliminary Examination.

If the student and their advisor agree to have the student submit a research thesis to fulfill part of their requirement for an M.S. degree, this document must be viewed and commented on by the thesis committee, with final approval by the thesis advisor and the Department Head.

The format of the thesis must also be approved by Diane Tsevelekos, Office Support Specialist, and subsequently approved by the Graduate College. The Graduate College has strict requirements for the thesis format. A copy of these thesis guidelines can be obtained from the Graduate College website or from the Thesis Office (www.grad.illinois.edu/thesis-dissertation).

2.2 Ph.D. Degree Requirements

Candidates for the Ph.D. degree must complete the following.

Graduate College Requirements:

• Completion of at least 96 credit hours of work beyond the baccalaureate degree. This may include credit hours earned for a Master’s degree or the equivalent (32 credit hours) whether taken at the University of Illinois or elsewhere.

• At least 64 credit hours of coursework must be completed at the University of Illinois.

• Submission of an acceptable thesis.
• All requirements for the Ph.D. must be completed within 7 years after initial registration in the Graduate College except in the following cases: (a) a candidate for the Ph.D. who has received a Master’s degree elsewhere must complete all requirements for the degree within 5 years after initial registration in the Graduate College; (b) a student whose study is significantly interrupted after receiving a Master’s degree from the University of Illinois and who later returns to work toward a Ph.D. will have 5 years from the date of return to complete degree requirements. If the Ph.D. is not completed within 5 years after the Preliminary Examination, the student will be required to take a second Preliminary Examination. An exception to the above is a student in the Medical Scholars Program, who will be allowed 10 years to earn their Ph.D. Please see the Graduate College Handbook for more details (http://www.grad.illinois.edu/gradhandbook/).

Microbiology Department Requirements:

• Successful completion of the course requirements set by the Department of Microbiology (see below).

• An overall grade point average (GPA) of at least 3.0 in all 400- and 500-level courses (not including research credit).

• The Advisory Meeting must be taken before the end of May of the spring semester of the first year unless special permission is obtained from the Head of the Department. This meeting is designed to advise the student of possible deficiencies and to identify areas in which the student needs more coursework or in-depth study.

• Passing grade on the Research Qualifying Exam (Preliminary Examination). This exam must be taken before the end of May of the spring semester of the second year unless special permission is obtained from the Head of the Department. This examination is designed to determine if the student is qualified for advancement to a Ph.D. degree.

• Experience teaching for at least two semesters (two 50% TA slots or the equivalent). International Microbiology graduate students must be eligible to teach (passed the campus requirements for English proficiency; see below) within 3 years of their entering the graduate program. International students who are Ph.D. candidates who are not eligible to teach within this time period must leave the Ph.D. program.

• At least two first-author publications in which the candidate has made the major scientific research contribution. At the time of graduation at least one of these manuscripts must be accepted to a peer-reviewed journal and a second paper must, at minimum, be in the pre-submission stages. A description of a “pre-submission stage” manuscript is described in section 12.1. Under special
circumstances, and after careful evaluation by a student’s committee, a co-first author publication may be counted towards a given student’s publication requirement. The guidelines that the student’s committee will adhere to are described in section 12.1.

- Submission and successful defense of a dissertation prepared on original research, performed under the direction of a faculty member or an Affiliate of the Microbiology Department. Defense of the thesis requires a public seminar presentation of the student’s thesis work. The thesis and defense must be approved by a faculty committee. See section 12.2, Ph.D. Thesis (Dissertation), and section 12.3 Thesis Defense (Final Examination).

3. **Advising**

All students are admitted into the School of Molecular and Cellular Biology (School of MCB) umbrella program. Over the course of the first semester, the student will perform three research rotations in laboratories within the School of MCB. During this time, the Associate Director of the MCB program (Jim Imlay) will serve as the primary advisor. At the end of the semester, the student will arrange to do thesis research in a permanent laboratory. If a student joins a lab in which the principal investigator (PI) has a primary appointment in the Department of Microbiology, then the student will typically become a member of this Department. At this point, the Microbiology graduate advisors will become the first point of contact when students seek advice or assistance with issues relating to the graduate program. Students should feel free to bring up problems or concerns about their graduate program with their PI, the graduate advisors, or the Head of the Department.

4. **The First Semester of Graduate School**

4.1 **Coursework**

During the first semester of the first year of graduate school, all students are considered School of MCB graduate students. As such, they take the MCB core graduate courses: MCB 501 (4 credit hours) and MCB 502 (4 credit hours). In addition, the students also register for rotations (3 credit hours of MCB 581 for the first rotation, 3 credit hours of MCB 582 for the second rotation, and 3 credit hours of MCB 583 for the third rotation). Thus, for the first semester of the first year of graduate school, the student will be enrolled for a total of 17 credit hours.

4.2 **Lab Rotations**

All students are required to perform three lab rotations (MCB 581, 582, and 583) during their first semester of graduate study. Each lab rotation will be approximately 5 weeks in length. Lab rotations are graded on an S/U basis. Before the first day of classes, students will provide a list of 6 preferred MCB labs for their first rotation to Shawna Smith, who is the School of MCB Graduate Program Coordinator. Students may
Request any lab within any department of the School of MCB. Members of the School of MCB Admissions Committee will then assign the lab rotations based upon the student lists. The lab rotations allow new graduate students to become acquainted with faculty, graduate students, and research in several laboratories. The purpose of the rotations is to help students choose a research advisor and to expose the students to a variety of experimental questions and techniques.

Towards the end of the first lab rotation, graduate students will provide a second list of 6 preferred labs for the second rotation and towards the end of the second lab rotation, graduate students will provide a third list of 6 preferred labs for the third rotation. The Graduate Committee tries to accommodate each student’s request; however, this is not always feasible.

Beginning on December 1st, students may seek firm commitments from rotation advisors regarding joining a thesis lab. During rotations, students may indicate to their rotation advisor an interest in joining his/her lab. The rotation advisor may also indicate whether s/he might be interested in having the student join the lab at the end of the semester. This discussion is UNOFFICIAL, i.e. either party can change their mind up until December 1st. All final lab commitments need to be made by the final day of the fall semester classes.

If desired, a student may arrange another rotation after completion of the three assigned rotations. This fourth rotation should begin as early as possible after the third rotation (it is usually performed over the winter break) and must be arranged by the student and mutually agreed upon by the student and the PI. The fourth rotation is informal, the student does not need to register for the rotation, and no credit is given for it.

4.3 Departmental Affiliation

In some cases, a student will join a lab outside of the Microbiology Department, but will want to earn a Ph.D. from the Microbiology Department because the student’s research project focuses upon problems or utilizes approaches that are based in microbiology. In these cases, the student and his/her advisor may approach the Microbiology Department and request that the student be affiliated with the Microbiology Department. If this request is granted, then the student is responsible for meeting all of the degree requirements of Microbiology, as described in section 2.

5. The Second Semester and Beyond

To fulfill the requirements of a Ph.D. in Microbiology, graduate students must satisfactorily complete the additional following classes before they graduate:

- 12 credit hours of 400- or 500-level lecture-based courses
- 3 credit hours of 400- or 500-level discussion-based courses
Note that some of the MCB courses combine the lecture and discussion section under one listing, as a 4 credit hour course.

Most students in our Department fulfill these requirements with classes that have an emphasis on microbiology. Depending upon your area of research, classes listed by other departments within MCB (Biochemistry, Cell and Developmental Biology, and Molecular and Integrative Physiology) are acceptable towards fulfillment of the above requirement. Any course should be discussed and agreed upon between your advisor and you.

Occasionally, classes taken outside of MCB fulfill a niche that cannot be accommodated by an MCB course. These courses must be agreed upon by your advisor and must also be approved by the Department following discussion with a departmental graduate student advisor.

In addition to the above courses, students are also required to satisfactorily complete the following before graduation:

1. MCB 580 (Research Ethics and Responsibilities). This class must be taken in the fall semester of the second year.

2. MCB 585 (Current Topics in Microbiology). This class must be taken in the spring semester of the first year.

3. MICR 595 (Microbiology Graduate Seminar). Students should register for one credit hour of the Microbiology seminar every fall and spring semester that they register. This class requires the attendance of students at the Departmental Student Seminar (Tuesdays, 4-5 PM) and the Departmental Seminar (Thursdays, 4-5 PM). In addition, occasionally additional seminars are scheduled at different times, and attendance at such seminars is strongly encouraged. This course is graded S/U based on attendance.

4. MICR 590 (Individual Topics) and MICR 599 (Thesis Research)

Students should register for MICR 590 before they pass their Preliminary Examination and MICR 599 after they pass their Preliminary Examination (See section 15, Registration, below.).

5. Number of hours per semester

Outside of the coursework listed above, students should also register for research credit hours such that the combined total of both course and research is at least 16 credit hours per semester if they are being supported as a research assistant (RA). If a student is being supported by a teaching assistantship (TA), they should register for a combined 14 total credit hours.
These hours may vary if a student is on a fellowship. Please contact Deb LeBaugh, if you have questions.

During the first and second years, students are encouraged to apply for external funding to support their graduate research. The Graduate College has assembled a list of dissertation fellowships at https://www.grad.illinois.edu/fellowship/. Application dates vary. Once students choose a laboratory, they should make a list of appropriate sources of external funding to share with their advisor. Students are advised that formal applications can be written in collaboration with their advisor well before the published deadlines to allow time for revision and modification. For support in writing proposals, students should consider enrolling in writing courses MCB 529 (WRI)/MCB 540 and PATH 513, even though these courses will not count towards either lecture or discussion course degree requirements. Students are strongly encouraged to submit at least one application for external funding during their first two years.

6. Teaching

6.1 Requirements

Because teaching is an important expectation of many students after graduation, the Department requires each Ph.D. student to obtain experience teaching for at least two semesters (two 50% TA slots or the equivalent). At least one of the semesters must involve “hands-on” teaching (not simply class preparation or grading). Non-native English speaking Microbiology graduate students must be eligible to teach (passed the requirements for English proficiency) within 3 years of their entering the graduate program. Ph.D. candidates who are not eligible to teach within this time period must leave the Ph.D. program.

6.2 UIUC Teaching Assistant English Language Proficiency Requirements

Illinois state law requires that all instructors at the University of Illinois be orally proficient in English to be eligible to teach. All non-native English speaking students applying for appointments as teaching assistants at UIUC must first satisfy the English proficiency admission requirements of the Graduate College and the appointing academic unit.

The TOEFL iBT test measures English language proficiency in the following areas by section: Reading, Listening, Writing, Speaking. The Speaking section includes both integrated and independent tasks. Section scores range from 0-30 and total scores range from 0-120. Further information about the test can be obtained at the TOEFL website (http://www.ets.org/toefl).

The total and speaking scores from the TOEFL iBT determine whether a student is eligible for TAing immediately. Shawna Smith, who is the School of MCB Graduate Program Coordinator, is the liaison for all matters related to English language proficiency requirements.
The following chart provides an outline of action for International Teaching Assistantship consideration (effective Spring 2006)*:

<table>
<thead>
<tr>
<th>Total/speaking iBT score</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>103+/24+</td>
<td>Student is admitted on full status AND is immediately eligible to TA</td>
</tr>
<tr>
<td>103+/24 or less</td>
<td>Student is admitted on full status BUT student must take the EPI (see below); student must pass EPI before being eligible to TA</td>
</tr>
<tr>
<td>79-102/24+</td>
<td>Student is immediately eligible to TA BUT student is admitted on limited status; student must take the EPT (see below) in the fall semester and any ESL courses within 2 years of beginning graduate school</td>
</tr>
<tr>
<td>79-102/23 or less</td>
<td>Student is admitted on limited status; student must successfully complete BOTH the EPI and EPT to be eligible for TAing</td>
</tr>
</tbody>
</table>

* Please note: TOEFL iBT scores must be less than two years old from the first day of class at the proposed term of entry in order to be valid.

### 6.3 The EPI (English Proficiency Interview)

Illinois state law requires that all instructors at the University of Illinois be orally proficient in English to be eligible to teach. Currently, all non-native speakers of English who wish to provide classroom instruction are required to pass the EPI with a score of 4CP, 5 or 6. There are no exceptions. The EPI is an interview in which there is a person who will talk to the student and a person who will assess the quality of spoken English. All MCB students who are in their first term and have a TOEFL iBT speaking score of less than 24 must contact Shawna Smith in the MCB Graduate Program Office to schedule a test in the fall semester. There are several possible outcomes for the initial EPI:

- If the student earns a 5 or 6, the student is eligible to TA.

- If the student receives a 4CP grade, the student is required to successfully complete “ESL 508: Seminar for International TAs” during or before the first semester of teaching.

- If the student earns a score of 4, 3 or 2, the student may retake the test after successful completion of an English improvement activity. English improvement options include enrollment in an ESL course (504, 506, or 510) or 10 hours of participation in Center for Innovation in Teaching & Learning approved tutoring and must be completed in the semester after the EPI was taken. Students have a maximum of 3 attempts. Not passing the EPI is grounds for dismissal from the department.
In addition, campus policy requires those who pass the English language assessment to: (1) attend both the All-Campus International Teaching Assistants Orientation and the All-Campus Teaching Assistants Orientation; (2) participate in microteaching; and (3) have their classroom teaching monitored closely by their department during the semesters in which they subsequently teach. Additional information may be obtained from the Center for Innovation in Teaching & Learning website (http://cte.illinois.edu/).

6.4 The EPT (English Placement Test) (http://www.linguistics.illinois.edu/students/placement/grreg.html).

The EPT does not assess or in any way affect the qualification of graduate student International Teaching Assistants (ITAs). For information about English language assessment requirements of ITAs, please go to: http://www.grad.illinois.edu/admissions/taengprof.htm.

Those international students who have a total TOEFL iBT score of 79-102 must take an EPT. This test is administered by the Foreign Languages Department soon after the student arrives on campus. If your “Notice of Admission” states that you must take the English Placement Test (EPT), then you are required to take the test. If your “Notice of Admission” does not state this, you may choose to take the EPT if you wish to enroll in ESL courses or you may choose not to take it. All students are strongly encouraged to take the EPT well before classes begin, and if possible, at least two full business days before meeting with their advisor(s) to do final course selection.

The EPT consists of two parts: a written test and an oral test. The writing test requires students to produce an academic essay based on the information obtained from a reading passage and a short lecture. In the oral test, students are given a topic on which to speak for three minutes. If students speak intelligibly, they will be exempted from further oral testing. Otherwise, students will be required to take another oral exam. Students will be placed into or exempted from the general oral or written ESL service courses based on the results of the test.

7. Graduate Committees

7.1 M.S. Committee

Students who are earning a terminal M.S. in Microbiology will have a committee comprised of their advisor plus two other faculty members. The purpose of the committee will be to ensure that the student’s research is progressing and to help decide when sufficient work has been completed to earn the M.S. degree. Shortly after selecting a thesis advisor, each student, in consultation with their thesis advisor, will recommend professors for the committee. The Head of the Department will use this list to select the members of the committee.
The student will meet with their committee at least once per year. The student will also have a committee meeting approximately 6 months prior to a projected completion date to discuss what final experiments must be performed for the completion of an M.S. degree.

7.2 Ph.D. Thesis Committee

Each student will have a thesis committee comprised of at least four professors. Shortly after selecting a thesis advisor, each student, in consultation with their thesis advisor, will recommend professors for the committee. If a student chooses a professor from outside the Department as one of the committee members, the student must inform the outside member of his or her role on the committee. This list which should also include a brief description of the student's project, will be used by the Head of the Department to select three permanent members and one temporary member of the committee. At least two of the permanent members must have tenure-track appointments at the Urbana-Champaign campus of the University of Illinois. (Essentially every professor in the University fulfills this criterion.) During the period of graduate study, these professors will serve as members of the Advisory and the Preliminary Examination committees. After the Preliminary Examination, the temporary member of the committee will be replaced with the graduate student's advisor and this new four member committee will meet yearly to evaluate the student's progress, to provide advice, and will also constitute the final thesis committee. However, the advisor is excluded from the proceedings of the six-month meeting. Thus, the six-month meeting committee is comprised solely of the other three permanent committee members.

If necessary, it is possible to replace a member of the thesis committee, with permission from the Head of the Department.

All members of the committee are expected to attend the student's annual meeting and research seminar, in addition to approving the thesis.

8. Committee Meetings

8.1 The Advisory Meeting

This exam must be taken before the end of May unless special permission is obtained from the Head of the Department. Once an acceptable time is arranged, the student should reserve a room for the meeting and inform Deb LeBaugh of the time and location of the meeting.

The student is required to write a research proposal describing the thesis topic he/she proposes to undertake. This proposal should be no longer than 8-10 pages in length (1.5 space type, 12 point font) excluding the cover page, references, tables, and figures. The format of this proposal is described in section 9 entitled “Advisory and Preliminary Examination Papers.” It should be submitted to members of the committee at least one week before the meeting.
copy should be deposited with Deb LeBaugh for the student's file at the same time the committee members receive their copy. The student will then meet with the committee for about 2 hours. At the meeting, the student will present the research project and answer questions from the committee about the research project and related topics. The committee will evaluate the research proposed, the student's background, and the student's ability to communicate effectively and to think critically about his/her research work and about the literature related to the proposed work.

Immediately following the meeting, the student will be asked to leave the room and the committee will discuss the student's strengths and weaknesses. The chair of the committee will then meet with the student and outline the committee's evaluation and provide comments and suggestions for improvement. The committee may recommend additional coursework or informal study in areas where the student is judged to have weaknesses. Within one week following the meeting, the chair of the committee will send a letter to the student summarizing the student's evaluation, with copies to the student's advisor, all committee members, and Deb LeBaugh for the student's file. The Advisory Meeting is not an examination it cannot be passed or failed. The purpose of this meeting is to evaluate the student's grasp of their project including background, current hypotheses and experimental approaches. Most importantly, the committee provides advice for the student on any preparations deemed necessary for the successful completion of a Preliminary Examination (see below). The committee's comments should be taken seriously by the student, and the Advisory letter usually provides a reference point for the Preliminary Examination.

8.2 The Preliminary Examination

The Research Qualifying Exam (or “Preliminary Examination”) is required by the University to determine if the student is qualified for advancement to candidacy for the Ph.D. degree. This exam must be taken before the end of May of the spring semester of the second year unless special permission is obtained from the Head of the Department. The student should arrange an acceptable time with the committee, reserve a room for the meeting, and inform Deb LeBaugh of the time and place of the meeting.

The student should prepare a research proposal describing his/her thesis project. This proposal should be no longer than 15-17 pages in length (1.5 space type, 12 point font) excluding the cover page, references, tables, and figures. The format of this proposal is described in section 9 entitled “Advisory and Preliminary Examination Papers.” It should be submitted to members of the committee one week before the examination. A paper copy should be deposited with Deb LeBaugh for the student's file at the same time the committee members receive their copy. If the committee considers the paper inadequate, the scheduled meeting may be postponed by the committee chairperson until the student has provided an acceptable revision. During the Preliminary Examination, the student should be able to describe clearly the rationale of the experiments, to summarize the results obtained, to defend the conclusions, and to describe the future research directions of the
project. The student should be prepared to explain any aspect of the project, including the techniques used, other studies relevant to the project, and future directions. Students will be expected to have a detailed understanding of the relevant background and literature. The committee will evaluate the student's progress and potential to carry out Ph.D. degree-level research in the Department. Following the meeting, the chair of the committee will meet with the student to explain the committee's evaluation.

There are three potential outcomes of a Preliminary Examination:

1) **Fail**: Students who fail will not be advanced to candidacy to the Ph.D. degree. If a student fails the Preliminary Examination and the student's research advisor feels that the failure does not reflect the talents or potential of the student, the advisor may appeal to the Head of the Department to allow the student to retake the Preliminary Examination within 6 months of the initial examination.

2) **Deferral**: Students who are deferred must rewrite the proposal and will be reevaluated in the form of a second Preliminary Examination within 6 months of the first. A Preliminary Examination cannot be deferred twice and the outcome of a deferred exam is either “pass” or “fail.”

3) **Pass**: Students who pass are advanced to candidacy to the Ph.D. degree. It is possible for a student to pass contingent on recommendations put forth by the committee including, but not limited to, rewriting parts of the proposal and/or taking additional coursework. The student must satisfy these recommendations before officially passing their Preliminary Examination.

The results of the Preliminary Examination are sent to the Graduate College by the Department in the form of a signed official notification.

### 9. Advisory and Preliminary Examination Papers

In addition to distributing copies of the proposal to the members of the committee, the student must provide Deb LeBaugh with a copy of the proposal to be included in the student's file. The format of the Advisory and Preliminary Examination papers should be similar to an NIH grant proposal.

A few websites with instructions are listed below. These websites are not meant as an end-all-be-all formula for writing, but are to help get you started. Another suggestion is to ask for the advisory document of successful students in your lab.

The advisory document must include the following sections:

**Cover Page:** The cover page should include the title of the project; your name; whose lab you're in; whether the meeting is an Advisory Meeting or Preliminary Examination; the date (month, day, year); the time and place of the meeting; and the members of the committee, with the chair indicated.

**Abstract:** Describe concisely the proposal's long-term and specific objectives and the work to be completed toward achieving these objectives. A central hypothesis must be included.
Advisory: No more than 150 words.
Prelim: No more than 150 words.

**Specific Aims Page:** Outline the broad, long-term objectives and describe concisely what the specific research described in the proposal is intended to accomplish and the hypotheses that are to be tested.
Advisory: No more than one-half to one full page.
Prelim: No more than one-half to one full page.

**Background and Significance:** Describe the background to the present proposal, critically evaluate existing knowledge, and specifically identify the questions that the proposal is intended to answer. State concisely the importance of the research described in the proposal by relating the Specific Aims to the broad, long-term objectives.
Advisory: No more than two to three pages.
Prelim: No more than two to three pages.

**Preliminary Studies and Progress Report:** Summarize any studies pertinent to the proposal or any other information that might be useful to establish your ability to carry out the proposed research. This is the section where you will discuss the data you have generated. Summarize the importance of the findings. The progress report is a very important component of the Preliminary Examination proposal and should, in addition to the above, summarize the advisory proposal's Specific Aims and provide a succinct account of your published and unpublished results indicating progress toward their achievement. The Preliminary Examination proposal should also include a discussion of any changes in the Specific Aims since the Advisory Meeting.
Advisory: No more than two to four pages.
Prelim: No more than five to seven pages.

**Experimental Plans:** This is a very important component of the written exam as it provides your future research plans for the next 2-3 years. This is NOT a “Materials and Methods” section that one would typically find in the primary literature. Rather, it is an opportunity to outline the experimental design and plans you have as well as the
procedures you will use to accomplish the Specific Aims of the project. It is imperative that the Specific Aim (goal, objective, or reason for doing the experiment) is clearly outlined when discussing a particular experimental approach. Include the means by which the data will be collected, analyzed, and interpreted. Describe possible results and how each outcome may affect your next hypothesis and experimental design. Describe any new methodology or assay and its advantage over existing methodologies. Discuss the potential difficulties and limitations of the proposed procedures and potential alternative approaches to achieve the Specific Aims. This section comprises the main body of the proposal and is usually the most difficult one for students to write. It requires the critical thinking and evaluation expected in grant proposals.

Although no specific number of pages is recommended for this section of the paper, the Specific Aims, Background and Significance, Preliminary Studies or Progress Report, and Experimental Plans may not exceed:
Advisory: 8-10 total pages.
Prelim: 15-17 total pages.
(Please see sections 8.1 and 8.2 for specific guidelines about spacing and length requirements.)

**Literature Cited**: Provide full literature references, which include the author names, the title of the manuscript, the pages, volume, year, and title of the journal in which the work was published. This does not count towards the page limit.

**Appendix Including Figures and Tables**: The papers should include figures and tables summarizing the results. All tables should have titles and a brief description of the contents of the table. All figures should have titles and legends that describe the figure to the reader. Figure legend formats should be of the caliber of those seen in published manuscripts. All abbreviations and symbols used in the figure should be defined in the figure legend. Ambiguous figure legends will make it impossible for the reader to evaluate your preliminary data. Figures should also be of the caliber of those seen in published manuscripts. This does not count towards the page limit.

**Advisor Involvement**: The student’s advisor should discuss the broad outline and main ideas of the written proposal with the student. The advisor should also read a first draft of the proposal and make suggested changes regarding the specific aims, approaches taken, and the overall presentation of ideas. However, the proposal should be fully written by the student, and the advisor should not become involved in checking sentence structure, grammar, references, and other details of the written presentation. As with all written work, a proposal that is poorly constructed and contains numerous errors will convey a negative message to the committee.
10. Graduate Student Annual Research and Academic Progress Review

Campus policy stipulates that graduate units must conduct annual academic progress reviews for all graduate students enrolled in degree-seeking programs at least once every academic year. A written copy of the review must be given to the student and be placed in the student's academic file. The review must include: a student self-report and assessment; a written review prepared by the advisor; and an opportunity for the student to discuss this review in person.

This review will occur within the framework of the Department's current well-developed structure of Advisories, Preliminary Examinations, and student seminars:

1st-year students: The student’s written Advisory proposal, and the letter to the student serve as the documents for the review. The Advisory meeting will serve as the meeting and the time for student feedback.

2nd-year students: The student’s written Preliminary Examination proposal and defense of the proposal, and the decision of “pass” or “fail” serves as the review process.

3rd-year and beyond: Each student will fill out an “Annual Research and Academic Progress Review” (progress report) form (obtained from Deb LeBaugh) and a paper copy of this form will be turned in to committee members and Deb LeBaugh a week before their student seminar. The progress report will consist of the following:

- Title of thesis research; type of support (RA, TA, etc.) per semester since the last meeting; courses completed since the last meeting; presentations, publications, and/or awards since last meeting,

- 1-2 page outline of research accomplishments and previous research, both successful and unsuccessful. The student should also lay out a clear plan for future potential publications.

Following the student’s seminar, the student should meet privately with the committee. The meeting can take place immediately after the seminar. The meeting should focus on the student’s progress and future plans for satisfying the degree requirements including course requirements, teaching, and research publications.

The student’s PI will prepare a short written summary of the meeting. The student, the PI, and at least one other committee member who was present will sign the document. This completed form should be given to Deb LeBaugh and a copy of the report will be given to the student.
11. Graduate Student Annual Seminar and Progress Report

After a student passes their Preliminary Examination, the student will meet with his/her thesis committee annually to discuss the student’s progress and future research directions. As a prelude to this meeting, the student gives a formal student seminar. One week prior to the seminar, the student should submit an annual progress report and a copy of the “Annual Research and Academic Progress Review” form (see section 10) to each of the members of their committee and to Deb LeBaugh.

12. The Final Year

12.1 Pre-defense or “6-Month” Meeting

Each student who is within a year of graduating is responsible for scheduling the pre-defense meeting with the committee. Deb LeBaugh should then be informed of the date of the pre-defense meeting. The final defense cannot be scheduled until the student has the approval of the Thesis Committee, including the PI. Please consult the Department Administrative Assistant, Deb LeBaugh, well in advance of scheduling your 6-month meeting to make sure you have completed all the necessary requirements for a Ph.D. degree.

For the pre-defense meeting, each student will meet with the committee, that includes the three permanent members but excludes the research advisor, approximately 6 months before the anticipated thesis defense. The original chair of the committee (i.e., the committee chair for the Preliminary Examination committee) will also chair this committee meeting. A week prior to the 6-month meeting, the student must provide the committee with the following:

- An outline of the thesis (indicating sections that have been completed and any experiments that have not yet been completed).
- A final version of the introductory chapter.
- Proof of the acceptance of one first-author manuscript in a peer-reviewed journal.
- A manuscript in the pre-submission stages. It is suggested that the student provide the committee with, at minimum, an outline of this second manuscript, including the title of the publication, an abstract, publication quality figures and figure legends, a list of experiments that remain to be performed, the potential outcomes of the experiments, and conclusions that would be drawn from each of these outcomes. Any additional material, such as a nearly-final written portions of the manuscript, is looked upon positively by committee members.
- Co-first author manuscripts. Under special circumstances, and at the discretion of a student’s committee, and in consultation with the student’s advisor, a co-
first author paper may be counted toward a given student’s publication requirement. Only one co-first author publication can be counted towards a given student’s publication requirement, and for that one co-first author publication, no more than two co-first authors are allowed. Because the 6-month meeting is held after publication of a student’s first paper, and with the second paper in pre-submission stage, it should be clear whether the student is planning to count a co-first author paper as a paper towards the thesis requirements. At the 6-month meeting, the student must spell out how his/her contribution to the co-first author paper is distinct from that of the other co-first author. At this stage, the committee can evaluate whether the co-first author paper might be admissible. If the co-first authors are both UIUC Microbiology graduate students, then the two students involved, their advisor(s), and both students’ committees, must agree which of the results from the co-first author paper will be presented in each student’s dissertation.

This meeting provides an opportunity for the committee to evaluate the student’s progress, to suggest any additional experiments that may be necessary before completion of the thesis, and to determine if the expected timeframe for completion of the thesis is reasonable. In particular, the meeting will allow the committee to appraise whether the student will meet all of the Ph.D. degree requirements (listed in section 2) including the publication requirement. It is important for the student to understand the remaining tasks that must be performed before scheduling a thesis defense. After this meeting, the PI of the student returns as a member of the committee.

12.2 Ph.D. Thesis (Dissertation)

The Graduate College has strict requirements for the thesis format. A copy of these thesis guidelines can be obtained from the Graduate College website or from the Thesis Office. Please read these thesis guidelines carefully before writing your thesis. The website for this is http://www.grad.illinois.edu/thesis-dissertation.

Once you have made all revisions that were suggested by your thesis committee, the format of your thesis will be reviewed by Diane Tsevelekos, Office Support Specialist. Once approved by the Department, the thesis will be sent to the Graduate College. A time lag of up to, but not exceeding, one year is permitted between time of the final exam (thesis defense) and official deposit of the thesis in the Graduate College, but the degree is not official nor conferred until all other degree requirements have been met and the thesis is deposited.

A thesis is most readily organized around the publications. Given judicious pruning to eliminate redundancies, each publication can become a thesis chapter. (Explicit acknowledgment of any published work should be included in the thesis.) In addition to these experimental-results chapters, the thesis must have a separate chapter devoted to an Introduction, a separate chapter devoted to Conclusions, and detailed experimental procedures for any non-standard methods used.
The Introduction should discuss the scientific background leading to the project, including a review of:

- previous literature related to the topic;
- the questions that are addressed and how the thesis addresses these questions.

The Conclusions chapter should evaluate the material covered in all of the experimental results chapters and succinctly put the work in context of the appropriate field(s).

Additional chapters may include experimental outcomes that, while important to the lab, are not part of a publication.

An acceptable thesis should describe discoveries of sufficient quantity and quality to constitute a minimum of two publications in a first-rate journal with the Ph.D. candidate as first author.

- At least one of these two publications should have been accepted for publication before a thesis defense is scheduled (that is, at the 6-month meeting).
- The body of work that will represent the second first-author manuscript should be at a stage that the student and PI are satisfied that a manuscript will be submitted in the near future (see section 12.1).
- Under special circumstances (see section 12.1), a co-first author publication may be counted.

If this criterion has not been fulfilled, the thesis defense cannot be scheduled without the expressed consent of the Head of the Department.

12.3 Thesis Defense (Final Examination)

A Ph.D. candidate is expected to submit their thesis to committee members at least 3 weeks prior to the final examination. The thesis committee will read the thesis and make suggestions for corrections and any additional work which may be necessary to complete the Ph.D. The student should arrange an acceptable time with the thesis committee, reserve a room for the thesis defense, and inform Deb LeBaugh of the time and place of the meeting. The thesis defense is a public seminar where the student presents their research project and answers questions about their research. Diane Tsevelekos, Office Support Specialist, will prepare a public notice of the thesis defense. After the seminar, the student meets with the thesis committee to answer any remaining questions and discuss any changes required in the thesis. After completion of the thesis defense, a “Final Examination Result” form must be signed by the committee for forwarding to the Graduate College. Two completed copies of the final thesis must be turned in to the Microbiology Departmental Office after the Graduate
College has approved your thesis for deposit. The Graduate College website outlines the steps necessary for the deposit of the thesis.

12.4 Electronic Deposit of Thesis (EDT) (http://www.grad.illinois.edu/thesis-dissertation)

Release Options (Students should discuss these options with Diane Tsevelekos and their PI before making a final decision.)

Shortly after degree conferral for each graduation period, the Graduate College transfers the theses of those graduates to IDEALS, the Illinois Digital Environment for Access to Learning and Scholarship. IDEALS is the digital repository for research and scholarship produced at Illinois and contains over 40,000 graduate theses.

When you submit your thesis to the Graduate College, you will be asked to select a release option for your work in IDEALS. These options go into effect when the Graduate College transfers your thesis to IDEALS. Take time to review the IDEALS Deposit Agreement: Non-Exclusive Distribution and Preservation License prior to submission.

IDEALS Release Options (Students should discuss these options with Diane Tsevelekos and their PI before making a final decision.)

The release option you choose will go into effect after your thesis has been transferred to IDEALS. The metadata for your thesis--including title, author's name, advisor/committee, department, degree, abstract, and subject(s)--will be visible for your thesis in IDEALS for all release options. All doctoral and master's students will choose from one of three release options:

- **Open Access**: The thesis will be immediately publicly available through IDEALS.

- **U of I Access**: Access to the thesis through IDEALS will be restricted to members of the University of Illinois at Urbana-Champaign community for a period of 2 years. The thesis will also be available through the University Library's interlibrary loan service during this period of time. After 2 years, the thesis will become publicly available through IDEALS.

- **Closed Access**: Access to the thesis through IDEALS will be restricted such that it will not be available to anyone, including you and your adviser, for a period of 2 years. After 2 years, the thesis will become publicly available through IDEALS.

ProQuest Release Options (Doctoral Students Only)

In addition to the copy of the doctoral dissertation transferred to IDEALS, the Graduate College also transfers a copy to ProQuest. To complete a doctoral deposit, students
are required to submit pages 4 and 5 of the ProQuest publishing agreement. Note that as the dissertation author, you retain the copyright to your work; this agreement grants ProQuest only a non-exclusive license to make the dissertation available according to the option selected by the author.

Doctoral students will choose from the following ProQuest publishing options:

- **Traditional Publishing (recommended):** ProQuest will offer paper and electronic copies of the dissertation for purchase on demand.

- **Open Access Publishing:** ProQuest will make an electronic copy of the dissertation available free for download. This option requires students to pay an additional $95 fee to ProQuest. Students interested in making the dissertation available as an open access work are encouraged to select the IDEALS Open Access option instead.

In addition to the publishing option, doctoral students can choose a delayed release (embargo) options for the ProQuest copy of their dissertation: **6 months, 1 year, or 2 years.** During this time, ProQuest will not make the dissertation available; however, metadata including the author's name, title, and abstract are published and appear in the ProQuest Dissertations and Theses Database.

Please note that the ProQuest choices are separate from the IDEALS release options; doctoral students will make selections for both IDEALS and ProQuest.

12.5 The Graduate College Calendar

The [Graduate College Calendar](https://mcb.illinois.edu/departments/microbiology) lists the dates of important deadlines for graduate students. Ph.D. candidates must complete all requirements within 7 years after the initial registration in the Graduate College.

12.6 Dates and Deadlines for Graduation

Both master's and doctoral degrees are conferred three times per year, in August, December, and May. After completing their thesis deposit, a student may request a Degree Certification Letter (DCL) by downloading the [Degree Certification Letter Request](https://mcb.illinois.edu/departments/microbiology) from the Graduate College website. After completing and signing the top half of the form, the student should submit the DCL request to their departmental or program office, which is responsible for completing the departmental section and routing the completed request to the Graduate Student Academic Services (GSAS) Office for processing.
13. Life in the Lab

13.1 Experimental Records and Data

All experimental procedures and results should be carefully recorded in the student's lab notebooks. Laboratory notebooks should be systematic and thorough enough to be scrutinized by other scientists or granting agencies. They should contain a Table of Contents and each entry should be dated. If desired, the committee may request the student to present the notebooks at the meetings or examinations. According to NIH, University of Illinois, and Departmental policy, all lab notes and data are considered property of the lab where the research was done and should remain in the lab when the student leaves. With permission of the research advisor, the student may take a copy of these materials upon leaving the lab.

13.2 Vacation

Probably more than any other factor, success in science requires hard work and dedication. First-rate scientists routinely work long hours. In contrast to classwork, experiments may continue on weekends and between semesters year round. In fact, the time between classes is often the most productive time to do experiments. Graduate students are not officially eligible for vacation benefits except for the official University holidays. Graduate students who wish to schedule a vacation must have the time approved by his/her advisor well in advance.

13.3 Leaves of Absence

The Graduate College and the Department do not grant formal leaves of absence. A student who must interrupt his or her graduate program for an acceptable reason must make arrangements with their departments and advisors prior to departure. A domestic student who has not registered for any three consecutive terms (including summer) must submit a Graduate Student Petition requesting re-entry. A student holding educational loans should consult the lender before choosing not to enroll for a fall or spring semester. International students who plan not to enroll for a spring or fall semester or plan to leave campus are required to meet with staff from International Student and Scholar Services. International students must petition for re-entry after one missed semester (not including summer), and will need to work with the staff from International Student and Scholar Services as well as with their department. Students wishing to reenter are advised to consult with the department or unit in which they plan to reenroll. The student registers for courses for the term in which he or she returns.

13.4 Grounds for Dismissal

A student must be “in good standing” to remain as a student in the Department of Microbiology. There are several situations that will cause a student to lose their good standing status:
• A GPA of less than 3.0 for a period greater than one semester. (See section 15 “Registration” below).

• A student who has not secured a position as a member of a laboratory.

• Failure of the Preliminary Examination.

• Failure to perform teaching service for at least two semesters (two half-time [50%] TA slots or the equivalent).

• Misconduct relating to propriety, ethics, failure of effort, or lack of progress. These problems can manifest in either the student's coursework or lab work. While any faculty member can report various types of student misconduct, the student's research advisor is usually in the best position to determine if such misconduct is taking place. It is the advisor's responsibility to handle these issues as deemed necessary including expulsion of the student from their laboratory.

14. Department Resources

14.1 Travel to Scientific Meetings

As long as funds are available for this purpose, the Department of Microbiology will provide support for Ph.D. students, who have passed their Preliminary Examination, to attend national meetings when the student is presenting a paper in the form of an oral presentation or poster. The level of support will be determined by the availability of funds. Students are limited to one meeting per academic year (August 16th through August 15th) and the student must be the first author. A copy of the abstract must be submitted to Diane Tsevelekos, Office Support Specialist. Notices concerning the policy for travel reimbursement of graduate students will be distributed each academic year.

14.2 Employment Opportunities

Postdoctoral job postings and fellowship opportunity announcements are maintained on a bulletin board in the B-wing on the third floor of CLSL. The Biotechnology Center has job placement information. A list of fellowship opportunities for graduate students are available from the Graduate College Fellowships Office.

15. Registration

New students: Registration information is provided during orientation.

Late registration: Students are expected to enroll during the appropriate registration period. Any late registration charges must be paid by the student.
15.1 Number of Credit Hours to Register for in a Semester

In addition to credit for coursework, a student may get credit for research (MICR 590) until the time he/she passes the Preliminary Examination, or credit for research (MICR 599) after a student successfully passes his/her Preliminary Exam. Thus, outside of coursework, students should also register for research credit hours such that the combined total of both coursework and research is at least:

- 14 credit hours in the fall or spring semester if the student is supported by a TA;
- 16 credit hours in the fall or spring semester if the student is supported by an RA;
- 12-16 hours if a student is supported by a fellowship (please see Deb LeBaugh to identify the exact number of credit hours you should register for);
- 6 credit hours for summer research, regardless of the mechanism that the student is supported by.

International students may be advised to take a reduced load during a semester in which they are enrolled in a remedial English course (courses with an “ESL” assignment). Please speak with Deb LeBaugh for further information.

15.2 CRN Numbers and Grades

Students should sign up for the appropriate CRN assigned to their research advisor. Be aware that the CRN number is specific to the advisor and the term of registration; thus they may change every term.

15.3 Registration, MICR 590, and MICR 599

Students should register for MICR 590 before passing their Preliminary Examination and MICR 599 after they pass their Preliminary Examination. The grade of DFR (deferred) for MICR 599 courses is reported for research credit until the thesis has been completed, successfully defended, and deposited in the Graduate College. The DFR symbol for thesis courses (599) stands indefinitely until a Supplemental Grade Report Form is submitted by the advisor at the completion (successful or unsuccessful) of the thesis. When a thesis is successfully defended and deposited, the DFR grades will be changed to S (satisfactory). If the student fails the final defense, the grade becomes U (unsatisfactory), and the thesis cannot be deposited. No credit will be given for MICR 599 unless a thesis is deposited.

The MICR 590 course, which is for research done before passing the Preliminary Examination, is graded satisfactory/unsatisfactory (S/U), but advisors may defer grades for this course until the student completes the Preliminary Examination or a Master’s thesis. The MICR 599 course is graded as deferred until the student graduates.
15.4 Summer Registration

Students are expected to enroll for credit hours during the summer session if they have an appointment (research assistantship, teaching assistantship, fellowship, etc.) and/or if they are conducting research in a laboratory. The policy for Microbiology graduate students is to enroll for 6 credit hours during the summer session of either MICR 590 or MICR 599, depending on which stage the student is in, either pre- or post- Preliminary Examination.

15.5 Registration After Completion of Degree Credit Requirements

At the time of thesis deposit, neither master's degree students nor doctoral degree students are required to be registered. All doctoral candidates, however, must be registered for the entire semester or term during which they take the final examination (thesis defense). If enough thesis credit hours have already been accumulated, registration for 0 credit hours is acceptable from the Department's point of view; however, the student needs to consider if this affects the status of their student loan payments. Please see Deb LeBaugh for follow-up questions.

15.6 Minimum Grade Point Average Requirement

The Microbiology Department requires a minimum GPA of 3.0 in courses (excluding research credit). A student who completes at least 12 credit hours of work with a GPA of less than 3.0 (B) will receive a communication from the Graduate College and/or the department saying that the student is on academic probation. In this case, the student will need to petition the Graduate College to continue, and this petition must be signed by the student and the department. If the GPA is not raised to 3.0 or subsequently falls below 3.0 at the end of the subsequent semester, the student will be placed on dismissal status by the Graduate College. In such cases, however, the department can petition the Graduate College to waive this requirement and therefore enable the student to continue with graduate school. A student must raise his/her GPA to 3.0 by the point of graduation.

16. Financial Assistance

16.1 Appointments

Four types of financial assistance are available to graduate students: teaching assistantships, research assistantships, fellowships, and training grant appointments. For TAs and RAs, the stipend is divided into 11 equal payment units. A student will receive one unit of payment per month (on the 16th of each month) for 9 months during the fall and spring semesters and two months (June and July [RAs], July and August [TAs]) during the summer term. While there are only 11 payments, your contract is for 12 months. Thus, you are expected to work during the month you do not receive a paycheck. Our graduate students do not receive a paycheck in August unless they hold a 12-month appointment such as a traineeship or fellowship or hold a TA appointment.
16.2 Paychecks

Paychecks and reimbursements from the University will be direct deposited into your bank account. Payday is typically the 16th of each month. The University pays monthly paid employees on the 16th of the month following the service dates of the 16th through the 15th. If the 16th of the month falls on a weekend or holiday then the pay date is the last work day prior.

16.3 Tuition Waivers

Each student holding an appointment of at least 25% but not more than 67% receive a tuition waiver. Fees must be paid by the student.

16.4 Fees

Registered graduate students must pay all applicable fees as listed in the campus Graduate Student Handbook.

17. Departmental Grievance Policy

Students, faculty, and staff at the University of Illinois at Urbana-Champaign are a diverse group whose personalities, experiences, activities, and personal goals vary widely. Most conflicts and problems that arise in this environment can be resolved informally, without invoking formal grievance procedures. University policy strongly encourages all students who believe they have a dispute or conflict to use all appropriate avenues for informal resolution before initiating the Graduate College grievance process described below.

In most cases, a graduate student who has a problem should first discuss that problem with the person who seems to be the source of the difficulty. If that discussion is inappropriate or unfruitful, the problem can probably still be resolved informally with assistance from the other individuals within the department. We encourage meeting with your advisor, members of your thesis committee, Departmental graduate advisors (Orlean, Shisler or Whitaker), or other trusted faculty members or Department Head (Cronan). Students who feel that they need advice about how best to approach a particular situation may also seek advice from a number of different campus offices, including the Graduate College.

Graduate students who believe that they have received an incorrect or inappropriate decision or behavior that adversely affects their status as graduate students may file a formal grievance with the Graduate College if informal efforts to resolve the problem are not successful. The grievance may be filed directly with the Graduate College. See the Graduate College Policy and Procedures on Grievances by Graduate Students. Students who wish to consult with a Graduate College dean about a possible grievance situation may call the Graduate College to make an appointment.
18. Final Caveat

This document is intended to describe the Microbiology graduate program and to summarize some of the policies of the Graduate College that pertain to Microbiology graduate students. It is not intended to be a complete description of the policies and procedures of the Graduate College or the University. Students are advised to consult the Graduate College Student Handbook for a more complete description of these policies. The Graduate College Student Handbook explains your privileges and responsibilities as a graduate student, describes many of the services provided to you by the University, and summarizes the Graduate College regulations that apply to all graduate students. Much of the Handbook deals with rules and regulations, but it also suggests ways in which exceptions can be requested for good reasons. The Handbook, along with other useful information, can be found at the Graduate College website.