Graduate Student Handbook

DEPARTMENT OF MICROBIOLOGY
UNIVERSITY OF WASHINGTON
2025

Program Overview

The Microbiology Graduate Program aims to cultivate independent scientists equipped with specialized expertise obtained through the advancement of a specific area of Microbiology during their thesis research. Upon completion of the program, graduates will have acquired critical thinking skills, scientific knowledge, effective written and oral communication abilities, independent creative thinking capabilities, and a solid foundation in project management, preparing them for diverse career opportunities including academia, industry, law, teaching, scientific writing, and more.

The Microbiology Program requires that students earn their doctoral degree within six years of entering the program. There are four major components to graduate training:

1) **Independent research in the lab of a member of the Microbiology Graduate Training Faculty**. During the first year, students participate in 10-week research rotations in three laboratories. These rotations allow students to familiarize themselves with the research directions and cultures of individual laboratories and enable an informed selection of a thesis lab in the Spring Quarter of the first year. Progress in independent research under the guidance of a thesis advisor for the remainder of graduate school is assessed by annual meetings with the Ph.D. Supervisory Committee, which is formed in the second year.

2) **Formal coursework and exams.** During their first and second years, students take approved graduate courses in the Department of Microbiology and other biomedical departments. The curriculum includes several required core courses, with flexibility for electives tailored to individual interests. Students also attend a weekly Departmental seminar series. Beyond assessments in individual classes, all students complete two programmatic milestones: the Topic Exam in year 2 and the General Exam in year 3.

3) **Science communication.** Science communication at the Program level is fostered by annual presentations in the Departmental Work in Progress seminar series, which receive developmental feedback from faculty. Additional training provided by individual labs includes instruction in scientific writing through the publication of first-author papers, one or more of which are required prior to graduation.

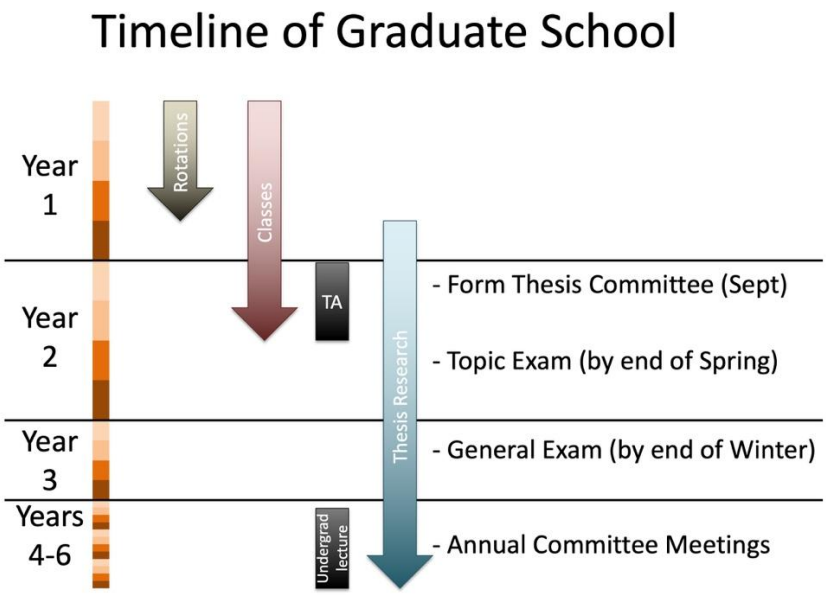
4) **Teaching.** Teaching instruction and practice occurs in two stages. In the second year, students lead a section of a Microbiology undergraduate laboratory class. After the third year, students present a formal lecture in a Microbiology undergraduate lecture class. In both cases, students benefit from training with Departmental Teaching Faculty.

Throughout graduate school, students are supported by a multi-layered system. In addition to mentoring provided by their thesis advisor, the Ph.D. Supervisory Committee meets with students at least annually. The Graduate Program Advisor and the Departmental Graduate Policy and Advising Committee (GPAC) meet with groups of students at scheduled junctures and on an individual basis as needed throughout their graduate careers. Open and ongoing communication with the GPAC and Graduate Program Advisor (GPA) is encouraged throughout the program. There is a formal peer mentoring program in Microbiology to help students navigate the personal and professional challenges of graduate school. And there are multiple resources provided by the School of Medicine, the Graduate School, and the University of Washington.

General Timeline of the Microbiology Graduate Program

An approximate timeline for successful completion of the Ph.D. is as follows:

- Year 1: Rotations, classes, join Thesis Lab, and begin thesis research
- Year 2: Complete classes and TA-ship, form Ph.D. Supervisory Committee by end of Autumn Quarter, pass Topic Exam by end of Spring Quarter
- Year 3: Pass General Exam by end of Winter Quarter
- Year 4-6: Complete annual committee meetings, complete undergraduate lecture requirement, publish thesis research, defend thesis



TIMELINE OF GRADUATE SCHOOL, GRAPHIC REPRESENTATION

Advising, Professional Support, and Community

Graduate Program Advisor (GPA)

The Graduate Program Advisor (GPA) is a key administrative and advising position that supports graduate students throughout their academic journey. This position serves as a primary point of contact for both current and prospective students, offering guidance on academic requirements, university policies, and departmental procedures. Through fostering a supportive and well-informed academic environment and ensuring clear communication and consistent policy application, the GPA helps maintain the integrity and success of the graduate program.

Key Responsibilities

- **Student Advising:**
    - Advise students on degree requirements, course registration, and academic planning.
    - Assist with the submission of petitions, forms, and other academic documentation.
    - Monitor student progress and ensure timely completion of program milestones.
- **Communication & Liaison Work:**
    - Serve as the main communication bridge between students, faculty, and the Graduate School.
    - Facilitate understanding of departmental policies and expectations.
    - Address and help resolve conflicts or misunderstandings between students and faculty.
- **Administrative Duties:**
    - Approve student requests such as leaves of absence, exam scheduling, and degree submissions.
    - Communicate individual status of students to the Graduate School.
    - Maintain accurate records of student progress and program compliance.
    - Disseminate important updates and deadlines to students and faculty

The current GPA, Sadie Reitz, can be reached at microgpa@uw.edu, (206)543-3812. Office hours are Monday & Friday, 1:00-5:00pm (SLU F508 and remote).

Graduate Policy and Advising Committee (GPAC)

Mission Statement: The GPAC is responsible for reviewing and updating the Microbiology Graduate Program curriculum, guidelines, and requirements. During a graduate student's career, the GPAC provides advice and mentoring concerning coursework, lab rotations, choice of a thesis lab, and exams. The GPAC also supports students and faculty in navigating challenges that arise from any aspect of graduate education.

Membership: The GPAC is chaired by the Departmental Graduate Program Coordinator (GPC) and includes one or two additional faculty members. Current members are Jason G. Smith (GPC), Beth A. Traxler, and Alex Meeske. The GPAC can be reached at microgpc@uw.edu.

Scheduled Advising:

First-year students:

- Orientation: Prior to the beginning of Autumn Quarter, GPAC will provide an overview of the Program and Program Requirements and will convene a panel of current students to discuss class choice and thesis lab choice with the incoming class.
- Autumn Quarter: The GPAC will meet with students in the 7th or 8th week as a group to discuss common concerns with curriculum and choosing rotations.
- Winter Quarter: The GPAC will again meet with students in the 7th or 8th week as a group to discuss common concerns with curriculum and choosing rotations.

Second- and third-year students:

- The GPAC will meet with all rising second- and third-year students as a group in Summer Quarter to review Program requirements, discuss common concerns, and promote discussion between the classes on strategies to successfully navigate expectations and requirements for the second year.

All students:

- The GPAC, with help from the GPA, will solicit feedback on student progress from Thesis Advisors in Summer Quarter. Upon review of this feedback or at the suggestion of the Thesis Advisor, the GPAC may reach out to individual students for follow-up advisory meetings.

Open Advising: The GPAC is available at any time during a student's career for individual advice and counseling and is best reached at microgpc@uw.edu. Students should consider either the GPA or GPAC as their first point of contact for any concern and should not hesitate to contact someone if they feel they need advice. Students may choose to meet with individual members or with GPAC as a group.

Departmental Community Programs and Events

Seminar Series

During the academic year, the Department hosts a weekly seminar series in which speakers are invited from outside institutions to present their latest research in microbiology. Speakers are invited by individual faculty as well as the postdoc and student communities. Audience members have the opportunity to engage with the speaker in Q&A after the talk concludes. The seminar series is an excellent source of exposure to diverse areas of microbiology and is a core component of the Microbiology Graduate Program.

Work in Progress (WIP) Seminars

During the academic year, the Department hosts a weekly Work in Progress seminar series, in which two students or postdocs affiliated with UW Microbiology labs each present a ~30 minute update on their research. The WIP seminar series is a great forum for trainees to hear about the research of their colleagues and an excellent opportunity to hone their science communication skills. Faculty provide private feedback to speakers after the talks conclude.

Department of Microbiology Annual Retreat

The Department gathers annually before the start of Fall Quarter at an off-site location to socialize and discuss ongoing science. Faculty, students, and postdocs participate. The program consists of multiple sessions of short research talks divided by refreshment and meal breaks, leisure time, a poster session, and organized

entertainment. The format is either a local one-day event or a more distant, two-day event. Transportation is provided to the retreat for students.

Microbrews

Core Microbiology labs take turns hosting an informal gathering to socialize once a month during the academic year. The host lab determines the location. The schedule is organized by students (see *Student Jobs and Student Retreat* below).

Faculty-Student Coffee & Chat

This initiative was enacted in response to student requests for improved faculty and student relationships and seeks to promote engagement, communication, and trust between our faculty and graduate students. These informal gatherings also provide a space and mechanism to address student concerns and provide a forum for career advice and professional networking. More generally, enhanced engagement breaks through the hierarchical nature of faculty/student interactions, which serves our community enrichment mission by allowing us to better understand the unique experiences and challenges that our students are facing and how we might mitigate those issues programmatically to create a more supportive and effective training environment.

Student Community

Microbiology Peer Mentor Network

This is an optional program where incoming students are paired with a more senior Microbiology graduate student (2nd-5th years). By sharing 'hidden' institutional knowledge, these interactions bridge experience/knowledge gaps, strengthen graduate student support networks, build community identity, and decrease isolation. Student pairings are coordinated by a faculty member and a senior graduate student.

Student Jobs and Student Retreat

After their first year, graduate students annually volunteer for student jobs that support the department, student life, and networking. These jobs include acting as graduate student representation on the Admissions Committee, the Committee on Community Enrichment, and at monthly faculty meetings. Student-led committees organize events such as recruitment, Microbrews, welcome week for incoming first years, and a yearly student retreat at Friday Harbor on San Juan Island. Student retreat is an important event that fosters connections, camaraderie, and collaboration between graduate students of all years in a judgement-free space. Students also help with organizing networking events. This includes weekly events where graduate students meet with the Department-invited seminar speaker in an informal setting and monthly opportunities to attend a small-group lunch with two intradepartmental professors. These student jobs allow trainees to directly influence the community and culture not only amongst themselves but throughout the Department.

Funding and Human Resources

Financial Support

Most graduate students are supported from Departmental funds as Research Assistants (RAs) in their first year. Thereafter, based on funding availability, students are supported either as a RA on their advisor's research grants, as a trainee on a training grant, or as a fellow (e.g., supported by NSF, NIH, or a foundation). If a training grant or fellowship stipend provides a lower salary than the designated Departmental RA rate, the stipend will be supplemented to the standard RA rate.

Payday is the 10th and 25th of each month, with the exception that if the 10th or 25th is:

- a **Saturday**, you get paid the Friday before.
- a **Sunday**, you get paid the Monday following.
- a **holiday falling on a Monday**, you get paid the Friday before.

Hours worked from the 1st to the 15th are paid on the 25th.

Hours worked from the 16th to the end of the month are paid on the 10th of the following month.

Insurance

All Academic Student Employees (ASEs) are eligible for the Graduate Appointee Insurance Program (GAIP) when they meet the qualifying criteria. GAIP provides medical, dental, and vision coverage. Students are enrolled in GAIP when their employment information is entered by the Department into Workday. Once enrolled, they will receive an enrollment confirmation email from LifeWise.

Fellowships and Training Grants

NSF Fellowship rules now allow only one application from a graduate student, which must be submitted in the first year of graduate school. All eligible students should apply.

Shortly after joining a thesis lab at the end of the first year, rising second-year students are strongly encouraged to apply for a position on the Cell and Molecular Biology (CMB) training grant (https://depts.washington.edu/cmbtg/). Additional training grants solicit applications via email to faculty and students as positions become available. Other opportunities for funding include NIH Individual Graduate Fellowships (F31) and support from foundations. A list of fellowship opportunities is also maintained by the Graduate School. Students should review for potential applications that would align with their qualifications and discuss possible applications with their faculty mentor.

Awards

There are several Departmental Awards that support graduate students, including:

The Falkow Award

Supports research or research-related travel for graduate students in the UW Department of Microbiology

Stanley Falkow was a Professor of Microbiology at the University of Washington from 1972 until 1981. He is widely recognized as one of the earliest contributors to the use of molecular methods to study bacterial pathogenesis. This fellowship fund supports efforts to pursue innovative research on the bacteria and viruses that threaten human health and on strategies to combat them.

Applications for this award are typically opened in early July with rolling acceptance throughout the year. Application submission requirements include: a short description of plans, how the award will enhance the applicant's research program, and estimated costs. Only current Microbiology Graduate Students are eligible to apply. The Falkow Award Committee will review applications on a rolling basis throughout the year and will make awards as long as sufficient funds remain.

The Groman Award

Recognizes graduate student instructors for excellence in teaching

This award honors the memory of Dr. Neal Groman, who was a Professor of Microbiology at the University of Washington from 1950 until his retirement in 1989. He was recognized for his dedication to teaching and scholarship. All Microbiology Graduate Students who have been a TA in the last Academic Year are eligible and automatically submitted for consideration. The Award Committee will meet each summer and select a recipient to be announced at the Department of Microbiology Annual Retreat.

The Whiteley Fellowship

Provides financial support to deserving graduate students in the Department of Microbiology

The Helen Riaboff Whiteley Fellowship was established in 1991 by UW Professor Emeritus Arthur Whiteley (deceased), and her friends to honor her academic and research achievements. Dr. Helen R. Whiteley was a distinguished member of the faculty of the Department of Microbiology in the School of Medicine for almost 40 years.

The Whiteley Award Committee is charged with identifying an outstanding Ph.D. student in Microbiology who will graduate in the next academic year. Ph.D. students working in Microbiology labs are also eligible to be nominated. The primary selection criterion for this award is the nominee's research accomplishments, with preference to students in the Microbiology Graduate Program and to those who aspire to have an academic or research career in microbiology. Other factors include participation in and contributions to the Department's various activities. Faculty mentors should consider nominating a senior graduate student either in their lab or in another lab for this prestigious award. The nomination and complete packet of supporting materials should be submitted electronically to the GPA (microgpa@uw.edu). The recipient will be announced at the Department of Microbiology Annual Retreat.

Nomination Requirements:

1. A letter stating why you are nominating the student for the Whiteley Fellowship.
   a. This letter should include a description of their research project, the nominee's research initiative and independence, the significance of their research accomplishment(s), and a list of publications resulting from the research
   b. The contributions that the student has made to the Department, especially in the area of teaching
2. Additional letters of recommendation supporting the nomination
   a. The nominee's advisor should select a member of the dissertation committee to write a letter of support. The nominee may also solicit a third letter of support.
3. A copy of the student's CV and reprints of publications
4. Student must complete graduate studies by summer quarter of the following academic year

Workload, Vacation, and Leaves of Absence

The Microbiology Department adheres to policies stated in the UW/UAW Union contract (http://hr.uw.edu/labor/unions/uaw/contract?redirect=contract/preamble.html).

Article 35, Section 8 states, "Workload assigned to an ASE under this article is separate from the academic expectations associated with thesis and dissertation research that is expected pursuant to 600-, 700-, and 800-level course work. This Agreement should not in any way be construed as imposing a limit on the amount of academic work necessary for a student to make satisfactory academic progress toward their degree."

Under Article 32, 50% salaried Academic Student Employees (ASE) are entitled to four weeks (20 business days) of vacation during a 12-month academic period. Section 2 states, "Vacation time off shall be taken during academic quarter breaks, except when used as a Paid Family and Medical Leave (PFML) supplemental benefit, or as otherwise mutually agreed to by the ASE and a supervisor." Accordingly, students should discuss their vacation plans with their advisors well in advance of the proposed time off. ASEs in non-trainee positions should track and submit their leave requests via Workday. ASEs in trainee positions do not track and report leave in Workday. They need to coordinate their leave requests via email with their faculty supervisor.

Article 17 of the UW/UAW Union contract details policies for leaves resulting from personal illness or disability, for the care of a family member, or for childbirth. In brief, students may be entitled to paid leave for illnesses of up to 7 days (28 hours) per 12-month academic year and unpaid leave for up to 12 weeks for illness or childbirth. Sick time off resulting in more than 3 consecutive workdays requires verification of absence. The student will provide verification from a medical provider (excluding any sensitive health information) of the absence to the department GPA. The verification will be stored in the student's electronic file.

Under unusual circumstances, a student who is in good academic standing and making normal progress in research may apply for an unpaid leave of absence from graduate school, subject to approval by the student's mentor and the Microbiology GPC. Guidance for on-leave status is provided by the Graduate School (https://grad.uw.edu/policies/graduate-on-leave-status/) and in Policy 3.5 (https://grad.uw.edu/policies/3-5-on-leave-policy-to-maintain-graduate-student-status/). During such an absence, other members of the lab may continue the student's research and upon returning the student may have to redefine their research project.

Thesis Research

Laboratory Rotations

Overview of First-Year Laboratory Rotations

Graduate students generally rotate through three laboratories during the first year. Each rotation lasts one quarter (registered as MICROM 500). The primary purpose of the rotations is to acquaint students with faculty members and their labs to provide the basis for choosing a Thesis Advisor. The first year is a time to explore, and students are encouraged to consider labs beyond their current knowledge base or "comfort zone."

Exploration and Resources

Students are not required to arrange a Fall rotation prior to arrival, nor is it recommended to arrange all three rotations before Fall Quarter. In addition to the Departmental Website, the Department of Microbiology Annual Retreat (see above) is an excellent place to meet faculty and discuss their work. Incoming students should also contact current students who have joined laboratories of interest or speak with them during orientation or at the retreat.

A series of bi-weekly meetings (MICROM 599) in Autumn Quarter will introduce first-year students to faculty research. At each meeting, two faculty members present their research projects, providing an overview of lab opportunities and serving as a basis for making rotation decisions for Winter and Spring Quarters.

Arranging Rotations and Scheduling Deadlines

It is the student's responsibility to contact faculty members among the Graduate Training Faculty to arrange rotations. Faculty are polled each Summer Quarter for their interest in taking rotation or thesis students; however, this decision is often based on funding, which changes throughout the year. Therefore, the most straightforward way to find out if a faculty member is available for a rotation is to contact them directly.

The deadline for scheduling the Fall rotation is the Friday before the start of classes. Deadlines for Winter and Spring are one month before the start of classes. Students should notify the GPA of their rotation choices by these deadlines. Students are encouraged to meet individually with the GPAC as needed to discuss their academic progress, rotations, and future plans.

Evaluation

At the end of each rotation, students will give a 15-minute presentation to the Department in a mini-symposium (Rotation Talks) during Finals Week. The faculty supervisor will write a brief evaluation of the student's performance during their rotation, which will be collected by the GPA, made available to the student, and kept in the student's file.

Choosing a Thesis Advisor

The choice of a Thesis Advisor is important and worthy of considerable care and thought both during and after the rotations. It should be emphasized that the selection of an Advisor depends on numerous factors and is not a unilateral decision on either the student's or faculty member's part. First-year students should plan to discuss thesis research opportunities and available funding with those faculty members with whom they rotate. Students should meet with potential Thesis Advisors on a regular basis throughout the rotation to explore the kinds of research projects available and to get a sense for the way the faculty member approaches research problems and mentoring. ***First-year students should plan to choose their Thesis Advisor in the last three weeks of Spring quarter, and the deadline for making a decision is the last day of instruction***

of Spring Quarter. Although the possibility of joining the lab should be discussed during each rotation, no commitments are to be made by either the students or the faculty before this time. Students should convey their choices to the GPA by this deadline, and both the student and Thesis Advisor will sign a contract ensuring their awareness of Departmental expectations and requirements for completing the Ph.D. One metric for satisfactory academic progress in the first year is to successfully join a thesis lab. ***Accordingly, failure to secure a thesis lab by the end of Spring Quarter may result in immediate drop from the program.*** Students encountering challenges in securing a place in a lab should contact the GPAC or GPA as early as possible. Note that each Microbiology student can have only a single primary mentor who is responsible for training and financial support. There are no formal "co-mentor" arrangements. However, collaborators may play a strong role in the trajectory of the thesis project, may serve on the thesis committee, and may be asked to contribute to the support of a student, at the discretion of the primary mentor.

Ph.D. Supervisory Committee

A well-balanced committee is of tremendous benefit to the students and their advisors. ***By the end of Autumn Quarter of the second year***, a five person Ph.D. Supervisory Committee is appointed as follows:

1. Chair (Advisor) must be Microbiology Graduate Teaching Faculty*
2. Member Microbiology Graduate Teaching Faculty*
3. Member Microbiology Graduate Teaching Faculty*
4. Member Microbiology Graduate Teaching Faculty or Faculty member outside of the department
5. Graduate School Representative (GSR) - cannot have a Primary, Joint, or Affiliate appointment in the Microbiology Department but can have an Adjunct Appointment. Please see here for more information from the Graduate School on this policy.

*At least one, and preferably two, members of the committee (including the Advisor) must be Primary or Joint members of the Department of Microbiology.

The composition of the committee, including a recommendation for the GSR, is determined by the student and her/his advisor with final approval by the GPAC. All students will ***submit their committee choices to the GPA (microgpa@uw.edu) one week before the start of Autumn quarter***. Names of two alternative faculty to fulfill the "core or joint member" requirement should also be submitted at this time. The GPAC will review all committees for composition, with the criteria described above. ***Once permission has been granted by the GPAC, students will then contact faculty to form the committee by the end of Autumn Quarter***.

Individual Development Plan (IDP)

An IDP is a self-assessment that will help trainees define and pursue their short- and long-term career goals. The Department of Microbiology requires that all students complete an IDP, in consultation with their thesis advisor, and discuss the IDP annually with their Ph.D. Supervisory Committee. This will ensure that students have considered their future plans, receive training, and have access to resources that will prepare them for diverse career paths. There is no required format for the IDP, although one that requires both short- and long-term planning is preferred. An excellent tool is available from Science (https://www.science.org/content/article/myidp). An example IDP form is available on the website under *Graduate Student Resources*. Once the annual IDP has been completed, a copy should be forwarded to the GPA for inclusion in the student's file. The IDP should also be sent to the Ph.D. Supervisory Committee with other written materials before each meeting.

Guidelines for Ph.D. Supervisory Committee Meetings

The time limit for completing all requirements for the Microbiology Ph.D. degree is 6 years (24 quarters). Time on leave does not count towards this limit, but aggregate time on and off leave cannot exceed 10 years. Below is a series of guidelines to provide both students and faculty with a set of benchmarks against which student progress can be measured. Note that it is the policy of the Department of Microbiology that students do not bring refreshments (food or drink) to committee meetings. This includes the Topic Exam, the General Exam, and annual committee meetings starting in year 4.

Second Year

One Week Before Autumn Quarter – deadline for submitting suggestions for the composition of the Ph.D. Supervisory Committee to the chair of the GPAC.

End of Autumn Quarter – deadline for finalizing the Ph.D. Supervisory Committee

January 31 – deadline for scheduling a date and time for the Topic Exam with the Ph.D. Supervisory Committee. The exam **must** take place by the end of Spring Quarter. When2Meet (when2meet.com) polls or similar services facilitate scheduling.

6 weeks prior to the Topic Exam – deadline to submit Topic Exam proposals to GPAC. (see *Topic Exam* under *Didactic Curriculum and Exams* below).

End of Spring Quarter – deadline for completion of the Topic Exam.

Third Year

Last Day of Fall Quarter (mid-December) – deadline for scheduling a date and time for the General Exam. When2Meet (when2meet.com) polls or similar services facilitate scheduling. The student must enter the date, time, and location of the exam on MyGrad (https://grad.uw.edu/for-students-and-post-docs/mygrad-program/) under "Schedule a doctoral general or final exam". Once this is completed, inform the GPA (microgpa@uw.edu), who will then officially approve the date in MyGrad.

Last Day of Winter Quarter (mid-March) – deadline for completion of the General Exam (see *General Exam* under *Didactic Curriculum and Exams* below).

Fourth and Fifth Years

At least one meeting with the Ph.D. Supervisory Committee is required ***in every academic year*** in graduate school beginning in Year 2. This requirement is fulfilled in Year 2 by the meeting for the Topic Exam and in Year 3 by the meeting for the General Exam. In Year 4 and subsequent years, the time of year in which the meeting occurs is at the discretion of the student and the advisor. The advisor and at least three additional members of the committee must be present. The GSR is not required to attend though should be invited. It is the responsibility of both the student and advisor to ensure that annual meetings are scheduled. Note that depending on progress, more than one meeting per year may be suggested by the Ph.D. Supervisory Committee.

As summarized in the *Microbiology Thesis Committee Meeting Guidelines* (available on the website under *Graduate Student Resources*), one week prior to each meeting, the student will provide the committee with a 2-3 page written progress report and a copy of their most recent IDP. This concise report should include progress since the previous meeting, news of publications or anticipated timelines for publications, and a summary of plans for the next year. Students will receive much better guidance if the committee is aware of what will be presented at the meeting in advance.

Progress in Microbiology program requirements and the IDP will be discussed briefly at the beginning of each committee meeting. The remaining time should be spent on a student presentation and committee discussion. The student presentation should include a brief background and key pieces of new data obtained since the last meeting as well as an experimental rationale that supports future plans. Towards the end of the meeting, the committee should meet briefly with the student while the advisor is out of the room to provide an opportunity for the student to convey any confidential concerns pertaining to mentoring. Similarly, the committee should meet briefly with the advisor while the student is out of the room to inform the committee of any concerns. Committee discussion while both the student and advisor are out of the room is at the discretion of the committee.

At the conclusion of the meeting, all present should complete and sign the *Annual Thesis Committee Meeting Report* (available on the website under *Graduate Student Resources*). In addition, the faculty advisor will prepare a short summary of the discussion within 2 weeks of the meeting that is distributed to the members of the committee and to the student. A copy of this report is also sent to the GPA (microgpa@uw.edu) to be placed in the student's file. It is very important to document any problems that have been identified in the report. If progress is unsatisfactory, the student may be placed on Academic Alert, and the committee should clearly describe what must be accomplished over a defined time frame for the student to be removed from Academic Alert. If these expectations are not met after one quarter, Academic Alert may be extended, or the student may be placed on Final Academic Alert. A student on Final Academic Alert for one quarter who fails to meet the expectations of the advisor and committee may be recommended for Academic Drop per UW Graduate School Policy 3.7.

If the student plans to finish in 1-2 quarters following a committee meeting, the student should provide an outline of the proposed thesis and seek approval from the committee to begin writing the thesis. A timeline for completion of the thesis and for the Final Exam (Thesis Defense) should be presented. Approval of the committee is required prior to the writing of the thesis and must be documented on the *Annual Thesis Committee Meeting Report*. Although the expectation is that a student's thesis research will be published in 2-3 (or more) peer-reviewed papers, the formal requirement of the Microbiology graduate program is for the student to be the first author on at least one paper that is published (or in press) in a refereed journal *prior* to the Final Exam (see *Final Exam and Format for the Ph.D. Thesis* under *Didactic Curriculum and Exams* below).

Sixth Year

Because the Microbiology program requires that students earn their doctoral degree within 6 years (24 quarters) of entering the program, students nearing or past the program's limit will be placed on Academic Alert (potentially leading to Final Academic Alert and Academic Drop; Graduate School Policy 3.7). To extend their graduate studies into year 7, the following ***must be completed no later than the end of Spring Quarter of year 6:***

1. **Ph.D. Supervisory Committee Meeting:** The student must convene a Ph.D. Supervisory Committee meeting during which they present a milestone-driven plan that will allow them to complete all degree requirements by the end of Summer Quarter of year 7. This plan generally includes an outline of a manuscript with supporting figures and should be presented in writing to the committee one week prior to the meeting as a supplement to the usual progress report.
2. **Plan Evaluation:** During the meeting, Committee members should provide feedback on the suitability and feasibility of the plan. If the student and advisor are not in agreement, the Committee will mediate to develop a final plan for completion of the student's research program. This discussion must be documented in the meeting summary submitted as part of the *Annual Thesis Committee Meeting Report*.

3. **Submission of the Plan:** The finalized plan, signed by both the student and thesis advisor, must be submitted to the Chair of GPAC and filed by the GPA. The written plan should include detailed and frequent milestones for interim progress monitoring.

Year 7 Monitoring: Ph.D. Supervisory Committee meetings must be held at least quarterly to review student progress. Zoom meetings are acceptable. If student progress is unsatisfactory, the student may be placed on Academic Alert and Final Academic Alert pursuant to Graduate School Policy 3.7 . If program requirements have not been met by the end of Winter Quarter of year 7, the student is automatically placed on Academic Alert for Spring Quarter. During the first faculty meeting of Spring Quarter, the GPAC Chair will present the student's situation for discussion in executive session. All Ph.D. Supervisory Committee members, including those who are not Microbiology Faculty, will be invited. The Microbiology Graduate Training faculty will then vote by confidential ballot, and a simple majority of non-abstaining votes will determine the outcome:

a) The student will be permitted to immediately begin scheduling their thesis defense, which must take place before the end of Autumn Quarter, even though program requirements have not been met.
b) The student will be placed on Final Academic Alert in Summer Quarter. Failure to meet program requirements by the end of Summer Quarter will result in the student being removed from enrollment. Students at this point are generally eligible for a non-thesis master's degree (see Appendix 3).

Didactic Curriculum and Exams

Initial Advising and Workshops

Prior to the start of Autumn Quarter, the cohort of incoming students will meet as a group with a faculty/student advising committee during Orientation to discuss their course options for the upcoming year. A schedule of recommended classes will also be provided. Prior to this meeting, students should review course requirements and prepare a tentative plan. **Registration for classes should be completed prior to the first day of classes.** Courses may be added or dropped until the end of the second week of the quarter without a tuition penalty. A *Change of Registration* fee will be charged to the student for all registration changes made on a single day during this period. Tuition forfeiture period begins at the start of Week 2.

Graded Course Requirements

A total of 18 graded credits with a minimum 2.7 grade in each course is required before scheduling the General Exam. Students are required to take the following courses in bacteriology, virology, and biostatistics:

Bacteriology (3 credits)

- MICROM 553 (Spring 2026; Autumn 2027; Autumn, odd years thereafter, 3 credits), *Molecular Interactions of Bacteria with their Hosts*

Virology (3 credits)

- MICROM 540 (Autumn, even years, 3 credits), *Virology*

Biostatistics (minimum 2 credits, choose one)

- UCONJ 510 (Summer, 2 credits), *Introductory Laboratory Based Biostatistics*
- BIOSTAT 511 (Autumn, 4 credits), *Introduction to Statistics in Health Sciences*

The remaining credits (for a total of 18 graded credits) can come from taking ***departmentally approved*** 400- and 500-level courses listed in Appendix 1. ***Program policy limits students to no more than 6 graded credits per quarter***. If students are interested in a class that is not listed, please petition the GPAC by contacting the chair (microgpc@uw.edu) for permission to have it count towards the degree *before* taking the class. Note that courses change, so verify all course details online. Also investigate the anticipated workload, which varies considerably among graduate classes.

Non-graded Academic Requirements

1. **Attending MICROM 520 (seminar) and MICROM 522 ("Work in Progress" or WIP) is mandatory**. Both courses are graded Credit/No-Credit. Departmental seminars are crucial for contributing to the breadth of student knowledge, and students ***must register for and attend seminar each year of graduate school***. WIP serves to develop oral presentation skills. Students ***must register for and attend WIP through year 5 and will be scheduled and must present in WIP every year of graduate school***. The requirement for a grade of "Credit" and the manner in which this requirement will be assessed will be conveyed to students at the beginning of the academic year. A grade of "No-Credit" will result in a Notification, which may escalate to Academic Alert, Final Academic Alert, and Academic Drop (see https://grad.uw.edu/policies/3-7-academic-performance-and-progress/) should the deficiency not be addressed satisfactorily. Failure to register for WIP will immediately escalate to Academic Alert. The only exception is that students may register for a graded class that meets at the same time as WIP. In this case, please notify the GPA of the scheduling conflict and the reason for not attending WIP. For conjoints

that conflict with WIP, students are expected to attend WIP for the half of the quarter in which the conjoint does not meet.

2. **Every year, students must maintain full-time status by registering for enough MICROM 500, 600, or 800 credits to bring their total credits to 10-18 per quarter in Autumn, Winter, and Spring.** Register for MICROM 500 for each of the three lab-rotation quarters. Once students join a thesis lab, they must register for MICROM 600 prior to completing the General Exam and for MICROM 800 after passing the General Exam for a total of 10-18 credits (graded and non-graded credits) per quarter during the academic year. Registering for less than 10 credits is considered part-time and for more than 18 credits incurs additional tuition costs and should be avoided. Register for *exactly* 2 credits in Summer, which is either UCONJ 510 (to fulfill the biostatistics requirement) or MICROM 600/800.
3. **Bioethics:** Students must complete either 8 hours of Biomedical Research Integrity: Responsible Conduct of Research training (register at https://www.washington.edu/research/required-training/biomedical-research-integrity-program-nih-required-responsible-conduct-of-research-rcr-training/) or Bioethics 101 taught by the Biochemistry Department (register for the Winter Quarter BIOC 533), ***by the end of Summer quarter of the second year***.
4. **TA one laboratory course in Microbiology**. Developing good teaching skills is an important part of graduate training. Students will be assigned to TA a specific course by the Microbiology Teaching Faculty. Generally, students teach in their second year, and ***the teaching requirement must be met by the end of the second year***. This is an academic requirement and does not constitute a change in ASE duties as outlined in the annual appointment letter. Note that for students who entered the program prior to Autumn 2024, two TAships are required.
5. **Creditable passage of the Topic Exam** in the second year.
6. **Present one lecture** in an undergraduate Microbiology course, ***preferably in the fourth or fifth years***. Arrangements for giving these lectures can be made by contacting individual course directors. For example, this requirement can be fulfilled by presenting lectures in the undergraduate methods course (MICROM 431). At the conclusion of the lecture, students must complete the *Undergraduate Lecture Self-Assessment* (available on the website under *Graduate Student Resources*) and review their answers with the course instructor(s) within 2 weeks of the lecture. The completed self-assessment must be sent to the GPA (microgpa@uw.edu) as evidence of completion of the lecture requirement. Note that for students who entered the program prior to Autumn 2021, two lectures are required.
7. **Be first author on at least one paper related to thesis research**, which is published or accepted for publication in referred journals prior to the Final Exam (Thesis Defense).

Additional Requirements

See also Graduate School Policy 1.1.

1. A minimum cumulative grade point average of 3.00. The GPA for graduate students is calculated entirely on the basis of numeric grades in 400- and 500-level courses.
2. Completion of a total of 60 credits prior to taking the General Exam.
3. Creditable passage of the General Examination. Registration and completion of credits as a graduate student is required the quarter the exam is taken and candidacy is conferred.
4. Completion of 90 credits prior to the Final Exam. With the approval of the graduate program and the Graduate School, a master's degree in a relevant field of study from an accredited institution may substitute for up to 30 of the required 90 credits.
5. Satisfactorily completion of a minimum of 27 credits of dissertation (800) over a period of at least three quarters, with at least one quarter occurring after the General Exam. With the exception of summer, when students take 2 credits, students are limited to a maximum of 10 credits per quarter of dissertation (MICROM 800).

6. Preparation of and acceptance by the Dean of the Graduate School of a dissertation that is a significant contribution to knowledge and clearly indicates training in research.
7. Creditable passage of a Final Examination, which is usually devoted to the defense of the dissertation in the field with which it is concerned. The General and Final Examinations cannot be scheduled during the same quarter. Registration and completion of credit as a graduate student is required the quarter the Final Examination is taken.

Topic Exam

Purpose

The objectives of the Topic Exam are for the student to: (i) gain an understanding of a topic area distinct from his or her thesis research, (ii) present a critical written review of previous work and devise a logical plan for future research directions in the topic area, and (iii) effectively present the topic and respond to questions in an oral setting. Additional benefits include an introduction to the student of how the Ph.D. Supervisory Committee functions as a group and a chance for the Committee to identify areas of concern that can be improved for the General Exam.

Procedures

In preparation for the Topic Exam, second year students must form their Ph.D. Supervisory Committee. Once the Committee is formed, the student is encouraged to contact the members to schedule a date and time for the Topic Exam. If the exam is to take place in Autumn Quarter, scheduling should begin immediately after forming the Ph.D. Supervisory Committee. For Winter Quarter exams, please schedule the exam at least 3 months in advance of your target exam date. For all students, scheduling must be complete by January 31, ***and the exam must take place by the last day of Spring Quarter***. Exceptions to this deadline are dependent upon petitioning the GPAC jointly by the student and advisor no later than January 31 and are at the discretion of the committee.

Inform the GPA (microgpa@uw.edu) of your exam date. The GPA will coordinate the following deadlines relative to the actual exam date for each student:

1. **Six weeks prior to the exam date:** Deadline to submit two topic proposals to the GPA. For each proposed topic provide: 1) a title, 2) a paragraph briefly outlining the subject of the proposed topic and the gap in knowledge that you propose to address, 3) a hypothesis statement and the methodology that you will use to test the hypothesis, 4) two or three recent references that serve as the basis for the topic to be explored. In addition, please describe your thesis project in a short paragraph, so that the GPAC can judge how different your proposal will be both in subject and approach from your thesis work.
    a. ***What constitutes an acceptable Topic?*** Since one of the goals of this exercise is for you to explore and learn about an "off topic" area outside of the expertise of your lab and the focus of your thesis project, you should consider other areas of microbiology that you find intriguing. But "off topic" need not be completely far afield. Virology students can still write proposals on viruses, and bacteriology students can still write proposals on bacteria. However, pick a different organism and a different aspect of the biology of the organism than is the focus of your thesis research. The proposal should not be derived from papers that you have used (or plan to use) in a class that includes proposal writing or from prior research experience (either in rotations or before entering graduate school). By venturing into a related but distinct area of microbiology, you can expand your knowledge, gain new skills, and potentially discover synergies between your thesis research and the topic you choose to explore in this exercise.

The key is to find a balance between staying within the broad field of microbiology while still branching out from your immediate research focus.

b. ***How long should you spend looking for Topics?*** You can be thinking about ideas for this exercise throughout your rotations and coursework in your first year and in the beginning of your second year. A significant amount of time dedicated exclusively to looking for topics is generally unwarranted.

c. ***How much help can you receive for the exam?*** Although the goal is for you to come up with the proposal topic yourself, seek advice from your thesis advisor and peers when vetting topics to make sure that the area is distinct from your thesis work and that what you learn is likely to be of use to your general knowledge and development as a microbiologist. Review the *Topic and General Exam Rubric* (available on the website under *Graduate Student Resources*) to see how you will be evaluated. We encourage your advisors to talk to you about best practices in grant writing. They are welcome to provide you with an example of what a grant application looks like, although you must adhere to the length and formatting limitations of this exam. If your advisor reads a draft, at most once during the process, they can comment on areas that are unclear or in an illogical order but not how to fix them. They should not edit the text or point out gaps in logic or missing elements.

2. **Four weeks prior to the exam date:** If there is a question about the suitability of the proposed topics, the GPAC may request clarifications, modifications, or revisions. Once they reach a decision, the GPAC will inform the GPA. Four weeks prior to the exam, the GPA will inform the student that one or both topics are approved. This feedback will also be provided to the Thesis Advisor, who has the option to share it with the Ph.D. Supervisory Committee. If both topics are approved, the student can choose which one to work on.

    a. ***How long should you spend preparing for the exam?*** For the first two weeks after your topic is approved, think about hypotheses and Aims. Read a little bit more, mull over some ideas, and outline the proposal. At this point, you should still be 100% engaged in lab activities, and any writing should not impact time in the lab. Devoting almost full-time effort to the proposal is only acceptable in the last two weeks before the exam. Inform your advisor of your plans, as he/she may want at least partial effort in the lab even at this point.

3. **Three business days prior to the exam date:** The student will distribute to all members of the Ph.D. Supervisory Committee:

    a. A copy of their most recent IDP.

    b. The *Topic and General Exam Rubric* (available on the website under *Graduate Student Resources*).

    c. The written component of the exam. The document must be written in 11-point font or larger, single-spaced, with half inch margins on all sides on standard letter paper. Recommended fonts are Arial, Helvetica, Palatino Linotype, or Georgia. Include page numbers on the bottom and a header with your name and the date of the exam. The document consists of 3 sections totaling no more than 4 pages. Up to one additional page of figures (with figure legends) as well as an unlimited number of pages of references may be included that do not count against the 4-page limit. The format is:

    Section 1 *(1 page):* Briefly describe current knowledge about the subject of your proposal and the gap in knowledge that your proposal will address. State the objective of the proposal and how it will address the gap in knowledge. State the central hypothesis and provide a brief description of two or three specific aims to address the hypothesis. End with expected outcomes and how your proposal will impact the field. This is equivalent to the "Specific Aims" page of an NIH grant application. Aim for a scope of work that could be completed in

approximately 2 or 3 years. Refer to online guidance for tips on writing an effective NIH "Specific Aims" page.

Section 2 *(1 page):* The current state of the field based on selected results from 2 or 3 key recent papers. Think of this as your preliminary data.

Section 3 *(1-2 pages):* A research plan for each Aim. Include a brief rationale, experimental approaches, alternative approaches, and expected outcomes. You should provide sufficient information to convey the logic behind the approach and its feasibility without going into experimental detail.

4. **The Oral Component of the Exam:** The exam is administered by the student's Ph.D. Supervisory Committee and ***must take place in-person by the last day of Spring Quarter***. The advisor and at least three additional members of the committee must be present. The GSR is not required to attend though should be invited. The advisor does not participate in the exam, which is conducted by a temporary chair who is selected by the faculty at the start of the meeting. The oral presentation should last approximately 30 minutes, with allowances for clarifying questions, followed by questions. It should be an expanded version of the written document, which will allow a more in-depth discussion of key elements of the proposal. This is a "closed-book" exam and notes should be kept to a minimum. Questions from the committee generally originate with the material in the proposal; however, a line of questioning may delve into basic knowledge from course work. The entire exam, including the presentation and questions, should not exceed 90 minutes.

Evaluation

Immediately following the exam, the student will be evaluated by the Ph.D. Supervisory Committee in the absence of the advisor, using the criteria listed in the *Topic and General Exam Rubric*. The outcome of the exam and feedback will then be provided first to the advisor and then to the student. The Committee will complete the *Topic Exam Report* (available on the website under *Graduate Student Resources*), which will be submitted to the GPA. The temporary chair will provide a written evaluation that will be distributed to the student and other members of the Committee and submitted to the GPA within 2 weeks of the exam.

Guidelines for the outcome of the exam based on the number of "does not meet expectations" categories are provided on the *Topic and General Exam Rubric*. While a highly developed and innovative research plan is desirable, it is recognized that this is still a formative area for a second-year student. If both the written and oral components of the exam are satisfactory, then the determination should be "Pass". If moderate weaknesses are identified that can be addressed by revising or elaborating a portion of the proposal, by taking a class to bolster basic knowledge, or by some other remedial work, then the determination should be "Conditional Pass". The conditions and deadline for the conditions to be met should be clearly conveyed to the student and recorded on the *Topic Exam Report*. The temporary chair of the Topic Exam committee is responsible for ensuring that conditions are met, with the consent of the examining committee. If the performance is unsatisfactory, the Committee may reach a determination of "Re-examine" and require the student to repeat some or all aspects of the examination. The student will be placed on Academic Alert in the quarter following the examination and will remain on Academic Alert until successful re-examination. The timing of the re-examination is at the discretion of the committee. Note that only one re-examination is allowed. Alternatively, the Committee may reach a determination of "Fail" and recommend that the student be dropped from the program. Successful completion of the Topic exam is a prerequisite for the General Exam.

General Exam

Purpose

The objectives of the General Examination are for the student to (i) demonstrate mastery of the field in which they intend to conduct their thesis work, (ii) demonstrate general knowledge of microbiology and other disciplines (e.g., immunology, biochemistry, genetics) relevant to their thesis project, (iii) present a written plan for future research directions in the form of an R21 grant application, and (iv) effectively present their research proposal and respond to questions in an oral setting.

Scheduling

The oral component of the General Examination must occur ***by the last day of Winter Quarter*** (mid-March). Accordingly, the meeting must be scheduled by the last day of Autumn Quarter (mid-December). When2meet (www.when2meet.com) polls or similar services facilitate scheduling. The student's advisor, the GSR, and at least two additional members of the Ph.D. Supervisory Committee must be present. The student must enter the date, time, and location of the exam on MyGrad (https://grad.uw.edu/for-students-and-post-docs/mygrad-program/) under "Schedule a doctoral general or final exam". Once this is completed, inform the GPA so that the Department can officially approve the date. ***The date must be officially approved in advance to obtain credit for the exam from the Graduate School.*** Exceptions to this deadline are dependent upon petitioning the Ph.D. Supervisory Committee and the GPAC jointly by the student and advisor no later than the last day of Autumn Quarter (mid-December). The Ph.D. Supervisory Committee will advise GPAC of their willingness to grant an extension, with GPAC making the final determination.

Format of the written research proposal

The written research proposal on the student's thesis work should follow the format specified for an NIH R21 grant application. There is a single "Specific Aims" page. The "Research Strategy" includes the "Significance, Innovation, and Approach" subsections and can be no more than 6 pages in length**.** References are not included in the 6-page limit; however, unlike for the Topic Exam, figures must be embedded in the text and count towards the page limit. The document must be written in 11-point font or larger, single-spaced, with half inch margins on all sides on standard letter paper. Recommended fonts are Arial, Helvetica, Palatino Linotype, or Georgia. Include page numbers on the bottom and a header with your name and the date of the exam.

The student should present a draft of the proposal to her/his advisor at least three weeks prior to the oral exam. The advisor may give the student feedback on the overall organization and format of the proposal but should not edit the scientific content or participate in a substantive way in the writing process. ***The written proposal must be sent to the committee at least one week prior to the oral exam***.

Format for the oral exam

1. The student should bring the *Graduate School Committee Signature Form* (obtained from the GPA), the *Microbiology General Exam Checklist*, and the *Topic and General Exam Rubric*. The last two forms are available on the website under *Graduate Student Resources*.
2. Prior to beginning the oral exam and in the absence of the student, the advisor will review the student's academic record and give the Supervisory Committee members a written evaluation of the student's research performance and potential (see Appendix 2 below). The advisor should have discussed the evaluation with the student prior to the exam. The evaluation should include an overall assessment of the student's effort level, creativity, independence, lab techniques, ability to design and execute

experiments, and ability to communicate. This evaluation will be sent to the GPA (microgpa@uw.edu) for inclusion in the student's file.

3. The oral exam is chaired by a member of the Ph.D. Supervisory Committee other than the advisor or the GSR. The advisor will not examine the student but will be present and available for comment or clarification when needed.
4. The exam begins with a 30-minute oral presentation of the research proposal by the student summarizing his/her research progress and indicating future directions of the research in relation to the proposed Specific Aims. Although the length of the presentation is limited to a maximum of 30 minutes, an allowance will be made for interruptions by committee members who ask clarifying questions. Following the oral presentation, members of the Ph.D. Supervisory Committee other than the advisor will examine the student. Although the research proposal will provide the starting point for the oral exam, questioning can extend into related topics including experimental techniques. The meeting may last up to three hours in total.

Final evaluation

At the end of the oral exam, both the student and the student's advisor will leave the room. The outcome of the General Exam will be determined solely by the committee members in the absence of the advisor. At the end of the deliberations, the student's advisor is apprised of the outcome in the absence of the student. Finally, the student will be called back into the room and members of the committee will provide feedback to the student on his/her performance.

The decision made at the end of the oral exam is a cumulative one, taking into account the student's performance in all areas since entering graduate school. These include, in the order of relative importance:

1. the performance on the oral exam
2. the quality of the written research proposal
3. the performance on the Topic Exam and improvement in areas of deficiency from the Topic Exam

The final decision must be one of the following: **Pass, Fail, or Re-examine**. If the committee feels deficiencies exist that need to be corrected, the "Re-examine" option must be chosen rather than awarding a "Pass" with stipulations concerning the deficiencies. Timing of the re-examination is at the discretion of the committee. A "Fail" means the student must leave the Ph.D. program, generally with the option to obtain a non-thesis master's degree (see Appendix 3). A written summary of the Committee's decision prepared by the member of the committee who chairs the exam will be placed in the student's file.

Final Exam and Format for the Ph.D. Thesis

To graduate, students are required to submit an Electronic Thesis/Dissertation (ETD) and a Committee Approval Form to the Graduate School through the UW ETD Administrator Site. ETDs are distributed by ProQuest/UMI Dissertation Publishing and made available on an open access basis through UW Libraries ResearchWorks Service.

1. A proposed outline of the thesis must be reviewed and approved by the Ph.D. Supervisory Committee prior to the beginning of writing. Once approved, the student must schedule the final exam. It is strongly recommended that the Final Exam (Thesis Defense) occur ***no later than two weeks before the end of the quarter***.

2. Confirm with your committee the day and time that you would like to defend your thesis. The GPA can help reserve a room for you. Once the room has been reserved, please schedule a doctoral final exam in MyGrad ***at least three weeks prior to the Final Exam***.
3. Establish a Reading Committee from the members of the Ph.D. Supervisory Committee at least ***five weeks prior to the Final Exam***. When at least three faculty members have agreed to serve, the student will notify the GPA (microgpa@uw.edu) so that the committee can be formed in MyGrad.
4. A draft of the thesis is due to the Reading Committee ***no later than four weeks prior to the defense***. The Committee will inform the student of required revisions to the Thesis no later than the day of the defense. Note that alterations to these deadlines are acceptable at the discretion of the Reading Committee and should be clearly communicated to the student.

   Format of the Thesis: A typical Ph.D. thesis is organized into the following chapters: Introduction (overview of the field and rationale for the thesis research), Materials and Methods, one or more Results chapters (each with its own brief Introduction, Results, and Discussion sections), and a Future Directions chapter. If any of the thesis research has been published, the papers can be reformatted as is for inclusion in the thesis. In the event that a published paper contains work carried out by another researcher, only the experiments done by the student should be included in the thesis. For continuity, a summary of related work done by others may be included with proper citations. Whether the Materials and Methods are collected into one chapter or left in each chapter is a matter of personal choice, but often it is desirable to place all the methodological information in one chapter to avoid excess redundancy.

   See the Graduate School Guidelines for the proper format of the Electronic Thesis or Dissertation. Note that only the format of the front matter is specified. The remainder of the thesis should be prepared with one-inch margins using Arial 11 font. Figures should be prepared in the same way as for journal publication and be included in the text near the point where they are cited and with an accompanying figure legend. Figures can be presented singly on a separate page or embedded within the text. If included within the text, the size of the figures should be adjusted so that the data are clearly visible. During preparation of the thesis and prior to final submission, the student's advisor should be consulted concerning overall style and presentation.

5. The Final Exam (Thesis Defense) is a public, in-person seminar on the student's Ph.D. thesis research.
   a. If you would like a defense flyer prepared, let the GPA know ***at least two weeks prior to the defense*** and send a picture if you want something other than your website photo to be used on the flyer.
   b. *Committee Signature Form*: The GPA will prepare a *Committee Signature Form* before the exam and send it to you.
   c. The advisor, GSR, and two other committee members are required to attend.
   d. At the end of the seminar, the Ph.D. Supervisory Committee and the public are invited to ask questions. It is the prerogative of the Committee to continue to question the student in private.
   e. The Ph.D. Supervisory Committee members who attend the defense sign the *Committee Signature Form*. Please return the form to the GPA promptly after the defense so that your degree can be approved by the last day the quarter.
6. Return a revised thesis to the Reading Committee, if needed, so that final approval can be obtained by the deadline for the quarter. The Reading Committee approves the Thesis electronically in MyGrad.
7. Upload your dissertation according to Graduate School instructions (https://grad.uw.edu/current-students/enrollment-through-graduation/thesis-dissertation/).
8. Thesis Copies: You must order at least three copies of your dissertation to be printed. You may obtain worktags to use for payment from the GPA. Deliver one printed copy for the Department to the GPA. Deliver one to your advisor. The third copy is yours. You may wish to obtain additional copies at your own expense.

Appendices

Appendix 1: Approved Electives

The following courses are approved to count towards the degree. Note that departmental offerings change from year to year and that the quarter in which courses are offered, especially conjoints (CONJ), can vary. Note also that categories are based on course titles rather than a thorough review of the syllabus.

BIOCHEMISTRY CLASSES:

Dept	Number	Title	Credits	A	W	Sp	Su
B STR	515	Biological X-Ray Structure Analysis	3		X		
B STR	519	Current Problems in Macromolecular Structure	2	X	X	X	X
BIOC	440	Biochemistry	4	X			
BIOC	441	Biochemistry	4		X		
BIOC	442	Biochemistry	4			X	
BIOC	530	Introduction to Structural Biology	3	X			
BIOC	533	Topics In Biochemistry	1	X	X		
BIOC	540*	Literature Review	2	X			
BIOC	541*	Literature Review	2		X		
BIOC	542*	Literature Review	2			X	
CONJ	544	Protein Structure, Modification, and Regulation	1.5		X		
CONJ	545	Molecular Interactions and Medicine	1.5			X	
GENOME	540	Introduction to Computational Molecular Biology: Genome and Protein Sequence Analysis	4		X		
GENOME	555**	Protein Technology	1.5	X			
MEDCH	541	Biological Mass Spectrometry	3			X	

CELL BIOLOGY CLASSES:

Dept	Number	Title	Credits	A	W	Sp	Su
CONJ	524	Structural Basis of Signal Transduction	1.5		X		
CONJ	530	Directing Stem Cells Toward Regenerative Medicine	3		X		
CONJ	531	Signaling Mechanisms in Excitable Cells	1.5	X			
CONJ	532	Signal Transduction from the Cell Membrane to the Nucleus	1.5	X			
CONJ	533	The Dynamic Chromosome	1.5	X			
CONJ	537	Mechanism of Transcriptional Regulation	1.5	X			
CONJ	542	Cell Biology of Development	3	X			
CONJ	583	Molecular Targets in Cancer Therapy	1.5	X			
GENOME	551**	Principles of Gene Regulation	1.5		X		
MCB	536	Tools For Computational Biology	3	X			
MCB	539	Biological Basis of Neoplasia	3			X	
MCB	543	Logic Constructs and Methodologies of Biological Research	3			X	

TEACHING, COMMUNICATING SCIENCE, AND COMMERCIALIZATION:

Dept	Number	Title	Credits	A	W	Sp	Su
BIOL	505	Evidence-Based Teaching in Biology: Teaching for Equity in STEM	2		X		
BIOEN	504	Introduction to Technology Commercialization	4	X			
CSE	583	Software Development for Data Scientists	4	X			
CONJ	512	Scientific Speaking Seminar	1.5		X		
MOLMED	559	Scientific Ideas at Work	1.5			X	

GENETICS:

Dept	Number	Title	Credits	A	W	Sp	Su
GENOME	541	Introduction to Computational Molecular Biology: Molecular Evolution	4			X	
GENOME	552**	Technologies for Genome Analysis	1.5	X			
GENOME	553**	Advanced Genetic Analysis	1.5	X			
GENOME	559	Introduction to Statistical and Computational Genomics	3		X		
GENOME	561	Molecular Population Genetics and Evolution	1.5		X		
GENOME	562	Population Genetics	4		X		
GENOME	565	Advanced Human Genetics	4		X		
GENOME	570	Phylogenetic Inference	3		X		
MCB	533	Evolutionary Genetics and Genomics	3			X	

IMMUNOLOGY, MEDICINE, PATHOGENESIS, and OTHERS:

Dept	Number	Title	Credits	A	W	Sp	Su
BIOENG	599	Special Topics – Contemporary Microscopy and Biophotonics	3			X	
CONJ	504	Topics of Molecular Medicine	1.5			X	
CONJ	526	Introduction to Systems Biology	1.5		X		
CONJ	539	Modern Approaches to Vaccines	1.5			X	
CWEA	540	Microbiological Process Fundamentals	3	X			
CONJ	557	Microbial Evolution	2			X	
EPI	520	Epidemiology of Infectious Diseases	3		X		
EPI	527	Vaccines	3	X			
G H	560	Principles of STD/HIV Research	3				X
G H	590	Selected Topics in Global Health	1		X		
IMMUN	441	Introduction to Immunology	4	X			
IMMUN	532	Intersection of Innate and Adaptive Immunity in Disease	4		X		
IMMUN	537	Immunological Methods	1.5	X			
IMMUN	538	Immunological Based Diseases and Treatments	2			X	
IMMUN	550	Selected Topics in Immunology	1	X	X	X	
MCB	536	Tools For Computational Biology	3	X			
MEDCH	561	Immunizing and Antimicrobial Agents	4			X	
MICROM	555	Advanced Clinical Microbiology	2.5	X	X	X	
MOLMED	514	Molecular Medicine	1.5		X		

MOLMED	540	Medicine in Action	1.5	X	X	X	
OCEAN	532	Marine Zooplankton Ecology	3		X		
PABIO	551	Biochemistry and Genetics of Pathogens and Their Hosts	4	X			
PABIO	552	Cell Biology of Human Pathogens and Disease	4		X		
PABIO	536	Bioinformatics and Gene Sequence Analysis	3			X	

***** These classes are primarily for Biochemistry graduate students, who take them as a cohort. Microbiology students can take them with permission of the instructor.

** These are smaller Genome Sciences class, so registration may be difficult.

Appendix 2: Advisor Evaluation Form for General Exam

Prior to the General Exam, the Advisor is to complete the following evaluation and share their assessment with the student. The Advisor will then bring the completed evaluation to the General Exam and share their assessment of the student's strengths and weaknesses with the Thesis Committee. The completed evaluation will then be added to the student's file.

Instructions: Evaluate the student in the following areas using a scale of 1 to 5, as defined:

1. Truly exceptional (use rarely)
2. Good to very good
3. Satisfactory, solid, no obvious problems
4. Needs improvement
5. Poor, area needs serious attention

In addition to circling a numerical score, ***provide a 1-2 sentence*** explanation for each rating in the space provided.

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1 2 3 4 5 **1.** Ability to design feasible experiments, interpret results, and plan new experiments

1 2 3 4 5 **2.** Ability to think and work independently

1 2 3 4 5 **3.** Quality of laboratory work and attention to detail

1 2 3 4 5 **4.** Level and range of laboratory skills

1 2 3 4 5 **5.** Overall productivity

1 2 3 4 5 **6.** Knowledge of current literature

1 2 3 4 5 **7.** Writing skills

1 2 3 4 5 **8.** Verbal communication skills

1 2 3 4 5 **9.** Contribution to overall atmosphere of the laboratory, including helping others with their projects

1 2 3 4 5 **10.** Ability to contribute intellectually to laboratory discussions and group meetings

(Optional) Please provide any additional comments that were not covered above:

Appendix 3: General Guidelines for a Non-thesis Master's Degree

Although the Microbiology Department does not admit students specifically into a master's degree (M.S.) program, occasionally a student will leave the Ph.D. program with a non-thesis M.S. degree. Each situation is unique, but common reasons why students may opt for a M.S. degree include:

- Realizing that they no longer want to continue in a research-focused degree program;
- Encountering unexpected personal circumstances that cannot be accommodated by a leave of absence and interfere with their continuation in the Ph.D. program;
- Deciding that the UW Microbiology program is not well-aligned with their research/career interests.

A Ph.D. student may decide that graduating with a Microbiology M.S. is their best choice in different ways. Optimally, a student will discuss their situation with their Ph.D. Thesis Advisor and consult their Ph.D. Supervisory Committee. Alternatively, a student may first discuss options with members of the Microbiology GPAC and/or with the Microbiology GPA. Regardless of the route a student uses to reach their decision, we encourage students to obtain advice from multiple perspectives. Once a final decision to pursue a M.S. degree has been reached, the student should communicate their wishes and timeline clearly to their Thesis Advisor, their Ph.D. Supervisory Committee, the GPAC, and the GPA.

The general requirements for the master's degree are

- Completion of first-year student rotations;
- Completion of the course requirements for the Ph.D. degree (with 18 graded credits) and departmental T.A. obligations.

Other requirements and the final timeline will be determined by a three-person master's committee, composed of the student's Thesis Advisor and two additional members of the Ph.D. Supervisory Committee, preferably members with primary or joint appointments in the Microbiology Department. Typically, the student will carry out research for three (or more) additional quarters after their first year and present a concise (2-3 page) written report (or manuscript for publication) to the committee. The committee may require the student to make an oral presentation of their work to the committee. Note that a student who attempts the General Exam, regardless of the outcome, will generally have satisfied these requirements.

Appendix 4: Completing the Program at an Outside Institution

Students may need to complete the program at an outside institution if their PI and lab relocates. This can happen at any point during the student's thesis work. There are two general scenarios:

Scenario 1: The student has successfully passed the General Exam.

- The student continues to register for MICROM 800 until they defend their Thesis
- The student must participate in the new institution's relevant version(s) of Work in Progress (WIP)
    - The student is NOT required to register for MICROM 522
- The student must participate in the new institution's relevant seminar series
    - The student is NOT required to register for MICROM 520
- The student will have two options to complete the lecture requirement.
    - One option would be to give a lecture in an undergraduate Microbiology class at the new institution. The student's Thesis Advisor may be able to help connect them with faculty who are teaching suitable courses. The student may also give a lecture at another nearby institution, should the opportunity arise, subject to prior approval by the GPAC.
    - The second option would be to return to UW to give the lecture.
    - In either case, the student will then complete and submit the *Undergraduate Lecture Self-Assessment* (available on the website under *Graduate Student Resources*).
- The Department prefers that the student remain engaged with the UW Microbiology community. One way to do so would be to return once for a combined student retreat/committee meeting/undergraduate lecture, with the Thesis Advisor's permission.
- The student is still subject to the requirement for at least one first-author publication.
- The student will return to UW for an in-person Final Exam.
- Upon successfully defending their thesis, the student will be awarded their Ph.D. degree from the University of Washington.

Scenario 2: The student has not passed the General Exam.

- The student will transfer to a graduate program at the new institution and complete the requirements of that program.
- Upon successful completion of the program, the student will be awarded their Ph.D. degree from that institution.