OSU MICROBIOLOGY GRADUATE PROGRAM HANDBOOK

2024-2025 Academic Year

Updated Aug 14, 2024

Welcome to the graduate programs in the Department of Microbiology, Oregon State University!

How to use this handbook: First read the general information about the Microbiology Department and its graduate programs in sections I through VII – this pertains to all degree programs. Specific guidelines pertaining to your degree program follow this, and are color coded to aid navigation: Ph.D. (yellow), Master's of Science (M.S.) (blue), Master's of Science through the Accelerated Masters Platform (AMP) (orange), and Non-Thesis Master's of Science (NTM) (green). Then read and become familiar with the essential policies and regulations (Sections XII through XVI).

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Table of Contents

I. General Introduction

Oregon State University Microbiology Graduate Program provides graduate training leading towards Ph.D., Master's of Science (MS), Master's of Science through the Accelerated Master's Program (AMP), and Non-Thesis Masters (NTM) degrees. We enroll about 30-35 graduate students earning Ph.D. and master's degrees. The Program supports broad interests in microbiology, including environmental and pathogenic microbiology, with studies that encompass a spectrum of approaches from the ecological and organismal to the genomic and biochemical. The Microbiology Department's diverse faculty, along with faculty from several other departments and colleges, participate as major advisors.

Our research covers a range of subjects involving viruses, bacteria, parasites, and eukaryotic microbes, and their roles in the health of the environment and humans, animals and plants. Microbiology faculty are strongly multidisciplinary, and also train graduate students enrolled in related programs such as Pharmacology, Molecular & Cellular Biology, Comparative Health Sciences, Crop and Soil Sciences, Botany and Plant Pathology, Food Science and Technology, Fisheries & Wildlife, and Biological Oceanography. Graduate students are major contributors to the research output of the department. The department also trains about 800 undergraduate students in two majors, Microbiology and BioHealth Science.

This guide contains information on graduate study in the Department of Microbiology at OSU. Pertinent material from the Graduate School is also included. Although this handbook is updated regularly, rules, regulations, and deadlines may change at any time. Students should refer to the Department Head, Chair of MB Graduate Affairs, or department web site for current departmental policies, and to the Graduate School for policies administered by the Graduate School.

II. COVID-19

Covid-19 is an ongoing challenge. Please get updates and information on University policy from OSU's COVID-19 Safety and Success Plan and Resources:

https://covid.oregonstate.edu/

OSU's Graduate School has information specifically for graduate students:

https://gradschool.oregonstate.edu/coronavirus-info-graduate-students

It is important that students communicate with their PI/lab head and stay current on the situation.

III. Contact Information

Academic:

Dr. Anne Dunn, Head of the Microbiology Department, Anne.Dunn@oregonstate.edu
Dr. Kimberly Halsey, Graduate Affairs Committee Chair, Kimberly.Halsey@oregonstate.edu
Dr. Maude David, Admissions Committee Chair, Maude.David@oregonstate.edu

Administrative:

Amy Timshel, Department Head Assistant; Nash 228, amy.timshel@oregonstate.edu

XXXXX, Graduate Program Assistant, Nash 224

GTA assignments:

Dr. Linda Bruslind, Senior Instructor, bruslindl@oregonstate.edu

Reimbursement (travel and other expenses):

Financial Strategic Services, fss.science.service@oregonstate.edu

Course overrides, afterhours permits, shipping and mailing, keys to building offices and labs:

Sally Tatala, Microbiology Office Assistant, Nash 226, sally.tatala@oregonstate.edu

Program website address:

https://microbiology.oregonstate.edu

University Emergency Contacts:

The Department of Public Safety (https://publicsafety.oregonstate.edu/; Dial 9-1-1 or call (541) 737-7000): provides resources, information, emergency phone numbers, and protocols for maintaining personal safety. Sign up for OSU Alerts (https://oregonstate.edu/alerts/osu-alert-portal) to get timely messages delivered right to your phone or inbox regarding university closures and other emergency situations.

IV. Arrival checklist

When you first arrive at OSU:

- Get a University ID Card. The OSU ID Card is the official identification card for students, faculty, and staff. It functions as a meal card, library card, key and more. The ID Center is in Memorial Union room 103. Part of the process can be completed online.
- Sign up for your email account. Set up your ONID (OSU) email as soon as possible. Instructions are available at https://onid.oregonstate.edu/ ONID is the university's official email addressing system and you will miss crucial emails, including all class communications, if you do not activate this account.
- Meet with your Major Professor (if you have one) or the Graduate Program Assistant (non-thesis MS students) before registering for your classes and discuss objectives for your first year in the program.
- Register for Classes. You should register after conferring with your Major Professor or Graduate Program Assistant (non-thesis MS students). Check the Academic Calendar deadline dates for registering for classes and to avoid late fees.
- For students doing research, get a desk assignment in your new lab.
- Pick up your keys and have your ID card activated for after-hours access to Nash Hall. Have your major professor contact Sally Tatala for keys and for ID activation.
- Obtain an after-hours permit for authorization to be in buildings at night or on weekends (ask Sally Tatala for instructions).
- See the guides and information for new graduate students on the Graduate School website!

V. Academic and Support Resources

OSU offers a wide array of academic and support resources for graduate students. Some of the more commonly used resources are included below. For a more complete list, please visit the Graduate School's Student Resources web page.

Campus Safety – Emergency phone numbers, university alerts

Career Development Center – Resume/CV, networking, job search strategies

Childcare and Family Resources – University child care centers, child care assistance

Counseling and Psychological Services (CAPS) – Individual and group counseling

Cultural Resource Centers – Cultural based community centers, social support

Disability Access Services (DAS) – Academic accommodations

Equal Opportunity and Access (EOA) – Employment accommodations, discrimination or bias response

Financing your education – Funding options and information, graduate awards

Graduate Student Success Commons – Lounge, study space, printing, reservable meeting rooms

Graduate Writing Center – Writing workshops, groups, and 1:1 writing coaching

Health Insurance – Plans for graduate students and graduate employees

Human Services Resource Center (HSRC) – Food pantry, housing and SNAP assistance

Institutional Review Board (IRB) – Review for human subjects research

Office of International Services (OIS) – Visa and immigration advising

Ombuds Conflict Management Services – Informal, impartial conflict resolution advising

Recreational Sports – Dixon Recreation Center, intramural sports

Statistics Consulting Service – Graduate student research statistical advising

Student Health Services (SHS) – Clinic and pharmacy

Student Multimedia Services (SMS) – Poster printing, equipment and laptop loans

Transportation Options – Bike, bus, SafeRide

Transportation Services – Parking permits, maps

Valley Library – Reference and research assistance, study spaces, research tools

VI. Microbiology Graduate Curriculum

The program of coursework taken by all graduate students is jointly decided by the student and either their Advisor (NTM students) or Graduate Committee. The Microbiology Program requires all first-year students to take two core courses: MB 513 and GRAD 520 for a total of 5 credits during Year 1. Students have substantial latitude in choosing additional courses from among Microbiology (MB) listings and courses in other colleges and departments that are pertinent to their program. See the catalog and the Microbiology website for course listings.

Core courses:

MB 513. MICROBIAL SYSTEMS (3 cr). Presentation of a modern view of microbiology through the lens of microbes' influences on our planet's habitats and inhabitants. Discusses current research and the use of advanced techniques to illustrate how microbiology is contributing to many cross-disciplinary problems that can involve engineering, public health, sociology, ecology, geology, etc.

GRAD 520. RESPONSIBLE CONDUCT OF RESEARCH (2 cr). Covers 10 topics in responsible conduct of research: ethical decision making; human subjects; animal welfare; data acquisition; sharing and ownership; research misconduct; conflicts of interest; authorship; peer

review; mentor/trainee responsibilities; and collaborative science. Useful to all students who conduct scholarly activity.

VII. Other Components of your Graduate Education

Attendance at the Microbiology departmental seminars is expected for all graduate students. Seminars are typically scheduled for Tuesdays at noon during the Fall, Winter, and Spring terms. Announcements will be sent by email and posted in hallways. The seminar series includes speakers invited from academic, government, and industry institutions. Lunch with graduate students is typical and is an excellent opportunity to hear about various pathways in science. Do not skip these events – besides, it's a free lunch! Several dates in the MB seminar series are set aside for graduate students to present "Work in Progress" reports. These reports are 12-15 minute short presentations. Students who have advanced past the first year of their graduate program are expected to present annually.

Additional optional events:

PRIPS: This optional series of presentations is given by a group of labs with interests in infectious diseases and medically-related research. The group meets on alternate Thursdays at noon-1:00 PM, Dryden Hall 213. Members from each lab take turns presenting their data that is hot-off-the-bench. The presentations and discussions are informal, and attendance is encouraged for those from other labs. PRIPS is organized by Dr. Mahfuz Sarker (541-737-6918).

Other seminars: Other departments and graduate programs also sponsor seminars, and you are encouraged to attend those that interest you. Contacting the departments and programs of interest and having your e-mail address included in their contact list will help you know when there is a seminar that interests you.

Grad MSA: The Graduate section of our Microbiology Student Association (MSA) organizes a journal club and offers a variety of social events, including excursions and weekend trips.

VIII. The PhD program

Learning outcomes/competencies

Students completing a Microbiology Ph.D. degree will be able to:

1. Produce and defend an original significant contribution to knowledge.
2. Demonstrate mastery of subject material.
3. Conduct scholarly activities in an ethical manner.
4. Define, present, and justify a set of original research objectives in a formal research proposal.
5. Communicate project findings orally to a scientific audience.
6. Communicate research findings in a written dissertation to a scientific audience.
7. Exhibit basic skills in teaching microbiology to undergraduate students or during K-12 or other outreach events

Ph.D. proposed timeline and time to completion

Regardless of appointment type, it is primarily the student's motivation and dedication that determines productivity and progress in the program. Ph.D. students are normally expected to complete their graduate programs within 4-6 years, beginning with their first quarter at Oregon State University.

1. Before completing 5 terms: form a thesis committee (Graduate Committee) and have Program of Study approved.
2. First and second years: complete the majority of the courses on your Program of Study.
3. Meet yearly with your Graduate Committee to evaluate your progress. Typically, the meeting begins with a summary presentation of the student's research findings.
4. Submit a completed Graduate Student Annual Evaluation to your advisor each year by the end of winter term.
6. End of second year: Complete preliminary written and oral exam and advance to candidacy.
7. By the end of fourth year: Fulfill the one-term GTA requirement (note this requirement can be met through other approved outreach activities).
8. First through fifth year: Conduct dissertation research and fulfill public presentation requirement
9. Fifth year: Write dissertation and pass final oral examination to complete degree

Appointment types

Most Ph.D. students are appointed as **Graduate Assistants (GA**), although students may have different forms of support such as a fellowship or government scholarship, or be self-funded. GA appointments pay stipend and tuition. There are two types of GA appointments: **Graduate Teaching Assistants (GTA)** and **Graduate Research Assistants (GRA)**. The typical appointment is at 0.49 FTE (full-time equivalents), which equates to 255 hours per 13-week academic term, or 19.6 hours per week. The expectation is, therefore, that students devote approximately half of a full-time workweek to their assigned duties as GTA or GRA. **However, completion of a graduate degree requires substantial additional time for coursework and thesis research that is separate from the assigned GRA and GTA duties.** All Ph.D. students are required to complete a minimum of one term as a GTA or equivalent experience.

Graduate Teaching Assistant (GTA) duties

Under direction of the faculty member in charge, GTAs provide teaching assistance in various ways, such as setting up and taking down laboratory equipment and supplies, orally presenting lecture material, demonstrating microbiological techniques and supervising undergraduate students in laboratory classes and recitations, holding office hours, proctoring exams, grading

assignments, maintaining records, and preparing for these activities as necessary. The GTA salary is intended to offset educational expenses.

GTAs are required to take FERPA (Family Education Rights and Privacy Act) training. GTAs must adhere to essential instructional policies conveyed during graduate student orientation. The Graduate School provides orientation and instructional videos for new GTAs, and the department requires that new GTAs attend a departmental training session during orientation in September. An available 1-credit course, GRAD 516 - Graduate Teaching Seminar, focuses on evidence-based pedagogical practices with an emphasis on practical strategies and problem-solving. Students interested in college-level teaching should investigate the 18 credit Graduate Certificate in College and University Teaching (GCCUT) program.

Graduate Research Assistant (GRA) duties

Under direction of the faculty member in charge (major professor), GRAs conduct research related to the grant or fellowship that pays the student's salary and tuition. Tasks include designing and conducting experiments, developing methods, maintaining a functional work environment, analyzing and interpreting data, maintaining lab notes, data management, writing manuscripts, presenting results at scientific meetings, and cooperating with other group members. GRAs are available only through grants to individual faculty members or fellowships to students (e.g., NSF GFRP). The GRA salary is intended to offset educational expenses. Research conducted as a GRA may be applied towards thesis research, but is not sufficient by itself to fulfill the thesis requirement. Students must adhere to responsible and ethical conduct of research (RCR), and are required to complete RCR training if funded by federal agencies (NSF, NIH, and USDA).

Program of Study

Ph.D. students must complete 108 graduate (i.e., 500- or 600-level) credits

- At least 36 coursework credits consisting of:
  - The required 2 courses: MB 513 and GRAD 520 for a total 5 credits during Year 1.
  - 31 or more credits from MB listings, or courses relevant to the thesis research offered by other programs IF agreed to by the thesis committee.
- At least 36 Thesis credits (MB 603)
- No more than 15 credits can be "Blanket" courses (course numbers with a zero in the middle). This includes MB 601 Research, MB 605 Reading and Conference, and MB 607 Seminar/Colloquium, but *excludes* MB 603.
- Sufficient additional Thesis MB 603 credits to reach 108 total credits.
- A minimum of 50%, or 54 of the 108 credits, must be graduate stand-alone courses (500- or 600-level), which are not the 500 component of 400/500 slash courses. This will typically be satisfied by the 5 credits of the required first year core sequence and MB 603 Thesis credits.
- Enrollment in MB 601 Research, rather than MB 603, is appropriate while rotating.
- The 108 credit requirement is for credits beyond the bachelor's degree; thus coursework credits from a recent MS degree may be counted.
- The Microbiology Department requires all graduate students, except in very special circumstances, ***to register for 16 credits every term, except summer, when students register for only 5 credits.*** Maximum permitted load per term is 16 credits.

Graduate Minor

A graduate minor (optional) consists of courses in an academic area that clearly support the major. Doctoral minors require a minimum of 18 credits. A minor may consist of courses from one field or department. Alternatively, an integrated minor consists of at least 15 credits of cognate courses from two or more areas. These courses must be outside the major area of

concentration, with most of the courses being outside the major department. If your program of study includes a minor, one of your thesis committee members must represent the minor field.

Research requirements

Ph.D. students must satisfactorily complete a dissertation based on their laboratory research. Satisfactory completion of a degree is based on the performance and contribution of the student, as judged by the major professor and the thesis committee, and not on any specific length of time.

Ph.D. students are required to perform laboratory research each term. **Your dissertation research is the most important, and probably the most challenging, part of your educational program. It is to your advantage to commence work on your research as soon as possible.** Research projects take time to develop, and it is often surprising to students how much time and effort it takes to make progress on a lab research project. During your first year, you should work to secure a commitment from one of our faculty members to support you both scientifically and financially (if you don't already have this commitment). The sooner you get started on your dissertation research, the sooner you will be finished with the most important part of your educational program.

Lab rotations: Note: this option is very limited at present

Some Ph.D. students enter the program as GRAs and remain associated with a specific laboratory throughout their studies. Others enter the program as GTAs and do "lab rotations", moving to a different lab each term during their first year. The benefits of doing lab rotations are: 1) it exposes you to different projects, which may help you decide which lab to choose for your thesis lab; and 2) it exposes you to different techniques and scientific strategies. Consult with your rotational advisor(s) about their opinions on doing rotations.

If you are doing rotations, it is your responsibility to arrange with one of the graduate faculty to work on a laboratory research project. To do this, familiarize yourself with the research interests of our faculty: access information on our Microbiology Department web site and speak with the faculty directly. When you have narrowed your search for a lab, make appointments with the faculty members and discuss your interests. You are expected to find a lab in which you will do lab research each term. Make arrangements as far in advance as possible. Some labs may require at least 1 term advance notice before a rotation is possible.

Before making a rotation agreement, student and advisor should discuss each other's intentions and perspectives. Does the student consider the rotation lab as a potential dissertation lab, or is the student primarily interested in acquiring a new skill, with the ultimate goal of joining a different lab for dissertation research? Is the advisor interested in taking on another student and does he/she have the funding to do so?

Students on rotation are generally supported by GTA positions during that period, so you will need to carefully balance the demands of research, classes and teaching. You should discuss expectations for research time in the lab and participation in lab activities with your rotational professor. It would be reasonable to expect 10-15 hours of research time per week, and for this you should register for 3-4 credits of MB 601 Research credits. These credits are taken for a grade.

You and the rotational advisor, and others in the lab who will provide mentorship during your rotation (e.g. postdoctoral researchers), will hold discussions to decide on a research project. During the laboratory rotation, you should participate in the normal activities of that lab, which could include regular lab meetings, individual meetings with your rotational advisor, and social activities of the lab. It is important to learn what it would be like to work in that lab so that you can make the right decision about where to spend your next 4-6 years.

You and your rotational advisor should discuss the outcomes of your rotation. At minimum, a wrap-up discussion towards the end of the term is important to help you reflect upon the overall experience, provide each other with feedback, and learn about other considerations that may play a role in your decision to complete your Ph.D. in that lab. Highly motivated rotation students may end up using their research results in their thesis or become co-authors on manuscripts if another lab is chosen for thesis work.

It is recommended that you print out the rotation expectations and discuss them with your rotational advisor.

Major professor

After a student is accepted into a research lab, the professor in charge of the research lab is designated the major professor (or thesis advisor). This becomes official when you submit your signed Program of Study form to the graduate school (immediately after the Program Meeting; see below). The major professor helps the student decide which courses to take, and helps the student get started with a research project. The major professor advises the student on academic matters, such as the selection of thesis committee members, and is responsible for evaluating the student's performance.

Process for changing major professor

On occasion students inquire about changing their major professor. This change is an important decision and must be done in consultation with other committee members and/or the Department Head. Students have the right to change major professors for several reasons, such as making changes in educational or career directions, or finding that their major professor is unable or unwilling to abide by the responsibilities and obligations as a mentor and advisor. The Graduate School provides a description of the functions and behaviors of faculty mentors. After consulting with the Department Head, students who make the decision to pursue a change in their major professor are responsible for identifying a new faculty mentor willing to serve in this role, as well as potentially reconstituting the thesis committee. This change will almost certainly result in delayed progress towards degree completion. Students must inform the graduate school of these changes.

Thesis committee

After a major professor is selected, the student, in consultation with the major professor, must choose other faculty members to serve on the thesis committee, also called the graduate committee. Ph.D. students must select 4 additional committee members (including the Graduate Council Representative), usually in the second or third term, but no later than the end of the fifth term of study.

The thesis committee helps you plan and approves your educational program. The committee members act as your advisors, and you must schedule committee meetings at least yearly to review your progress. The committee is also charged with approving your preliminary exam proposal topic, evaluating your preliminary exam proposal, and conducting and evaluating your oral preliminary exam. The committee reviews your progress annually using the Graduate Student Annual Evaluation form. Finally, the committee conducts and evaluates your final thesis defense.

Committee members must be members of the Graduate Faculty. If the faculty member is not a member of the Graduate Faculty or is not approved for the role proposed, your major department/program will need to nominate the proposed member to act in those roles using the Nomination to Graduate Faculty form. This process will take at least several weeks and should be

initiated well in advance to accommodate Departmental faculty discussion. The Graduate School will evaluate committee structure when they receive your program of study, and again when you schedule your preliminary and final examinations.

Graduate Council Representative

One of your committee members must be a Graduate Council Representative (known as a GCR or Grad Rep). Your GCR represents the OSU Graduate Council and ensures that all rules governing committee procedures are followed. Your GCR must be present at your formal exams and will be responsible for some of the paperwork that the Graduate School requires. Per Graduate School guidelines, the GCR will also lead your committee's roundtable discussion following your final oral exam. Your GCR must be a graduate faculty member outside your major and minor area.

The GCR is a full voting member of your graduate committee. Many students select a GCR who can also add disciplinary expertise. Select your GCR using the online GCR list generation tool and be sure to allow ample time for this selection process. If you run into difficulty finding a GCR to serve on your committee, you can re-generate the list until you find someone who is willing to serve.

Policy on remote participation

It is generally expected that all committee members or approved substitutes must be present for all formal meetings with the student (e.g. final oral exams). If you have a special case in which a committee member may need to participate remotely, you and your committee must assure that all the conditions for remote participation are met.

Program meeting

You are required to convene a thesis committee meeting, called a program meeting, to plan the courses that you will take for fulfillment of your degree requirements. Ph.D. students must hold their first committee meetings and file a program of study by the end of their fifth term.

The Program Meeting will cover two areas: the proposed coursework (Program of Study) and the proposed research (Thesis Outline). A Program of Study form will be completed during the meeting. When the student's committee approves the Program of Study, they will sign the form and submit it to the Graduate School. If the student later wishes to change the approved Program of Study, they will need to discuss changes with the committee and obtain committee member signatures on the revised program.

Students also prepare and present to their committee an outline of the thesis project. This outline must be sufficiently detailed to enable the committee to evaluate the progress of the student on a yearly basis.

Submitting your annual evaluation

Each March Ph.D. students are required to complete the Graduate Student Annual Self-Evaluation. This progress report is submitted for approval to the major professor who will then forward for review by the committee members. Go To: **Graduate Student Annual Evaluation**.

Teaching requirement

Ph.D. students are required to be teaching assistants for a minimum of one term. This requirement may be fulfilled anytime during their graduate program. Because it is often difficult to place GRAs in a GTA position, students are advised to coordinate with their Major Professor and the Department Head as early as possible (as much as one year in advance).

Learning Outcomes for the Teaching Requirement

Students who have fulfilled their teaching requirement will be able to:

Exhibit basic skills in teaching microbiology to undergraduate students or during K-12 or other outreach events

Alternatives to the teaching requirement

Under special circumstances, if a student believes they have fulfilled the Teaching Requirement in a different way than formally serving as a GTA for one term, the student can petition the Microbiology Graduate Affairs Committee to use this alternative to fulfill the teaching requirement. For example, some labs participate in the Microbiology Pernot Summer Camp or the SMILE program. In both cases, graduate students participate in science communication and educational program development and delivery. The Graduate Affairs Committee will assess the alternative teaching experience and establish whether the student has achieved the Learning Outcome.

Public Presentation requirement

Ph.D. students are required to present the results of their research on two occasions. One presentation may be at a national or international meeting, and the other must be a departmental seminar (this may be the final Ph.D. oral defense). All students are encouraged to present their work more often than the minimum requirement, for example annually during the departmental seminar "Work-In-Progress" presentations.

Ph.D. Qualifying Examination (Preliminary Exam)

As outlined by the Graduate School, to complete the doctoral degree, Ph.D. students must pass a comprehensive Preliminary Examination conducted by their Graduate Committee. The purpose of this exam is to determine the students' understanding of their major and minor fields and to assess their capability for research. This exam must comply with the policies and requirements of the Graduate School.

The exam for the Microbiology Ph.D. degree includes two parts: (1) a written research proposal on a topic that is distinct from the student's thesis research, followed by (2) an oral examination that features a presentation and then questions on the proposal topic. There will also be questions on more general topics drawn from the student's coursework and/or general area of thesis research. The Preliminary Examination should be taken after about two years, near the completion of the coursework on the Program of Study.

Scheduling the Preliminary Exam. The student must contact the committee for:

1) Agreement on the research proposal topic
2) Setting the target date for completion of the written proposal
3) Acceptance of written proposal
4) Arrangement of a date, time, and place for the exam. The written proposal must be submitted to the committee at least 2 weeks prior to the scheduled oral exam.

Written proposal. Students must write a proposal on an approved topic.

- To select a topic, the student will provide the committee with up to 3 titles and brief summaries of each.
- The topic may be on anything except the student's thesis project and is at the discretion of the committee.

- The committee must approve the topic with no more than 1 dissenting vote (email votes are acceptable).
- Graduate students are expected to prepare the proposal independently. Students may rehearse their proposal presentation in front of other graduate students and practice responding to questions. The intent of the proposal is to examine the students' logical thinking, communication skills, knowledge of the chosen subject area, and creativity. Faculty are well aware that there will be flaws in the proposal (all proposals can be and are criticized by scientific panels). An important part of the proposal as a written exam is to evaluate how the student responds to questions concerning noted flaws. The existence of a few flaws are not typically sufficient grounds for failure, rather, the student's ability to rethink and communicate "on-their-feet" is considered an important quality for passing the exam.
- Unless otherwise specified by the committee, the proposal will be based on the format of an NSF postdoctoral proposal. The format and length should be discussed with the committee; a general guideline follows.
  - The length will be a minimum of 5 pages (single-spaced, not including references).
  - The proposal should include the following sections:
    - Specific aims
    - Background and Significance
    - Research Design and Methods
    - Literature cited (not included in the page limit)
  - Within these sections, the committee will be looking for the following components:
    - Clearly stated research problem
    - Clearly developed, testable hypothesis
    - Focused experimental aims
    - Contingency plans for aims/objectives
    - Appropriate experimental design
    - Appropriate data analysis methods
    - Justification for, and impact of, the proposed research
    - A realistic project timeline
- The proposal should be submitted to the committee within the specified period after the committee has approved the topic (6-10 weeks). The individual committee members must review the proposal and determine if the written proposal is acceptable for an oral exam defense. The committee must grant approval to proceed within 1 week of submission.
- In the event revisions are required (i.e., the proposal is judged as being insufficiently developed to proceed with the oral exam), the student will have 4 weeks to modify and re-submit the proposal to the committee for a second decision. Committee members will provide the student with completed rubrics (see next bullet) to help guide student revisions.
- Based on the Proposal Assessment Rubric, the committee has the following options in deciding whether to pass the individual on the written portion of the preliminary exam (i) to pass and move on to the oral exam, (ii) not to pass and dismissal from the Ph.D. program, (iii) to recess and re-convene within two weeks.
- Students that change their minds or are unable to complete a Ph.D., or fail their Preliminary Exam, have two possible ways to leave OSU with a graduate degree in Microbiology. Students can obtain a Non-thesis Master's degree (see below) or complete a thesis-based Master's degree within 6 months (see Thesis Master's degree section).
- Once the committee passes the student on the written proposal, the student must aim to schedule the oral exam within two weeks of the decision to accept the proposal.

Oral examination.

The exam is scheduled with the Graduate School using the Exam Scheduling Form. Exam forms must be submitted two weeks prior to the exam date. The Graduate School may not approve your exam if you submit the form late.

- The oral exam must be at least 2 hours in length and is typically up to 3 hours long.
- In is generally expected that all members of the graduate committee should be physically present at the required graduate exam. (for exceptions, see Remote Participation requirements).
- The defense of the proposal should include a presentation of the proposal (20-30 minutes), followed by questions from the committee members. This part of the exam should constitute about half of the exam time.
- The second half of the exam will be devoted to open questions that may include anything related to science or the training of the student that the committee members deem relevant.
    - The student should prepare for the exam by practicing answering questions with their advisor, committee members and/or other students.
- The decision to pass the individual is subject to the rules of the Graduate School, which gives the committee the options (i) to pass, (ii) not to pass and to terminate the student's work, (iii) not to pass and to allow a re-examination, or (iv) to recess and re-convene within two weeks.
- The decision will be based on the Rubric form for the Ph.D. Preliminary Exam.
    - The student can assess their preparation for the exam by studying the rubric.
- It is the responsibility of the student and major professor to provide the Scoring Guide to each graduate committee member, and the major professor must explain its use in documenting the assessment of the student. The committee will discuss the student's performance (with specific reference to rubric items) with the student at the conclusion of the exam.
- The major professor will collect the completed forms for filing in the Microbiology office.
- Students that change their minds or are unable to complete a Ph.D., or fail their Preliminary Exam, have two possible ways to leave OSU with a graduate degree. Students can obtain a Non-thesis Masters degree (see below) or or complete a thesis-based Masters degree within 6 months (see Thesis Masters degree section).

Concurrent Non-thesis Master Degree Option

All students who present their qualifying oral proposal and completed 45 credits of coursework are eligible for the non-thesis Masters degree. Note the student must declare their intent to obtain the NTM degree at least one term prior to the oral qualifying exam (see 2 below).

1. Students that have successfully completed 45 credits of coursework that fulfills Non-Thesis Master's Degree (NTM) criteria are eligible for an NTM degree. See requirements for the NTM degree, below. Consult with Dr. Kimberly Halsey, the Graduate Affairs Committee Chair.
2. Students who are on track to complete the preliminary qualifying exam and obtain the NTM concurrent degree need to declare/apply to the NTM degree and submit their independent NTM Program of Study at least one term prior to the preliminary qualifying exam.
3. Students must also submit a 'change of degree/major form' adding a NTM degree to their program.
4. The student must schedule the NTM final exam to be sequential to the oral qualifying exam. The only difference is that students must defend their out of area proposal and present their NTM program of study sequentially. The written proposal serves as the NTM "capstone project."
5. All graded courses are eligible for both degrees, but P/NP classes can only be applied to one degree.
6. Students must file for graduation of the NTM on the graduate school's required timeline.

Dissertation

You will record and publish your research in a Dissertation. Microbiology Ph.D. students use the Manuscript Document Format for their dissertations. This consists of a single document made up of several scholarly manuscripts or journal articles addressing a common theme, with a common introduction and conclusion. A typical Microbiology dissertation contains three manuscripts or journal articles, although this number is not fixed and should be discussed with your graduate committee. A three-journal-article dissertation would contain the following parts:

- Pretext Pages
- Chapter 1 – General Introduction (common introduction linking all manuscripts thematically)
- Chapter 2 – First Manuscript
- Chapter 3 – Second Manuscript
- Chapter 4 – Third Manuscript
- Chapter 5 – General Conclusion (common conclusion linking all manuscripts thematically)
- Bibliography (common bibliography covering all chapters, although each manuscript will have its own reference section)
- Appendices – (optional)

The Graduate School has extremely detailed instructions on pretext pages, thesis formatting, submission requirements, and deadlines. **Students should consult these instructions 2 to 3 terms before their planned graduation date.**

Ph.D. Final Oral Examination

Ph.D. candidates must pass a Final Oral Examination (also called a thesis defense). This exam must comply with the policies and requirements of the Graduate School. The student's Thesis Committee will conduct the examination. The examination committee will consist of the same members as for the Preliminary Examination, although substitutions may be made if approved by the Program and the Graduate School.

The student must contact members of the committee to arrange the date, time, and place, **then schedule the exam with the Graduate School no fewer than two weeks before the examination**. The Graduate School may not approve your exam, thus delaying your graduation, if you submit the form late. One copy of the pre-text pages of the dissertation must be submitted to the Graduate School when scheduling the exam. Examination copies of the complete dissertation must be distributed to **all** committee members two weeks prior to the examination. All members of the graduate committee should be physically present at the exam (for exceptions, see the Remote Participation requirements).

Examinations are generally scheduled for three hours. The first part of the exam is the dissertation presentation portion (seminar), which is open to all interested parties, and the student should work with Amy Timshel to develop a flyer to advertise this. After the thesis seminar and questions from the general audience, the committee and student will continue in closed session to examine the thesis and its broader relationship to microbiology.

The decision on the outcome of the exam will be based on two Rubric Forms (Assessment rubric MS-PhD, Ethics GLO3 rubric) provided by the student and the major professor for the Ph.D. thesis defense. After the major professor explains how the guide will be used, each graduate committee member will be asked to use the form in documenting their assessment of the student. At the conclusion of the exam the committee will discuss the student's performance (per the Rubric). The major professor will collect the completed forms for filing in the Microbiology Office.

No more than one re-examination is permitted. Students that change their minds or are unable to complete the PhD, or fail their final defense may be able to obtain an MS degree or a Non-thesis Masters degree (see MS and Non-thesis Masters sections below).

IX. The Master's Degree (Thesis)

Learning outcomes/competencies

Students completing a Microbiology M.S. degree will be able to:

1. Conduct research or produce some other form of creative work.
2. Demonstrate mastery of subject material.
3. Conduct scholarly or professional activities in an ethical manner.
4. Communicate research findings orally to a scientific audience
5. Communicate research findings in a written thesis to a scientific audience.

Proposed timeline and time to completion

Regardless of appointment type, it is primarily the student's motivation and dedication that determines productivity and progress in the program. Students are normally expected to complete their Master's degree within 2-3 years, beginning with their first quarter at Oregon State University.

1. Form a thesis committee (graduate committee) and have Program of Study approved. It is recommended that the Program of Study meeting be held before completing 18 credits of coursework, but it must be done by the end of the 5th term.
2. First and second years: complete coursework on your Program of Study.
3. Meet yearly with your Graduate Committee to evaluate your progress. Typically, the meeting begins with a summary presentation of the student's research findings.
4. Starting in Year 2, submit a signed Annual Progress Report to the Graduate Program Assistant each year by the end of December.
5. First through second or third year: Conduct thesis research and write thesis document
7. End of second or third year: Pass final oral examination to complete degree

Appointment types

Most M.S. students are appointed as **Graduate Assistants (GA)**, although students may have a different form of support such as a fellowship or government scholarship or be self-funded. GA appointments pay salary and tuition (see below). There are two types of GA appointments: **Graduate Teaching Assistants (GTA)** and **Graduate Research Assistants (GRA)**. The typical appointment is at 0.49 FTE (full-time equivalents), or 255 hours per 13-week academic term, or 19.6 hours per week. The expectation is, therefore, that students devote approximately half of a full-time workweek to their assigned duties as GTA or GRA. **However, completion of a graduate degree requires substantial additional time for coursework and thesis research that is separate from the assigned GRA and GTA duties.**

Graduate Teaching Assistant (GTA) duties

There are a limited number of GTA positions available, and most GTA positions are reserved for PhD students. If a student has particular interest in gaining teaching experience or needs GTA funding, they should discuss their goals/needs with their major professor who will communicate with the Department Head about GTA position availability.

Under direction of the faculty member in charge, GTAs provide teaching assistance in various ways, such as setting up and taking down laboratory equipment and supplies, orally presenting lecture material, demonstrating microbiological techniques and supervising undergraduate students in laboratory classes and recitations, holding office hours, proctoring exams, grading

assignments, maintaining records, and preparing for these activities as necessary. The GTA salary is intended to offset educational expenses.

GTAs are required to take FERPA (Family Education Rights and Privacy Act) training. GTAs must adhere to essential instructional policies conveyed during graduate student orientation. The Graduate School provides orientation and instructional videos for new GTAs and the department requires that new GTAs attend a departmental training session during orientation in September. An available 1-credit course, GRAD 516 - Graduate Teaching Seminar, focuses on evidence-based pedagogical practices with an emphasis on practical strategies and problem-solving.

Graduate Research Assistant (GRA) duties

Under direction of the faculty member in charge (major professor), GRAs conduct research related to the faculty member's grant that pays the student's salary and tuition. Tasks include designing and conducting experiments, developing methods, maintaining a functional work environment, analyzing and interpreting data, maintaining lab notes, writing manuscripts, presenting results at scientific meetings, and cooperating with other group members. GRAs are available only through grants to individual faculty members. The GRA salary is intended to offset educational expenses. Research conducted as a GRA may be applied towards thesis research but is not sufficient by itself to fulfill the thesis requirement. Students must adhere to responsible and ethical conduct of research (RCR), and are required to complete RCR training if funded by federal agencies (NSF, NIH, and USDA).

Program of Study

M.S. students must complete 45 graduate credits total (i.e., 500 or 600 level)

- The required 2 courses: MB 513 and GRAD 520 for a total 5 credits during Year 1.
- Thesis credits (MB 503): minimum of 6, maximum of 16 (16 cr. recommended).
- 24 to 34 additional credits from MB listings, or courses relevant to the thesis research offered by other programs IF agreed to by the thesis committee, for a total of 45 credits.
- No more than 9 credits can be "Blanket" credits (course numbers with a zero in the middle). This includes MB 501 Research, MB 505 Reading and Conference, and MB 507 Seminar/Colloquium, but *excludes* MB 503.
- At least 50%, or 23 of the 45 credits, must be graduate stand-alone courses (500/600 level), which are not the 500 component of 400/500 (slash) courses.
- The Microbiology Department requires all graduate students, except in very special circumstances, ***to register for 16 credits every term, except summer, when students register for only 5 credits.*** Maximum permitted load per term is 16 credits.

Graduate Minor

A graduate minor (optional) consists of courses in an academic area that clearly supports the major. Master's program minors must include a minimum of 15 quarter credits of graduate course work. A minor may consist of courses from one field or department. Alternatively, an integrated minor consists of a series of cognate courses from two or more areas. These courses must be outside the major area of concentration, with most of the courses being outside the major department. If your program of study includes a minor, one of your thesis committee members must represent the minor field.

Research requirements

M.S. students must satisfactorily complete a thesis based on their laboratory research. Satisfactory completion of a degree is based on the performance and contribution of the student, as judged by the major professor and the thesis committee, and not on any specific length of time.

M.S. students are required to perform laboratory research each term. **Your thesis research is the most important, and probably the most challenging, part of your educational program. It is to your advantage to commence work on your thesis research as soon as possible.** Research projects take time to develop, and it is often surprising to students how much time and effort it takes to make progress on a lab research project. The sooner you get started on your thesis research, the sooner you will be finished with the most important part of your educational program.

Lab rotations:

Most M.S. student enter into a laboratory with an identified major professor. “Lab Rotations” are rarely offered to MS students because rotations will lengthen the time to degree and departmental funding is limited.

Major professor

After a student is accepted into a research lab, the professor in charge of the research lab is designated the major professor (or thesis advisor). This becomes official when you submit your signed program form to the graduate school (after the Program Meeting; see below). The major professor helps the student decide which courses to take, and helps the student get started with a research project. The major professor advises the student on academic matters, such as the selection of thesis committee members, and is responsible for evaluating the student's performance.

Process for changing major professor

On occasion students inquire about changing their major professor. This change is an important decision and must be done in consultation with other committee members and/or the Department Head. Students have the right to change major professors for several reasons, such as making changes in educational or career directions, or finding that their major professor is unable or unwilling to abide by the responsibilities and obligations as a mentor and advisor. The Graduate School provides a description of the functions and behaviors of faculty mentors. After consulting with the Department Head, students who make the decision to pursue a change in their major professor are responsible for identifying a new faculty mentor willing to serve in this role, as well as potentially reconstituting the thesis committee. This change will almost certainly result in delayed progress towards degree completion. Students must inform the graduate school of these changes.

Thesis committee

After a major professor is selected, the student, in consultation with the major professor, must choose other faculty members to serve on the thesis committee, also called the graduate committee. Master’s students must select 3 additional committee members, including the Graduate Council Representative (2 faculty + 1 GCR).

The thesis committee helps you plan and approves your educational program. The committee members act as your advisors and will meet with you at least yearly to review your progress. The committee reviews your progress annually using the Graduate Student Annual Evaluation form.

Finally, the committee conducts and evaluates your final thesis defense.

Committee members must be members of the Graduate Faculty. If the faculty member is not a member of the Graduate Faculty or is not approved for the role proposed, your major department/program will need to nominate the proposed member to act in those roles using the Nomination to Graduate Faculty form. This process will take at least several weeks and should be initiated well in advance to accommodate Departmental faculty discussions. The Graduate School will evaluate committee structure when they receive your program of study, and again when you schedule your final examination.

Graduate Council Representative

One of your committee members must be a Graduate Council Representative (known as a GCR or Grad Rep). Your GCR represents the OSU Graduate Council and ensures that all rules governing committee procedures are followed. Your GCR must be present at your formal exams, and will be responsible for some of the paperwork that the Graduate School requires. Per Graduate School guidelines, the GCR will also lead your committee's roundtable discussion following your final oral exam. Your GCR must be a graduate faculty member outside your major and minor area.

The GCR is a full voting member of your graduate committee. Many students select a GCR who can also add disciplinary expertise. Select your GCR using the online GCR list generation tool and be sure to allow ample time for this selection process. If you run into difficulty finding a GCR to serve on your committee, you can re-generate the list until you find someone who is willing to serve.

Policy on remote participation

It is generally expected that all committee members or approved substitutes must be present for all formal meetings with the student (e.g. final oral exams). If you have a special case in which a committee member may need to participate remotely, you and your committee must assure that all the conditions for remote participation are met.

Program meeting

You are required to convene a thesis committee meeting, called a program meeting, to plan the courses that you will take for fulfillment of your degree requirements. The Microbiology Department requires that M.S. students hold their first committee meetings and file their approved programs by the end of their second term.

The Program Meeting will cover two areas: the proposed coursework (Program of Study) and the proposed research (Thesis Outline). A Program of Study form will be completed during the meeting. When the student's committee approves the Program of Study, they will sign the form and submit it to the Graduate School. If the student later wishes to change the approved Program of Study, they will need to obtain committee member approval/signatures on the revised program.

Students also prepare and submit to their committee an outline of the thesis project. This outline must be sufficiently detailed to enable the committee to evaluate the progress of the student on a yearly basis.

Submitting your annual evaluation

Each March M.S. students are required to complete the Graduate Student Annual Self-Evaluation. This progress report is submitted for approval to the major professor who will then forward for review by the committee members. Go To: **Graduate Student Annual Evaluation Form**.

Public Presentation requirement

Master's students fulfill their one required presentation at their public defense of their thesis. All students are encouraged to present their work more than the minimum requirement, for example during departmental seminar "Work-In-Progress" presentations.

Thesis

You will record and publish your research in a Thesis. Microbiology M.S. students use the Manuscript Document Format for their theses. This consists of a single document made up of one or more scholarly manuscripts or journal articles addressing a common theme, with an introduction and conclusion. The number of scholarly manuscripts or journal articles in a Master's Thesis is variable and should be discussed and agreed on with your major professor and committee. A two-journal-article thesis would contain the following parts:

- Pretext Pages
- Chapter 1 – General Introduction (common introduction linking all manuscripts thematically)
- Chapter 2 – First Manuscript
- Chapter 3 – Second Manuscript
- Chapter 4 – General Conclusion (common conclusion linking all manuscripts thematically)
- Bibliography (common bibliography covering all chapters, although each manuscript will have its own reference section)
- Appendices – (optional)

The Graduate School has extremely detailed instructions on pretext pages, thesis formatting, submission requirements, and deadlines. **Students should consult these instructions 2 to 3 terms before their planned graduation date.**

Final Oral Examination

M.S. candidates must pass a final oral exam (also called a thesis defense). This exam must comply with the policies and requirements of the Graduate School. The student's Thesis Committee will conduct the final oral examination. The examination committee will consist of members of the Thesis Committee, although substitutions may be made if approved by the Program and the Graduate School.

The student must contact members of the committee to arrange the date, time and place, **then schedule the exam with the Graduate School no fewer than two weeks before the examination**. The Graduate School may not approve your exam, thus delaying your graduation, if you submit the form late. One copy of the pre-text pages of the thesis must be submitted to the Graduate School when scheduling the exam. Examination copies must be distributed to **all** committee members two weeks prior to the examination. All members of the graduate committee should be physically present at the exam (for exceptions, see the Remote Participation requirements).

Examinations are generally scheduled for two hours. The first part of the exam is the thesis presentation portion (seminar), which is open to all interested parties, and the student should work with Amy Timshel to develop a flyer to advertise this. After the thesis seminar and questions

from the general audience, the committee and student will continue in closed session to examine the thesis and its broader relationship to microbiology.

The decision on the outcome of the exam will be based on two Rubric Forms (Assessment rubric MS-PhD, Ethics GLO3 rubric) provided by the student and the major professor for the M.S. thesis defense. After the major professor explains how the guide will be used, each graduate committee member will be asked to use the form in documenting their assessment of the student. At the conclusion of the exam the committee will discuss the student's performance (per the Rubric). The major professor will collect the completed forms for filing in the Microbiology Office.

No more than one re-examination is permitted. Students that change their minds or are unable to complete a masters, or fail their final defense may be able to obtain a Non-thesis Masters degree (see Non-thesis Masters section).

X. Master's Degree through the Accelerated Masters Program (AMP)

The AMP defined

The Accelerated Master's Platform (or Program) (AMP) enables highly motivated Oregon State University undergraduate students to enroll in a graduate master's program while finishing their undergraduate degree. Students apply to the program in their junior year and take graduate level classes (up to 22 credits) in their senior year. These credits are applied to both the undergraduate and graduate programs, enabling a seamless transition to graduate school and, with careful planning, completion of the master's program within 4 terms of completing their undergraduate degree. To be admitted to the AMP, a faculty member must agree to serve as your major professor. This is usually a faculty member with whom you have already begun research as an undergraduate.

Learning outcomes/competencies

Students completing a Microbiology AMP degree will be able to:

1. Conduct research or produce some other form of creative work.
2. Demonstrate mastery of subject material.
3. Conduct scholarly or professional activities in an ethical manner.
4. Communicate research findings orally to a scientific audience
5. Communicate research findings in a written thesis to a scientific audience.

Proposed Timeline and Time to completion

It is primarily the student's motivation and dedication that determines productivity and progress in the program. AMP students are normally expected to complete their graduate programs within 1-2 years after completing their Microbiology BS degree.

1. **Junior year**: approach and get approval from a faculty member to conduct research in their lab as part of your AMP degree program. Apply to the graduate school for the AMP using a code provided by the Graduate Admissions Chair.
2. **Senior Year**: **conduct research** under advising faculty on topic that will form the basis of your thesis
3. **Senior Year**: take up to 22 credits of course work at graduate level (500 level) that will be applied to both your bachelor's and your AMP Master's degree.
4. First year as a graduate student: take required **MB and GRAD courses** and **additional graduate courses germane to your work (500 and 600)** and approved by your thesis committee**.**
5. End of first term as a graduate student: form a **thesis committee** (graduate committee), hold a Program Meeting, and have **Program of Study** form approved.
6. During first year as a graduate student: conduct thesis research and write thesis document
7. End of first year as a graduate student: pass final oral examination to complete degree

Appointment types

AMP students are not eligible for GTA positions but may receive GRA support from their major professor's funds; other students are self-funded. If you receive a GRA appointment, please read the GRA information in the Master's Degree section.

Program of Study

AMP students must complete 45 graduate credits total (i.e., 500 or 600 level)

- Up to 22 graduate coursework credits taken as an undergraduate (e.g., register for the 500 level of a 400/500 slash course)
- The required 2 courses: MB 513 and GRAD 520 for a total of 5 credits during Year 1.
- 12 Thesis credits (MB 503)
- Additional coursework credits taken in the first year of graduate school (second year in program), consisting of MB listings, or courses offered by other programs and relevant to the thesis research, IF agreed to by the thesis committee.
- No more than 9 credits can be "Blanket" credits (course numbers with a zero in the middle). This includes MB 501 Research, MB 505 Reading and Conference, and MB 507 Seminar/Colloquium, but excludes MB 503.
- At least 50%, or 23 of the 45 credits, must be graduate stand-alone courses (500/600 level) that are not derived from the 500 component of 400/500 courses.
- Maximum permitted load per term is 16 credits.

Research Requirements

AMP students must satisfactorily complete a thesis based on their laboratory research. Satisfactory completion of a degree is based on the performance and contribution of the student, as judged by the major professor and the thesis committee, and not on any specific length of time.

AMP students are required to perform laboratory research each term. **Your thesis research is the most important, and probably the most challenging, part of your educational program. It is to your advantage to commence work on your thesis research as soon as possible.** Research projects take time to develop, and it is often surprising to students how much time and effort it takes to make progress on a lab research project.

Major professor

After a student is accepted into a research lab, the professor in charge of the research lab is designated the major professor (or thesis advisor). This becomes official when you submit your signed program form to the graduate school (after the Program Meeting; see below). The major professor helps the student decide which courses to take, and helps the student get started with a research project. The major professor advises the student on academic matters, such as the selection of thesis committee members, and is responsible for evaluating the student's performance.

Process for changing major professor

Students have the right to change major professors for several reasons, such as making changes in educational or career directions, or finding that their major professor is consistently unable or unwilling to abide by the responsibilities and obligations as a mentor and advisor. The Graduate School provides a description of the functions and behaviors of faculty mentors. Students who choose to pursue a change in their major professors are responsible for identifying a new faculty member willing to serve in this role, as well as potentially reconstituting the thesis committee. Students must inform the graduate school of these changes.

Thesis committee

After a major professor is selected, the student, in consultation with the major professor, must choose other faculty members to serve on the thesis committee, also called the graduate committee. AMP students must select 3 additional committee members including a Graduate

Council Representative (2 faculty + 1 GCR). You should do this in your first term as a graduate student.

The thesis committee helps you plan and approves your educational program. The committee members act as your advisors, and will meet with you at least yearly to review your progress. Finally, the committee conducts and evaluates your final thesis defense.

Committee members must be members of the Graduate Faculty. If the faculty member is not a member of the Graduate Faculty or is not approved for the role proposed, your major department/program will need to nominate the proposed member to act in those roles using the Nomination to Graduate Faculty form. This process will take at least several weeks and should be initiated accordingly. The Graduate School will evaluate committee structure when your program of study is received by the Graduate School and when you schedule your final examination.

Graduate Council Representative

One of your committee members must be a Graduate Council Representative (known as a GCR or Grad Rep). Your GCR represents the OSU Graduate Council and ensures that all rules governing committee procedures are followed. Your GCR must be present at your formal exams, and will be responsible for some of the paperwork that the Graduate School requires. Per Graduate School guidelines, the GCR will also lead your committee's roundtable discussion following your final oral exam. Your GCR must be a graduate faculty member outside your major and minor area.

The GCR is a full voting member of your graduate committee. Many students select a GCR who can also add disciplinary expertise. Select your GCR using the online GCR list generation tool and be sure to allow ample time for this selection process. If you run into difficulty finding a GCR to serve on your committee, you can re-generate the list until you find someone who is willing to serve.

Policy on remote participation

It is generally expected that all committee members or approved substitutes must be present for all formal meetings with the student (e.g. final oral exams). If you have a special case in which a committee member may need to participate remotely, you and your committee must assure that all the conditions for remote participation are met.

Program meeting

You are required to convene a thesis committee meeting, called a program meeting, to plan the courses that you will take for fulfillment of your degree requirements. The Microbiology Department requires that AMP students hold their program meeting and file their approved programs by the end of their first term as a graduate student.

The Program Meeting will cover two areas: the proposed coursework (Program of Study) and the proposed research (Thesis Outline). A Program of Study form will be completed during the meeting. When the student's committee approves the Program of Study, they will sign the form and submit it to the Graduate School. If the student later wishes to change the approved Program of Study, they will need to hold another committee meeting and obtain committee member signatures on the revised program.

Students also prepare and submit to their committee an outline of the thesis project. This outline must be sufficiently detailed to enable the committee to evaluate the progress of the student on a yearly basis.

Submitting your annual evaluation

Each March AMP students are required to complete the Graduate Student Annual Self-Evaluation. This progress report is submitted for approval to the major professor who will then forward for review by the committee members. Go to: **Graduate Student Annual Self-Evaluation**.

Public Presentation Requirement

AMP students fulfill their one required presentation at their public defense of their thesis. All students are encouraged to present their work more than the minimum requirement, for example during the departmental seminar "Work-in-Progress" presentations.

Thesis

You will record and publish your research in a Thesis. Microbiology M.S. students use the Manuscript Document Format for their theses. This consists of a single document made up of one or more scholarly manuscripts or journal articles addressing a common theme, with an introduction and conclusion. The number of scholarly manuscripts or journal articles in an AMP Thesis is variable and should be discussed and agreed on with your major professor and committee. A one-journal-article thesis would contain the following parts:

- Pretext Pages
- Chapter 1 – General Introduction (common introduction linking all manuscripts thematically)
- Chapter 2 – Manuscript
- Chapter 3 – General Conclusion (common conclusion linking all manuscripts thematically)
- Bibliography (common bibliography covering all chapters, although each manuscript will have its own reference section)
- Appendices – (optional)

The Graduate School has extremely detailed instructions on pretext pages, thesis formatting, submission requirements, and deadlines. **Students should consult these instructions 2 to 3 terms before their planned graduation date.**

Final Oral Examination

AMP candidates must pass a final oral exam (also called a thesis defense). This exam must comply with the policies and requirements of the Graduate School. The student's Thesis Committee will conduct the final oral examination. The examination committee will consist of members of the Thesis Committee, although substitutions may be made if approved by the Program and the Graduate School.

The student must contact members of the committee to arrange the date, time, and place, **then schedule the exam with the Graduate School no fewer than two weeks before the examination**. The Graduate School may not approve your exam, thus delaying your graduation, if you submit the form late. One copy of the pre-text pages of the thesis must be submitted to the Graduate School when scheduling the exam. Examination copies must be distributed to **all** committee members two weeks prior to the examination. All members of the graduate

committee should be physically present at the exam (for exceptions, see the Remote Participation requirements).

The first part of the exam is the thesis presentation portion (seminar), which is open to all interested parties. After the thesis seminar and questions from the general audience, the committee and student will continue in closed session to examine the thesis and its broader relationship to microbiology.

The decision on the outcome of the exam will be based on two Rubric Forms (Assessment rubric MS-PhD, Ethics GLO3 rubric) provided by the student and the major professor for the M.S. thesis defense. After the major professor explains how the guide will be used, each graduate committee member will be asked to use the form in documenting their assessment of the student. At the conclusion of the exam the committee will discuss the student's performance (per the Rubric). The major professor will collect the completed forms for filing in the Microbiology Office.

No more than one re-examination is permitted. Students that change their minds or are unable to complete a masters, or fail their final defense may be able to obtain a Non-thesis Masters degree (see Non-thesis Masters section).

XI. The Non-thesis Masters Program (NTM)

The NTM defined

Learning outcomes/competencies

Students completing a Microbiology NTM degree will be able to:

1. Conduct research or produce some other form of creative work.
2. Demonstrate mastery of subject material.
3. Conduct scholarly or professional activities in an ethical manner.
4. Communicate research findings orally and in writing to a scientific audience

Appointment Types

NTM students are usually self-funded; some may have other sources of funding such as government or industry scholarships. NTM students are not appointed as Graduate Assistants or Teaching Assistants.

Time to completion

It is primarily the student's dedication that determines productivity and progress in the program. The NTM program can be completed in one year, but most complete their NTM degree within 2-3 years (due to extra-curricular time-demands), beginning with their first quarter at Oregon State University.

1. End of first (ideally) or second term identify your NTM advisor, and have program of study reviewed and approved
2. Meet at least once each term with your NTM advisor to evaluate your progress.
3. First and second year: complete coursework on Program of Study.
4. Each March complete the Graduate Student Annual Self-Evaluation. This progress report is submitted for approval to the major professor who will then forward for review by the committee members. Go To: **Graduate Student Annual Self-Evaluation**.
5. End of first year, or second or possible third year: Complete Capstone Project report requirement
6.. End of first year, or second or possible third year: Present Capstone Project findings and hold a final meeting.

Program of Study

NTM students must complete 45 graduate credits total (i.e., 500 or 600 level)

- The required 2 courses: MB 513 and GRAD 520 for a total of 5 credits during Year 1.
- Completion of MB 520, MB 534, MB 556.
- Completion of an additional 25 credits of course electives approved by your NTM advisor.
- NTM students may choose the Microbiome Analytics track or the BioHealth Sciences track (https://catalog.oregonstate.edu/college-departments/science/school-life-sciences/microbiology/microbiology-ma-ms-phd/#requirementstext), or NTM students may choose to create their own program of study to best serve their interests.
- At least 3 credits and no more than 12 credits of MB 506 Special Projects (Capstone/Professional Skills)
- Completion of 31 additional credits from MB listings, or courses relevant to the student's program offered by other programs IF agreed to by your NTM advisor, for a total of 45 credits.

- No more that 9 credits can be "Blanket" credits (course numbers with a zero in the middle). This includes MB 506 Special Projects (Capstone/Professional Skills), MB 505 Reading and Conference.
- At least 50%, or 23 of the 45 credits, must be graduate stand-alone courses (500/600 level), which are not the 500 component of 400/500 (slash) courses.
- Maximum permitted load per term is 16 credits.

Capstone Project

NTM students must satisfactorily complete a Capstone Project which can be tailored to suit the students individual career goals. Examples of Capstone Projects include a comprehensive literature review on an approved topic, laboratory research that is presented in full report form (Introduction, Methods, Results, Discussion), data analysis using existing bioinformatic, metabolomic, or other microbiological data presented in full report form. Other Capstone Projects may be acceptable and should be discussed and overseen by the student's NTM advisor. Satisfactory completion of the NTM degree is based on the performance and contribution of the student, as judged by the major professor and the non-thesis committee and not on the length of time the student has been in the NTM program. Students should work with their NTM advisor early in their program to coordinate their Capstone experience. The Capstone Project will be evaluated based on the written report and final presentation.

Final Exam Presentation or Meeting

NTM candidates must pass a final oral exam. This exam must comply with the policies and requirements of the Graduate School. The student's Committee consisting of their faculty advisor and one additional faculty member, for example a professor who taught a course the student took as part of their NTM program (no Graduate Council Representative is needed) will conduct the final oral examination.

The student must contact their committee members to arrange the date, time, and place, then schedule the exam with the Graduate School no fewer than two weeks before the examination. The Graduate School may not approve your exam, thus delaying your graduation, if you submit the form late.

Members of the graduate committee should be physically present at the exam (for exceptions, see the Remote Participation requirements).

The first part of the exam is the presentation portion (seminar), which can be open to all interested parties. The student will give an oral presentation on their Capstone Project (expected 25-45 min). After the presentation and questions from the general audience, the committee and student will continue in closed session to review the Capstone Project and its broader relationship to microbiology, which allows the committee to evaluate the student's general knowledge in microbiology.

The decision on the outcome of the exam will be based on two Rubric Forms (Assessment rubric NTMS, Ethics GLO3 rubric) provided by the student for the exam. After the Faculty Advisor explains how the guide will be used, each committee member will be asked to use the form in documenting their assessment of the student's performance. At the conclusion of the exam the committee will discuss the student's performance (per the Rubric). The Faculty Advisor will collect the completed forms for filing in the Microbiology Office. No more than one re-examination is permitted.

XII. Course loads, continuous enrollment leave, breaks, grades

The OSU Schedule of Classes, available online, contains academic regulations, registration procedures and the final examination week schedule. The online catalog is the source for up-to-date changes for the current and immediately upcoming term. It is your responsibility to register for the appropriate number of credits that may be required for any funding eligibility and/or to meet the requirements of the continuous enrollment policy. Problems arising from registration procedures, such as late registration, adding or withdrawing from courses after deadlines, or late changes from letter or S/U grading are resolved through a petition for change in registration filed with the Graduate School. A late registration fee may be applied.

Minimum Course Loads

The Registrar and the Graduate School consider you to be a "full-time" graduate student if you are registered for 9 credits in a given academic term, but the **Microbiology Department requires all Ph.D and MS students to enroll in 16 credits** during fall, winter, and spring quarters. Most graduate students in Microbiology are generally full-time students. NTM students may not be full-time students.

Graduate students who use facilities or faculty/staff time during summer session are required to register for a minimum of 5 credits during the summer session. Students defending in the summer term are required to register for a minimum of 5 graduate credits.

You are considered a "part-time" graduate student if you enroll in less than nine credits. If you are a degree-seeking student, you must be registered for a minimum of three graduate credits in any term you are enrolled and access *any* university resources, including terms in which you take any required exams or give the final defense.

Students are responsible for staying current on course load requirements that may supersede the Graduate School requirements (i.e., international, financial aid, veterans).

Continuous Graduate Enrollment

All graduate students enrolled in a degree program must register continuously for a minimum of 3 graduate credits each term (fall, winter, and spring terms) until all degree requirements are met, regardless of student's location. Students on approved leave are exempt from the continuous enrollment policy for the term(s) they are on leave.

Students may appeal the provisions of the continuous graduate enrollment policy if extraordinary circumstances arise, by submitting a detailed request in writing to the Dean of the Graduate School. Scheduling difficulties related to the preliminary oral exam or the final oral exam are not considered an extraordinary circumstance.

Graduate assistantship eligibility requires enrollment levels that supersede those contained in this continuous enrollment policy. Various agencies and offices maintain their own registration requirements that also may exceed those specified by this continuous enrollment policy (e.g., those of the Veterans Administration, Immigration and Naturalization Service for international students, and those required for federal financial aid programs.) Therefore, it is the student's responsibility to register for the appropriate number of credits that may be required for funding

eligibility and/or compliance as outlined by specific agency regulations under which they are governed.

Leave of Absence

Leave of Absence status is available to eligible students who need to suspend their program of study for good cause. The time the student spends on approved leave will be included in any time limits prescribed by the university relevant to degree completion. Students on approved leave may not: a) use any university facilities, b) make demands upon faculty time, c) receive a fellowship or financial aid, or d) take course work of any kind at Oregon State University. Leave of Absence/Intent to Resume Graduate Study Forms must be received by the Graduate School at least 15 working days prior to the first day of the term involved. Family Medical Leave Act (FMLA) may be granted at any point during a term.

Unauthorized Break in Registration

Degree seeking graduate students who take an unauthorized break in registration relinquish graduate standing at the University.

To have graduate standing reinstated after an unauthorized break, students are required to reapply to their program (complete the online graduate admission application and pay the application fee). It is advisable that students in this situation state that they are applying for readmission in the application packet. A reapplication does not ensure admittance to the program.

Grade Requirements

A grade-point average of 3.00 is required: 1) for all courses taken as a degree-seeking graduate student, and 2) for courses included in the graduate degree or graduate certificate program of study. Grades below C (2.00) cannot be used on a graduate program of study. A grade-point average of 3.00 is required before the final oral or written exam may be undertaken. Enforced graduate-level prerequisite courses must be completed with a minimum grade of C.

Incomplete Grades

An "I" (incomplete) grade is granted only at the discretion of the instructor. The incomplete that is filed by the instructor at the end of the term must include an alternate/default grade to which the incomplete grade defaults at the end of the specified time period. The time allocated to complete the required tasks for the course may be extended by petition to the University Academic Requirements Committee. You can obtain the form from the Registrar's Office. It is the student's responsibility to see that "I" grades are removed within the allotted time.

Student Records

Both federal and state laws permit Oregon State University staff to release directory information (e.g. name, address, degree program, birth date) to the general public without your consent. You can prohibit the release of directory information to the public by signing the Confidentiality Restriction form available from the Registrar's Office. It will not prohibit the release of directory information to entities of Oregon State University that have a "need to know" to accomplish their required tasks. It further will not prohibit Oregon State University departments from including your name on mailing lists for distribution of materials that are essential to your enrollment at Oregon State University.

XIII. Grievance Procedures

All students desiring to appeal matters relating to their graduate degree should follow the Grievance Procedures for Graduate Students. Graduate assistants, whose terms and conditions of employment are prescribed by the collective bargaining agreement between OSU and the Coalition of Graduate Employees, American Federation of Teachers Local 6069, should also refer to that document and seek guidance from OSU's Office of Human Resources.

XIV. Student Conduct and Community Standards

Graduate students enrolled at Oregon State University are expected to conform to basic regulations and policies developed to govern the behavior of students as members of the university community. The Office of Student Conduct and Community Standards (SCCS) is the central coordinating office for student conduct-related matters at Oregon State University.

Choosing to join the Oregon State University community obligates each member to a code of responsible behavior which is outlined in the Student Conduct Code. The assumption upon which this Code is based is that all persons must treat one another with dignity and respect in order for scholarship to thrive.

Violations of the regulations subject a student to appropriate disciplinary action.

Academic Dishonesty

Academic Dishonesty is defined as an act of deception in which a student seeks to claim credit for the work or effort of another person, or uses unauthorized materials or fabricated information in any academic work or research, either through the Student's own efforts or the efforts of another. It includes:

- CHEATING — use or attempted use of unauthorized materials, information or study aids, or an act of deceit by which a Student attempts to misrepresent mastery of academic effort or information. This includes but is not limited to unauthorized copying or collaboration on a test or assignment, using prohibited materials and texts, any misuse of an electronic device, or using any deceptive means to gain academic credit.
- FABRICATION — falsification or invention of any information including but not limited to falsifying research, inventing or exaggerating data, or listing incorrect or fictitious references.
- ASSISTING — helping another commit an act of academic dishonesty. This includes but is not limited to paying or bribing someone to acquire a test or assignment, changing someone's grades or academic records, taking a test/doing an assignment for someone else by any means, including misuse of an electronic device. It is a violation of Oregon state law to create and offer to sell part or all of an educational assignment to another person (ORS 165.114).
- TAMPERING — altering or interfering with evaluation instruments or documents
- PLAGIARISM — representing the words or ideas of another person or presenting someone else's words, ideas, artistry or data as one's own, or using one's own previously submitted work. Plagiarism includes but is not limited to copying another person's work (including unpublished material) without appropriate referencing, presenting someone else's opinions and theories as one's own, or working jointly on a project and then submitting it as one's own.

Academic Dishonesty cases are handled initially by the academic units, following the process outlined in the University's Academic Dishonesty Report Form, and will also be referred to SCCS for action under these rules.

XV. Office of Equal Opportunity and Access

The OSU Office of Equal Opportunity and Access (EOA) is responsible for overseeing compliance with civil rights and affirmative action laws, regulations, and policies, to ensure equitable and inclusive environments for all Oregon State University community members. EOA serves as the University's Title IX and Americans with Disabilities Act/Section 504 coordinating office.

EOA defines sexual harassment as the following:

- Unwelcome* sexual advances, requests for sexual favors and other verbal or physical conduct of a sexual nature when:
- Submission to such conduct is made either explicitly or implicitly a term or condition of an individual's employment or education;
- Submission to or reject of such conduct by an individual is used as the basis for employment of education –related decisions affecting such an individual; or
- Such conduct is sufficiently severe or pervasive that is has the effect, intended or unintended, of unreasonably interfering with an individual's work or academic performance because it has created an intimidating, hostile, or offensive environment and would have such an effect on a reasonable person of that individual's status.

**Employee conduct directed towards a student – whether unwelcome or welcome – can constitute sexual harassment under OAR.*

There are two confidential resources to discuss reporting options: Center Against Rape and Domestic Violence (CARDV) provides 24/7 confidential crisis response at 541-754-0110 or 800-927-0197, and OSU Sexual Assault Support Services is available weekdays at 541-737-7604.

XVI. Funding Your Graduate Education

Consult the Graduate School web pages for complete listings.

Program/department specific funding opportunities (GTA, GRA, fellowships, awards, travel grants, etc.)

Graduate Scholarships and Fellowships: the student is responsible for checking for eligibility, as some of these are limited and specific. Specifically, AMP and NTM students are not eligible for most awards.

- Application for Department of Microbiology scholarships/fellowships requires the submission of two letters of recommendation in addition to the Microbiology Graduate Scholarship/Fellowship Application.
- Scholarships are awarded annually on a competitive basis, with typical awards of $500-$2,000. Eligibility varies depending on the particular award, and the number of awards given each year is dependent upon funding.

- Fellowships are awarded on a competitive and/or a needs basis. Typical awards cover a stipend for one to three terms with tuition remission. Department of Microbiology scholarships and fellowships are made possible by donations provided by alumni, faculty members, and other donors.
  APPLICATION DEADLINES – variable: January-April, 2023

Individual departmental scholarship fellowships

- **Margaret & Charles Black Scholarship:** The Margaret and Charles Black Scholarship Fund provides an annual scholarship award to an Oregon State University graduate student in microbiology who has demonstrated excellence in their graduate studies. Nominees must be Microbiology graduate students with a distinguished record of academic performance. (Cash award given when available.)
- **John L. Fryer Fellowship:** The friends and family of John L. Fryer have established the John L. Fryer Fellowship Fund to honor and recognize Dr. Fryer's scholarship and the years he dedicated to the study of infectious diseases of fish. The purpose of the John L. Fryer Fellowship will be to provide support to graduate student(s) at OSU involved in research on the infectious diseases of fish (finfish or shellfish) (Stipend & tuition or cash award). January 2023 date to be determined
- **Dick & Toshi Morita Scholarship:** Nominees must be Microbiology graduate students. Recipients must meet the following criteria: graduate student; microbiology major/focus; and demonstrates financial need. The nomination should document the student's academic record and other scholarly accomplishments. The application should include at least two letters of recommendation from faculty. (Cash award given when available.)
- **Joan Countryman Suit Scholarship:** Established by Joan Countryman Suit. Covers summer fellowships for Microbiology Graduate students. (when available).
- **Sheila van Zandt Scholarship:** Deadline March 1. The intent of this award is to promote collaboration between a graduate student and undergraduate student. Application is by a graduate/undergraduate pair separate from other Department of Microbiology scholarships. This scholarship is for an undergraduate/graduate student pair with one proposal submitted between the two of them. The award is for $1800 (with a requirement of matching funds from the lab). The students give a presentation at the spring symposium (or an acceptable alternative)
- **Harriet M. Winton Scholarship:** This scholarship was established by Mrs. Harriet Winton in appreciation to Dr. J.L. Fryer for assisting in graduating her son, Dr. James R. Winton, in the study of Diseases of Pacific Salmon from the Department of Microbiology. This award will go to a microbiology graduate student in the study of diseases of fish. Financial need will be considered. (Cash award).

Departmental fellowships requiring faculty nomination

- **Oregon Department of Fish & Wildlife Fish Health Graduate Research Fellowship:** Provides graduate level training on a project that is relevant to the health of non-aquarium fish. This fellowship will support a graduate student conducting research towards an MS or Ph.D. in Microbiology or under the mentorship of a Microbiology professor at Oregon State University, with the intention of training towards and encouraging a career in fish health studies relevant to the wild fish popularities of Oregon.
- **Middlekauf Outstanding Graduate Teaching & Service in Microbiology:** Established by Ruth M. Tyson to honor the memory of her brother and to aid students in bacteriology. Mark Middlekauf received his degree in bacteriology from OSU in 1916, served in the Army during

World War I and lost his life in France during that conflict.

- **Middlekauf Graduate Achievement in Microbiology:** Established by Ruth M. Tyson to honor the memory of her brother and to aid students in bacteriology. Mark Middlekauf received his degree in bacteriology from OSU in 1916, served in the Army during World War I and lost his life in France during that conflict.
- **Nicholas R. Tartar Graduate Student Fellowship:** Established by N.R. Tartar, M.D., a long-time friend of the early faculty in Microbiology. Awards are to go to qualified graduate students that meet residency requirements and are majors in the Department of Microbiology.

Fellowships outside the department

- **Charles Eckelman Scholarship:** Established by Mrs. Clara Marie Eckelman at the time of her husband's death. This is used to help students at OSU who are in a science beneficial to the dairy industry. Scholarship recipients must be enrolled in the College of Agricultural Sciences or in the Department of Microbiology with an emphasis on dairy industry. Qualified applicants in the following majors will be considered: Animal Sciences, Agricultural Business Management, Agricultural and Resource Economics, Food Science and Technology and Microbiology (through the Agriculture Research Foundation). (Nominated by the department).
- **MacVicar Animal Health Scholar Award:** The College of Veterinary Medicine, Biochemistry and Biophysics, and Microbiology Dean/Chair are serving as members of a committee to select a senior graduate student whose research is primarily concerned with animal health and welfare in its broadest sense and is interdisciplinary in approach, or a veterinarian in a residency program at OSU that includes research at the master's or doctoral level as part of the training program. Robert MacVicar was a past president of Oregon State University, and he and his wife, Clarice, had a strong interest in the health and welfare of animals. As a result, they established a fund to support research at OSU that impacts animal health and welfare in its broadest sense, that is interdisciplinary in its approach and represented by the areas of microbiology, biochemistry, and veterinary medicine. The award will be made as a $5000 stipend, with an additional $1000 for laboratory supplies and/or travel. Nominations of candidates should be made by faculty through their department chairs/heads. (Nominated by the department).
- In addition to departmental awards, scholarships, fellowships and assistantships are available through:
  College of Agricultural Sciences Scholarships/Fellowships
  College of Science Scholarships/Fellowships
  Graduate School Scholarships/Fellowships
  Student Financial Aid office provides information on general OSU scholarships and other financial assistance.

Addendum I: Scoring rubrics for Ph.D. preliminary proposal and oral exam, M.S. and Ph.D. defenses

Ph.D. Preliminary Exam Proposal Assessment Rubric

Criteria	**Unsatisfactory (1)**	**Satisfactory (3)**	**Exemplary (5)**	**Score**
1. Research sufficiently outside of student's research focus	Research topic is on the same system, similar study design, and similar methods to thesis research project.	Research topic is on a different system using a similar study design or methods, or on the same system asking new questions	Everything is new	
2. Research Hypothesis and Objectives	Research problem not clearly stated, or statement not hypothesis driven; Research plan not fully considered; Measurable outcomes not described.	Research problem clearly stated and hypotheses identified; Research plan adequately considered; Measurable outcomes described.	Research problem well described, hypotheses clear, and potential impact in the field defined; Research plan fully considered; Measurable outcomes and their significance discussed.	
3. Demonstrates a Creative Solution to the Problem	Proposed concept is well known, previously described in technical literature, or is impossible/illogical	Proposed work is original and possible but derivative/incremental in nature	Proposed work is original, practical and demonstrates a novel approach.	
4. Expected results	Methods for analysis or interpretation of research not described; Lack of awareness of assumptions and limitations.	Methods for analysis and interpretation of research results/data adequate; Major assumptions clearly stated	Methods for analysis and interpretation of research results/data effectively; Potential technical problems or unexpected results appropriately addressed. All assumptions clearly stated	
5. *FOR Oral EXAM only*: Quality of Oral Communication	Disorganized presentation with low original content; Poor communication skills; Answers to questions show weakness in depth of knowledge in subject matter and/or poor critical thinking skills.	Adequately organized presentation where concepts flow logically; Adequate communication skills; Answers show adequate knowledge in subject area and adequate critical thinking skills.	Highly engaging conference quality presentation; Excellent communication skills; Answers show superior knowledge in subject area and well-developed critical thinking.	

Assessment rubric MS and PhD Graduate Learning Outcomes

Criteria	Unsatisfactory (1)	Satisfactory (3)	Exemplary (5)	Score
1. Explain the gap in microbiological knowledge that your research addresses	Information presented in a disconnected manner and not clearly tied to the research. Little or no background discussed.	Information is organized by related themes. Some redundancy or ideas vaguely linked. Literature review leads to objectives of research.	Information clearly synthesized into themes. Themes seamlessly flow into research focus and objectives.	
2. Create a solution to the perceived gap or need	Solution/approach is outdated or could be reasonable replaced with more quantitative technology. Solution is not feasible or illogical. Research plan is incomplete	Proposed work is original and feasible but derivative/incremental. Research plan adequately considered; Measurable outcomes described.	Proposed work is original, practical and novel. Research plan is thoughtful with clear measurable outcomes.	
3. Use of quantitative reasoning	Analysis or interpretation of research incorrect or not thorough; Lack of awareness of assumptions and limitations; Low level of critical thinking	Analyzed and interpreted research results/data adequately; Major assumptions clearly stated; Adequate critical thinking displayed.	Analyzed and interpreted research results/data effectively; Responded to technical problems or unexpected results appropriately. Major assumptions clearly stated. Superior critical evaluation of results.	
4. Written dissertation Communicate research findings and their significance to science	Disorganized presentation with little originality; Unable to explain complex ideas and relevance to science.	Organized presentation with logical flow; Complex ideas and their broader implications adequately explained.	Highly engaging presentation; Complex ideas explained and clearly framed in the context of advancing the field of microbiology.	
5. Oral public presentation Communicate research findings and their significance to science	Disorganized presentation with little originality; Unable to explain complex ideas and relevance to science.	Organized presentation with logical flow; Complex ideas and their broader implications to science adequately explained.	Highly engaging presentation; Complex ideas explained and clearly framed in the context of advancing science.	

Assessment rubric MS (Non-thesis) Graduate Student Learning Outcomes

Criteria	Unsatisfactory (1)	Satisfactory (3)	Exemplary (5)	Score
1. Explain the gap in microbiological knowledge that your capstone project addresses	Information presented in a disconnected manner and not clearly tied to the research. Little or no background discussed.	Information is organized by related themes. Some redundancy or ideas vaguely linked. Adequate literature review leads to knowledge gaps.	Information clearly synthesized into themes. Themes seamlessly flow into knowledge gaps and potential approaches to fill those gaps.	
2. Use of quantitative reasoning	Analysis or interpretation of data/information incorrect or not thorough; Lack of awareness of assumptions and limitations; Low level of critical thinking	Analyzed and interpreted data/information adequately; Clear understanding of controls and assumptions; Adequate critical thinking displayed.	Analyzed and interpreted data/information effectively; Controls and assumptions clearly described. Superior critical evaluation of results leading to new ideas.	
3. Written report Communicate capstone project findings and their significance to science	Disorganized report with little originality; Unable to explain complex ideas and relevance to science.	Organized report with logical flow; Complex ideas and their broader implications adequately explained.	Highly engaging report; Complex ideas explained and clearly framed in the context of advancing the field of microbiology.	
4. Oral presentation Communicate capstone project findings and their significance to science	Disorganized presentation with little originality; Unable to explain complex ideas and relevance to science.	Organized presentation with logical flow; Complex ideas and their broader implications to science adequately explained.	Highly engaging presentation; Complex ideas explained and clearly framed in the context of advancing science.	

ALL GRADUATE STUDENT EXAMS MUST INCLUDE THIS EVALUATION: Ph.D., MS, and NTM degree programs

Graduate Learning Outcome 3. Conduct scholarly or professional activities in an ethical manner

Criteria	Unsatisfactory (1)	Satisfactory (3)	Exemplary (5)	Score
Attributions, recognition of prior research and methods	Widely known technical references clearly missing or not germane to the topic at hand	References/citations are used as needed, but some references known to experts in the field may be missing	References are complete and demonstrate thorough review and understanding of the literature and prior work in the field.	
Knowledge of animal care and use (if applicable)	Disregard for regulations and policies of laboratory animal resources.	Basic knowledge of animal use policies.	Deep understanding and appreciation for animal models. Acknowledges pros and cons of animal experimentation.	
Use of human participant data (if applicable)	Little awareness of informed consent process, lax safeguarding of private/confidential information, disregard for participant risk	Adequate knowledge of informed consent process, appropriate safeguarding of private/confidential information, participant risks	Deep knowledge of steps needed to protect privacy and confidentiality of human participant data. Understanding of how data can threaten participant livelihood.	
Responsible conduct of research	Fails to recognize co-author contributions. Lack of awareness given to individuals/groups involved in development and support of research ideas.	Proper credit is given to all co-authors. Recognition of each participant's role(s) in the research product.	Clear and transparent effort to promote knowledge, truth, and avoidance of error. Collaborative work facilitated by trust, accountability, respect and fairness.	

Addendum II: Annual graduate student evaluation

Microbiology Graduate Student Annual Evaluation

Send your completed evaluation to your major advisor. Your advisor and program committee will review your performance over the last year.

1. Student Self-Evaluation (completed by student)

Today's date:

Name of student: Degree sought:

Program start (Month, Year): Total years in program:

Name of Major Advisor: Expected graduation date (Term, Year):

Names and affiliations of Graduate Committee Members:

Name, department	**Role**
	Major advisor
	Graduate Committee Representative
	Committee member
	Committee member
	Committee member
	Committee member

<u>Academic Progress</u>

Overall GPA:

If you have outstanding incomplete grades for any classes, please list the class, term and year the class was taken, and your plans and schedule to address the incomplete.

Were any categories in your previous annual evaluation deemed to need immediate attention (Yes/No)?

If you answered "Yes," discuss how these deficiencies were/are being addressed:

Thesis, Dissertation Research, or Capstone Project

Current proposed title:

Progress to date. Describe the activities you have done to make progress on the following components of your research: a) literature review, b) data collection, c) data analysis or synthesis, d) data interpretation, e) chapter/manuscript/report writing.

(PhD students only) Have you passed the written component of your preliminary exam?

Yes ☐ No ☐

(PhD students only) Have you passed the oral component of your preliminary exam?

Yes ☐ No ☐

(PhD students only) Give the term and Year you completed the exam or plan to take:

(PhD students only) Have you completed your GTA requirement? Yes ☐ No ☐

If you answered "Yes" above, list the Term, Year, Course, Instructor of Record, Your Role for each class you were a GTA.

(PhD students only) If you answered "No," when do you plan to serve as a GTA (Term, year):

(Please discuss serving as a GTA with your major advisor).

Professional Activities and Accomplishments

List the oral and poster presentations given in the past year. Give author list, title, date, conference, and indicate poster or oral presentation.

List any professional conferences you attended in the past year where you did not present.

List any professional conference you plan to attend between now and your planned graduation date.

List any awards you received in the past year. List the source of the award and any monetary funds associated. Include internal scholarships or fellowships from OSU and the Department or Colleges.

List any grants, fellowships, or scholarships that you plan on applying for between now and your planned graduation date.

Describe the stages of your professional publications (give authors, publication date or 'in preparation,' 'submitted,' 'in revision,' the tentative or final title, journal name, and doi, if available.

List any mentoring activities you have done in the past year. Include your mentees' names, departmental affiliation, and mentorship dates.

Service Roles

List any on-campus service roles you have done in the past year. Examples include MGSA leadership, departmental committees, search committees, college and university committees.

List any professional service roles you have done in the past year. Examples include professional society roles, workshop organization and leadership.

List any service roles you are interested in serving during your graduate career.

Outreach

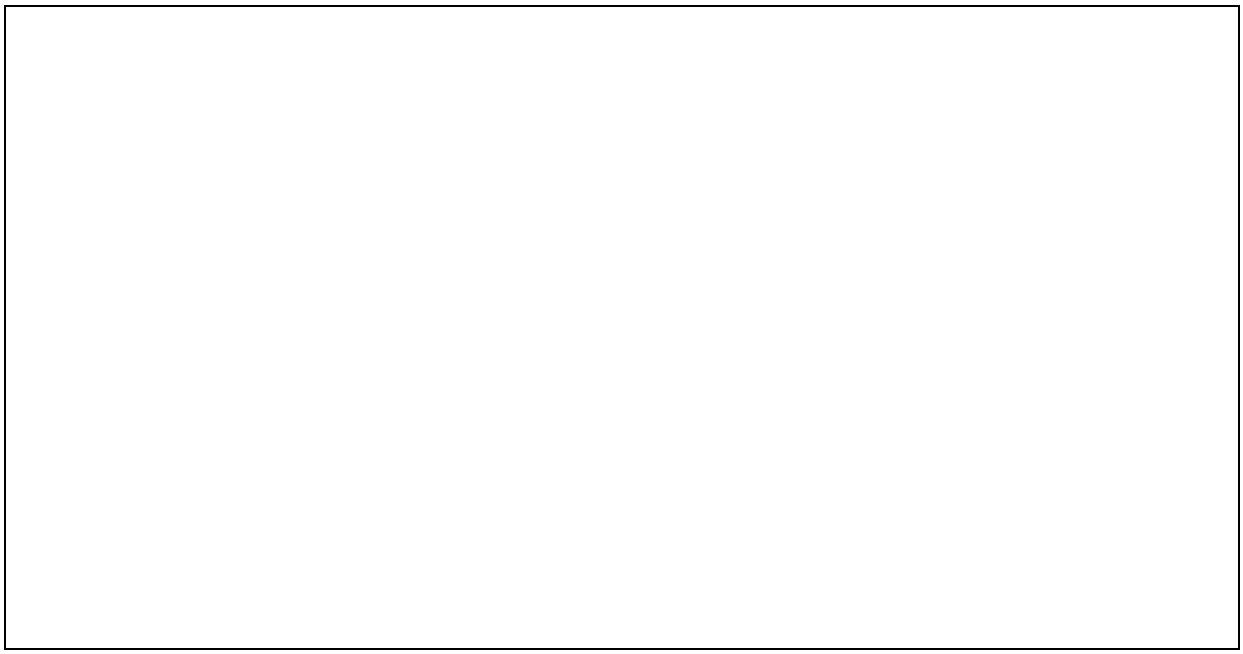
Describe any outreach activities you have participated in during the last year. Include the event, dates, activities, and your role in each outreach activity.

Future Plans and Goals

What is your plan for the next stage of your career? How will this next stage prepare you for your longer-term career goals?

What are your research strengths and weaknesses? To answer this question, consider all aspects of the research enterprise, including research vision and creativity, literature review, research execution, data analysis and interpretation, collaboration, writing, and oral communication.

a) What skills do you need to develop?
b) What resources are needed to do your research?
c) What can you do to develop your skills and obtain the necessary resources?



Microbiology Annual Graduate Student Evaluation

2. **Instructions for Faculty:** Use the student's self-evaluation in combination with your experiences over the past year to evaluate the student's progress. Please submit the completed evaluation to the Graduate Affairs committee chair (Kimberly Halsey, halseyk@oregonstate.edu).

When do you anticipate the student's program completion?

Does this date agree with the student's anticipated completion?

Research and Academic Progress: 5=Outstanding, 4=Above average, 3=Satisfactory, 2=Developing, 1=Needs immediate attention, N/A=Not applicable at this time

Provide brief, descriptive comments for categories as appropriate.

Group meeting participation:	5 ☐	4 ☐	3 ☐	2 ☐	1 ☐	N/A ☐
Writing (proposals, literature review, etc):	5 ☐	4 ☐	3 ☐	2 ☐	1 ☐	N/A ☐
Quality of research/technical skill:	5 ☐	4 ☐	3 ☐	2 ☐	1 ☐	N/A ☐
Productivity:	5 ☐	4 ☐	3 ☐	2 ☐	1 ☐	N/A ☐
Motivation/initiative:	5 ☐	4 ☐	3 ☐	2 ☐	1 ☐	N/A ☐
Attendance:	5 ☐	4 ☐	3 ☐	2 ☐	1 ☐	N/A ☐

Knowledge in research area: 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ N/A ☐

Communication – Oral: 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ N/A ☐

Communication – Written: 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ N/A ☐

Creativity/innovation/problem solving: 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ N/A ☐

Dependability/follow-through: 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ N/A ☐

Laboratory/field safety: 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ N/A ☐

Mentorship (of other students): 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ N/A ☐

Planning, organization, time management: 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ N/A ☐

Teamwork/collaboration: 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ N/A ☐

Ability to receive criticism/praise: 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ N/A ☐

Research progress: 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ N/A ☐

Academic progress: 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ N/A ☐

Has this review been shared with the student? Yes ☐ No ☐

Any additional comments from any **committee members**:

By signing below, the student acknowledges that they have received a copy of this evaluation. The signature does not imply the student agrees with the evaluation.

Signature of Major Advisor: _____

Signature of Student: _____

Committee Signatures: _____ _____

_____ _____ _____