

OSU

**MICROBIOLOGY GRADUATE
PROGRAM HANDBOOK**

2022-23 Academic Year

Updated February 14, 2023

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).

Click on the name of the section in the Table of Contents to navigate to it.

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I. General Introduction

Oregon State University Microbiology Graduate Program provides graduate training leading towards Ph.D., Master's of Science (M.S.), Master's of Science through the Accelerated Master's Program (AMP), and Non-Thesis Masters (N.T.M.) 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 Head Advisor, Department Head, 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. Stephen Giovannoni, Head of the Microbiology Department,
Dr. Jerri Bartholomew, Graduate Affairs Committee Chair, Jerri.Bartholomew@oregonstate.edu
Dr. Rebecca Vega Thurber, Graduate Adviser, Rebecca.Vega-Thurber@oregonstate.edu
Dr. Maude David, Admissions Committee Chair, maude.david@oregonstate.edu

Administrative:

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

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

Teaching labs technician/assistant:

Valerie Elias, Microbiologist, Nash 324 Valerie.Elias@oregonstate.edu

Program website address:

<https://microbiology.edu/>

University Emergency Contacts:

[The Department of Public Safety \(https://publicsafety.oregonstate.edu/\)](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 \(https://oregonstate.edu/alerts/osu-alert-portal\)](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 new student graduate advisor 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 new student graduate advisor. 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 a sequence of core courses. The required core sequence of 5 courses: MB 507 each quarter (starting 2022-2023) 511, 512, 513 and GRAD 520 for a total 10 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 507/607 MICROBIOLOGY SEMINAR SERIES (1cr each quarter): Attendance at monthly departmental seminars is an expectation for all graduate students (time, day and location TBA). Announcements will be sent by e-mail and posted on the bulletin board outside the departmental

office. In addition, we expect students to take this for credit at minimum during their first year and gain experience in presenting and critically evaluating research

MB 511. SCIENTIFIC SKILLS (1 cr). Foundational skills for success in graduate school. Students will also become familiar with ongoing microbiology research programs through attending seminar. [Course Syllabus](#).

MB 512. HIGHLIGHTS OF MICROBIOLOGY (1 cr). Designed for students to gain familiarity with the history of microbiology through reading, reviewing and writing about notable papers in the field. [Course Syllabus](#).

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. [Course Syllabus](#)

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

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 with interest. 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.

CQLS conferences: Each year the Center for Quantitative Life Sciences (CQLS) at OSU hosts two conferences, one in the fall and one in the spring. Seminars are presented by both OSU faculty and scientists from outside OSU. Graduate students and faculty present posters of their work. More info: <http://CQLS.oregonstate.edu/>

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. Conduct original research and contribute to the advancement of knowledge in microbiology.
2. Demonstrate proficiency at using current methods and techniques in microbiological research
3. Communicate research findings to a scientific audience.
4. Exhibit basic skills in teaching microbiology to undergraduate students.

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. Starting in Year 2, submit a signed Annual Progress Report to the Graduate Adviser each year by the end of December.
5. By the end of second or third year: Fulfill the one-term GTA requirement
6. End of second year: Complete preliminary written and oral exam and advance to candidacy
7. First through fifth year: Conduct dissertation research and fulfill public presentation requirement
8. 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 also have a different form of support such as a fellowship or government scholarship, or be self-funded. GA appointments pay salary and tuition. There are two types of GA appointments: **Graduate Teaching Assistants (GTA)** and **Graduate Research Assistants (GRA)**. The typical appointment is at 0.45 FTE (full-time equivalents), which equates to 18 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, 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 core sequence of 5 courses: MB 607 each quarter (starting 2022-2023) 511, 512, 513 and GRAD 520 for a total 10 credits during Year 1.
 - 26 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 7 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 supports 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 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 professor are responsible for identifying a new faculty mentor 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](#). 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. 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 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 hold another committee meeting 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.

Annual meeting with your graduate adviser and submitting your annual report

Starting in their second year, Ph.D. students are required to meet at least once per year with their graduate adviser to discuss their training and academic progress, submit a progress report approved by their major professor, and meet with Dr. Vega Thurber, Lead Graduate Adviser. You must do this in the fall before you can register for winter term classes. Download [PhD Annual Progress Report form](#).

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 with Linda Bruslind well in advance (as much as one year).

Learning Outcomes for the Teaching Requirement

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

- Implement different types of pedagogy, including course structure, assignments/activities, and methods of evaluation.
- Practice relevant instructional tasks related to a science lecture or laboratory or science outreach.
- Effectively communicate science at a level appropriate for the audience.

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. The Graduate Affairs Committee will assess the alternative teaching experience and establish whether the student has achieved the Learning Outcomes.

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, opportunities for poster presentations occur annually at the departmental winter term recruitment and fall CQLS conference.

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).
- 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 (typically 4-6 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.
 - The student must schedule the oral exam within one week 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.
- It 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 Master's degree (see below) or complete a thesis-based Master's degree within 6 months (see Thesis Master's degree section).

Concurrent Non-thesis Master's Degree Option

All students who present their qualifying oral proposal and completed 45 credits of coursework are eligible for the non-thesis master's degree.

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 Jerri Bartholomew, the Graduate Affairs Committee Chair, and Rebecca Vega Thurber, the NTM advisor.
2. Students who are on track to complete the qualifying exam and obtain the NTM concurrent degree should apply for a need to declare/apply to the NTM degree and submit their independent NTM Program of Study at least one term prior to the 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 qualifying exam. The only difference is that students must present their NTM program of study and defend their out of area proposal sequentially.
5. All graded courses are eligible for both degrees, but P/NP classes can only be applied to one degree.
6. Students will have to 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. [These guidelines will help you through the process.](#)

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 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 a [Rubric Form](#) 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.

IX. The Master's Degree (Thesis)

Learning outcomes/competencies

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

1. Conduct original research and contribute to the advancement of knowledge in microbiology.
2. Demonstrate proficiency at using current methods and techniques in microbiological research
3. Communicate research findings to a scientific audience.
4. Exhibit basic skills in teaching microbiology to undergraduate students.

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 committee be formed and this 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 Adviser each year by the end of December.
6. By the end of second year: Fulfill the one-term GTA requirement
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 also 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 0.45 FTE (full-time equivalents), or 18 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 M.S. 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.

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 core sequence of 5 courses: MB 507 each quarter (starting 2022-2023) 511, 512, 513 and GRAD 520 for a total 10 credits during Year 1.
- Thesis credits (MB 503): minimum of 6, maximum of 16 (16 cr. recommended).
- 22 to 32 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. This requirement would be met if taking 16 credits of Thesis, added to the 7-credit core.
- 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. 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 thesis research, the sooner you will be finished with the most important part of your educational program.

Lab rotations:

Most M.S. student will be entering into a particular laboratory with an identified major professor. However, in some circumstances the student may want to do a "Lab Rotation" either to find a lab and major professor or learn a particular technique. Because this adds substantially to the time it will take to complete a Master's Degree, MS students are generally not encouraged to do rotations, or to limit them to one or two terms. For complete information on laboratory rotations, see the appropriate information in the Ph.D. section of this handbook.

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 direction, 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 professor 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](#). Master's students must select 3 additional committee members, including the Graduate Council Representative.

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 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 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.

Annual meeting with your graduate adviser and submitting your annual report

Starting in their second year, M.S. students are required to meet at least once per year with their graduate adviser to discuss their training and academic progress, submit a progress report approved by their major professor, and meet with Dr. Vega Thurber, Lead Graduate Adviser. This must be done in the fall before you can register for winter term classes. Download the [MS Annual Progress Report form](#)

Teaching requirement

M.S. students are required to be teaching assistants for a minimum of one term. This requirement may be fulfilled anytime during their graduate program, with the approval of the Graduate Committee Chairperson. Because it is often difficult to place GRAs in a GTA position, students are advised to coordinate with their Major Professor and Linda Bruslind well in advance (as much as one year).

Learning Outcomes for the teaching requirement

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

- Implement different types of pedagogy, including course structure, assignments/activities, and methods of evaluation.
- Practice relevant instructional tasks related to a science lecture or laboratory, or science outreach.
- Effectively communicate science at a level appropriate for the audience.

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. The Graduate Affairs Committee will assess the alternative teaching experience and establish whether the student has achieved the Learning Outcomes.

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, opportunities for poster presentations occur annually at the departmental winter term recruitment and fall CQLS conference.

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. [These guidelines will help you through the process.](#)

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 the [Rubric Form](#) 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.

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 Master's degree (see Non-thesis Master's section).

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

The AMP defined

The Accelerated Master's Platform (or Program) (AMP) enables highly motivated Oregon State University 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 original research and contribute to the advancement of knowledge in microbiology.
2. Demonstrate proficiency at using current methods and techniques in microbiological research
3. Communicate research findings 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. AMP 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 AMP advisor, Dr. Jerri Bartholomew.
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 core series** 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** 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 TA-ships but may receive GRA support from their major professor's funds; others are self-supporting. 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 core sequence of 5 courses: MB 507 each quarter (starting 2022-2023), 511, 512, 513 and GRAD 520 for a total 10 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.

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

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. 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.

Annual meeting with your graduate adviser and submitting your annual report

Because of the accelerated nature of this program, students should have completed their final oral examination by the end of their first year or start of their second year as a graduate student. If a student is unable to finish by the fall term of their second year, they are required to meet with their graduate adviser to discuss their academic progress, submit a progress report approved by their major professor, and meet with Dr. Jerri Bartholomew, the AMP Adviser. This must be done in the fall before you can register for winter term classes. Download the [MS Annual Progress Report form](#)

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, opportunities for poster presentations occur annually at the departmental winter term recruitment and fall CQLS conference.

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 – First 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. [These guidelines will help you through the process.](#)

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 a [Rubric Form](#) 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.

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 Master's degree (see Non-thesis Master's section).

XI. The Non-thesis Master's Program (NTM)

The NTM defined

Learning outcomes/competencies

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

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 NTM degree within 2-3 years, beginning with their first quarter at Oregon State University.

1. End of second term: meet with Rebecca Vega Thurber, the NTM adviser, and have program of study reviewed and approved
2. First and second year: complete coursework on Program of Study.
2. Meet yearly with NTM adviser to evaluate your progress.
3. Starting in Year 2, submit a signed Annual Progress Report to the Graduate Adviser each year by the end of December.
5. Second and possible third year: Capstone requirement
- 6.. End of second or possible third year: Present Capstone and hold a final meeting.

Concentrations

Program of Study

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

- The required core sequence of 5 courses: MB 507 each quarter (starting 2022-2023), 511, 512, 513 and GRAD 520 for a total 10 credits during Year 1.
- No more than 12 credits of Capstone work
- 35 additional credits from MB listings, or courses relevant to the student's program offered by other programs IF agreed to by the NTM adviser, 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.
- 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.

Annual Meeting with NTM Adviser and submission of progress report

Meet with Dr. Rebecca Vega Thurber, the NTM Adviser and submit an approved progress report annually. This must be done in the fall before you can register for winter term classes. Download the NTM Annual Progress Report form.

Capstone Project:

NTM students must satisfactorily complete a capstone project which can be tailored to suit the students individual career goals. Satisfactory completion of a 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 any specific length of time.

Capstone projects can come in the form of, but are not limited to, a directed study on a given topic or lab research internship. You should work with Dr. Vega Thurber, the NTM adviser, early in your program to coordinate these Capstone experiences.

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 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. These guidelines will help you through the process.

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.

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 presentation portion (seminar), which can be open to all interested parties. After the seminar and questions from the general audience, the committee and student will continue in closed session to review the exam and its broader relationship to microbiology.

The decision on the outcome of the exam will be based on a Rubric Form provided by the student for the thesis defense. After the NTM Adviser 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.

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 12 credits in a given academic term, but the **Microbiology Department requires all Ph.D. and Thesis Master’s students to enroll in 16 credits** during fall, winter, and spring quarters. Graduate students in Microbiology are generally 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 have 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 it 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 may not be 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 examination, M.S. and Ph.D. thesis defenses

Rubric for Graduate Learning Outcome Assessment Ph.D. Qualifying EXAM in *Microbiology*

Candidate Name: _____ Date: _____

Title of Research Proposal: _____

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. Literature Review	Information presented in a disconnected, disjointed manner and not clearly tied to the research; widely known technical references clearly missing or not germane to the topic at hand.	Information is organized by themes that are related. However, some themes may be disconnected; some references known to experts in the field may be missing.	Information clearly synthesized into themes. Writing links themes, concepts, and ideas in the literature to the focus of the research. References are complete.	
3. Research Hypothesis and Objectives	Research problem not clearly stated, or statement not hypothesis driven; Research plan to investigate solution to the defined problem not fully considered; Measurable outcomes not described.	Research problem clearly stated, and hypotheses identified; Research plan adequately considered; Measurable outcomes described.	Research problem fully considered, and hypotheses clearly stated with broader impacts in the field identified; Research plan fully considered; Measurable outcomes described, and their significance discussed.	
4. Demonstrates a Creative Solution to the Problem	Proposed concept is well known, previously described in	Proposed work is original and possible but	Proposed work is original, practical and demonstrates a novel approach.	

	technical literature, or is impossible/illogical.	derivative/incremental in nature.		
5. 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; Responds to unforeseen technical problems or unexpected results appropriately. All assumptions clearly stated	
6. Broader Impact	Broader implications, new information/insights not identified	Research adds incremental information to the field; broader implications identified	Importance of research in moving field forward significant and clearly articulated	
7. Quality of Written Communication	Writing style is immature. Profuse grammatical errors, poor sentence construction and/or poor document structuring make it laborious to read.	Writing style is academic and flows by presenting information in a concise manner. There are only minor grammatical and spelling errors.	Writing style is scholarly and flows naturally, presenting information in a clear and precise manner. Voice is active and devoid of bias. No grammar or spelling errors.	
8. Quality of Oral Communication	Disorganized presentation with low original content; Excessively 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 skills.	

Rubric for Graduate Learning Outcome Assessment
M.S. THESIS DEFENSE EXAM in *Microbiology*

Candidate Name: _____ Date: _____

Title of Dissertation: _____

Criteria	Unsatisfactory (1)	Satisfactory (3)	Exemplary (5)	Score
9. Literature Review	Information presented in a disconnected, disjointed manner and not clearly tied to the research; widely known technical references clearly missing or not germane to the topic.	Information is organized by themes that are related. However, some themes may be disconnected; some references known to experts in the field may be missing.	Information clearly synthesized into themes. Writing links themes, concepts, and ideas in the literature to the focus of the research. References are complete.	
10. Research Hypothesis and Objectives	Research problem not clearly stated, or statement not hypothesis driven; Research plan to investigate solution to the defined problem not fully considered; Measurable outcomes not described.	Research problem clearly stated, and hypotheses identified; Research plan adequately considered; Measurable outcomes described.	Research problem fully considered, and hypotheses clearly stated with broader impacts in the field identified; Research plan fully considered; Measurable outcomes described, and their significance discussed.	
11. 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.	
12. Results	Analysis or interpretation of research incorrect or not thorough; Lack of awareness of assumptions and limitations.	Analyzed and interpreted research results/data adequately; Major assumptions clearly stated	Analyzed and interpreted research results/data effectively; Responded to unforeseen technical problems or unexpected results appropriately. Major assumptions clearly stated	

13. Broader Impact	Broader implications, new information/insights not identified	Research adds incremental information to the field; broader implications identified	Importance of research in moving field forward significant and clearly articulated	
14. Quality of Written Communication	Writing style is immature. Profuse grammatical errors, poor sentence construction and/or poor document structuring make it laborious to read.	Writing style is academic and flows by presenting information in a concise manner. There are only minor grammatical and spelling errors.	Writing style is scholarly and flows naturally, presenting information in a clear and precise manner. Voice is active and devoid of bias. No grammar or spelling errors.	
15. Quality of Oral Communication	Disorganized presentation with low original content; Excessively 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 skills.	
16. Ethics	Evidence of fabrication of data, lack of awareness of ethical issues including giving proper credit, animal welfare, bias.	Proper citations, independent writing and thought, adequate discussion of ethical concerns in experimental design.	N/A	

Rubric for Graduate Learning Outcome Assessment

Ph.D. THESIS DEFENSE EXAM in *Microbiology*

Candidate Name: _____ Date: _____

Title of Research Proposal: _____

Criteria	Unsatisfactory (1)	Satisfactory (3)	Exemplary (5)	Score
17. Literature Review	Information presented in a disconnected, disjointed manner and not clearly tied to the research; widely known technical references clearly missing or not germane to the topic at hand.	Information is organized by themes that are related. However, some themes may be disconnected; some references known to experts in the field may be missing.	Information clearly synthesized into themes. Writing links themes, concepts, and ideas in the literature to the focus of the research. References are complete.	
18. Research Hypothesis and Objectives	Research problem not clearly stated, or statement not hypothesis driven; Research plan to investigate solution to the defined problem not fully considered; Measurable outcomes not described.	Research problem clearly stated, and hypotheses identified; Research plan adequately considered; Measurable outcomes described.	Research problem fully considered, and hypotheses clearly stated with broader impacts in the field identified; Research plan fully considered; Measurable outcomes described, and their significance discussed.	
19. 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.	
20. Results	Analysis or interpretation of research incorrect or not thorough; Lack of awareness of assumptions and limitations.	Analyzed and interpreted research results/data adequately; Major assumptions clearly stated	Analyzed and interpreted research results/data effectively; Responded to unforeseen technical problems or unexpected results appropriately. Major assumptions clearly stated	

21. Broader Impact	Broader implications, new information/insights not identified	Research adds incremental information to the field; broader implications identified	Importance of research in moving field forward significant and clearly articulated	
22. Quality of Written Communication	Writing style is immature. Profuse grammatical errors, poor sentence construction and/or poor document structuring make it laborious to read.	Writing style is academic and flows by presenting information in a concise manner. There are only minor grammatical and spelling errors.	Writing style is scholarly and flows naturally, presenting information in a clear and precise manner. Voice is active and devoid of bias. No grammar or spelling errors.	
23. Quality of Oral Communication	Disorganized presentation with low original content; Excessively 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 skills.	
24. Ethics	Evidence of fabrication of data, lack of awareness of ethical issues including giving proper credit, animal welfare, bias.	Proper citations, independent writing and thought, adequate discussion of ethical concerns in experimental design.	N/A	

Rubric for Graduate Learning Outcome Assessment
NON-THESIS M.S. EXAM in *Microbiology*

Candidate Name: _____ Date: _____

TITLE OF CAPSTONE PROJECT:

Criteria	Unsatisfactory (1)	Satisfactory (3)	Exemplary (5)	Score
25. Literature Review	Information presented in a disconnected, disjointed manner and not clearly tied to the capstone project; widely known references clearly missing or not germane to the topic at hand.	Information is organized by themes that are related. However, some themes may be disconnected; some references known to experts in the field may be missing.	Information clearly synthesized into themes. Links themes, concepts, and ideas in the literature to the focus of the research. References are complete.	
26. Capstone Project Objectives	Project objectives not clearly stated; Research plan to investigate solution to the defined problem not fully considered.	Project objectives clearly stated; Research plan adequately considered.	Project objectives fully considered with broader impacts in the field identified; Research plan fully considered.	
27. Demonstrates Creativity	Proposed concept is well known, previously described in technical literature, or is impossible/illogical.	Proposed concept is original and possible but derivative/incremental in nature.	Proposed work is original, practical and demonstrates a novel approach.	
28. Results	Analysis or interpretation of project data incorrect or not thorough; Lack of awareness of assumptions and limitations.	Analyzed and interpreted project results/data adequately; Major assumptions clearly stated	Analyzed and interpreted project results/data effectively; Responded to unforeseen technical problems or unexpected results appropriately. Major	

			assumptions clearly stated	
29. Broader Impact	Broader implications, new information/insights not identified	Project adds incremental information to the field; broader implications identified	Importance of project in moving field forward significant and clearly articulated	
30. Quality of Written Communication	Writing style is immature. Profuse grammatical errors, poor sentence construction and/or poor document structuring make it laborious to read.	Writing style is academic and flows by presenting information in a concise manner. There are only minor grammatical and spelling errors.	Writing style is scholarly and flows naturally, presenting information in a clear and precise manner. Voice is active and devoid of bias. No grammar or spelling errors.	
31. Quality of Oral Communication	Disorganized presentation with low original content; Excessively 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 skills.	
32. Ethics	Evidence of fabrication of data or plagiarism, lack of awareness of ethical issues including giving proper credit, animal welfare, bias.	Proper citations, independent writing and thought, adequate discussion of ethical concerns.	N/A	

Addendum II: Annual progress reports for M.S. and Ph.D.

**ANNUAL GRADUATE STUDENT PROGRESS REPORT
PHD PROGRAM IN MICROBIOLOGY, OREGON STATE UNIVERSITY**

Student Name _____

Date _____

Please consult with your major professor and complete this form. Return a signed copy to Professor Vega Thurber.

1. Have you formed and met with your graduate committee and filed the Program of Study with the Graduate School?

Yes _____

No _____

2. Have you met with your committee this year to update your study and research progress and discuss your proposed experiments?

Yes _____

No _____

3. Preliminary Qualifying Exam

The Prelim Exam should be taken after you have completed most of your courses and before you are involved in your research. Part of the test will cover your general knowledge from lecture courses and if you do not pass you cannot continue. The intent is that you qualify to complete a Ph.D. course of research. Please distribute the "Guidelines for the Microbiology Program Prelim Exam" to each member of your committee when you provide them with your written proposal.

There are two parts to the exam. The written part is in the form of a research proposal. The oral exam will cover the research proposal and general knowledge from the courses you have taken.

Have you completed your preliminary exam? _____

Date _____

No _____

4. Your research requires a clear hypothesis or goal. You should give some thought to how the experiments you are doing and planning will be published. Have you discussed with your major professor and/or committee your plan for your first or next paper; are you focused on a plan that ends with a publication?

Yes _____

No _____

5. When will you finish your degree? _____

Date _____

6. When does your major professor anticipate you will finish your degree? _____

Date _____

7. Teaching Requirement

There is a Microbiology Program requirement that all graduate students experience one term of teaching by serving as a Graduate Teaching Assistant. Have you fulfilled this requirement?

Yes _____

No _____

8. Presentation Requirement

There is a departmental requirement that all PhD students give two presentations during their graduate education. One of these may be the thesis defense, but the other must be a public presentation outside of the department. Your goal should be to present at least one poster or talk at a national scientific conference. Have you presented at a national scientific conference?

Yes _____

No _____

Signature _____

Date _____

Major Professor _____

Date _____