



MICROBIOLOGY AND MOLECULAR GENETICS GRADUATE PROGRAM

Updated February 2008

GRADUATE PROGRAM GUIDELINES

To provide an environment of scholarship, integrity and research and teaching excellence that will assist students in acquiring the knowledge and skills necessary to excel as professional scientists and educators

I. Overview

The Microbiology and Molecular Genetics Graduate Programs (MS and PhD) strive to admit academically strong students and educate them for a successful career in science. To achieve these goals, both didactic course work and a publishable, peer-reviewed research component are required for graduation.

II. Admissions

Admissions are made through the OSU Graduate College with referral to the Microbiology & Molecular Genetics Department. The OSU Graduate College guidelines are to be followed for admissions. The Microbiology & Molecular Genetics Department accepts applications until March 31st of each year and all admissions are made for the Fall semester. To be considered and ranked for admission, we study applicants GPAs (undergraduate and/or Masters), GRE scores and recommendation letters (3 are minimum). Offers of acceptance are made in April and students are to be present to join the Graduate Program August. International students need to submit a TOEFL and upon arrival pass SPEK and ITS tests. New students will receive Departmental Assistantship until they are accepted into a suitable research program.

III. MS and PhD Requirements

A. Graduate Study Prior to Choosing a Thesis Adviser

Initial Advising and Research Choice. In the first semester the graduate coordinator along with the graduate committee members will determine the classes that students are to enroll in addition to Techniques in Molecular Biology (MICR5252). Once an advisor has been chosen, course and research plans are to be decided with the advisor.

Choosing an Advisor In the first semester students enroll in Techniques in Molecular Biology (MICR5252). During the semester, students visit with all Microbiology & Molecular Genetics Faculty for an entire week, learn a molecular biology technique and become familiar with the faculty research program. In addition a two-day symposium allows all faculty to explain their research and scientific findings. At the end of the semester students convene with potential faculty indicating them as scientific advisors. The collaborative agreement between a student and an advisor needs to be forwarded in writing to the Department Head

B. Graduate Study After Choosing a Thesis Adviser

Formation of the Thesis Committee Masters and PhD All students must formulate a thesis committee (see timetable for MS and PhD thesis committee's below). Once a student

has established a thesis/dissertation committee, they are required to meet with their committee a minimum of once every 6 months.

Guidelines for Thesis Supervisory Committee Meetings It is the student's responsibility to arrange these meetings. Committee members are strongly encouraged to collectively discuss the research progress of the student and if needed recommend to the student's advisor a letter grade for research courses (MICR 5000 or MICR 6000). The committee will receive an updated copy of the MS/PhD. calendar/checklist as well as a research and coursework update from the graduate student prior to each meeting. Following each committee meeting, the student and their mentor will prepare the Student Goals and Brief Summary of Discussion sections of the Thesis/Dissertation Committee Meeting Report form (see appendix). This prepared form will then be made available for each thesis/dissertation committee member to sign/edit. Committee members will note on the form whether the student's coursework has been satisfactory (S) or unsatisfactory (U) and whether their research progress has been satisfactory (RS) or unsatisfactory (RU), and sign their name. This form will be attached to the completed copy of the checklist and a copy sent to the student and to the Graduate Program Committee within one week following the meeting.

If the progress of any student is deemed unsatisfactory, in either coursework or research progress, by a majority of the thesis/dissertation committee the student shall be placed on probationary status. The Graduate Program Committee will then notify the student of their probationary status in writing. Should the student's coursework or research progress be deemed unsatisfactory after 6 months (i.e. at the next committee meeting) by a majority of the thesis/dissertation committee members, the student will be dismissed from the program. This decision will require written notification be made to the student by the committee within 2 weeks of the committee meeting.

C. Required Course Work

MS Degree In Microbiology and Molecular Genetics Total credit hour requirement is 30. This includes thesis research for which a minimum of 10 credit hours will be given as MICRO 5000. Entering Microbiology and Molecular Genetics MS students shall register for 2 credit hours of MICRO 5052, Techniques in Molecular Microbiology (boot camp). A minimum of 18 additional hours must be taken at the 5000 level or above. Of these hours, 9 must have MICRO prefixes and be non-zero ending. At least 6 additional hours of coursework at the 5000 level or above can include courses with major and non-major prefixes (also non-zero ending). See suggested list of other courses below (page 6). An additional 3 hours of zero ending courses are required, 2 hrs from journal club (MICR6120) and 1 hr from the microbiology seminar series (MICR5160). The student's thesis committee must approve any deviations from these requirements. See Table 1.

New students for the Master of Science degree may enter with an advisor/lab designated and immediately commence their research. Undecided new MS students will be given one semester to choose an advisor and are required to start their research no later than the beginning of the 2nd semester. Both the graduate student and their new mentor in writing should promptly notify the graduate coordinator of this decision. Students failing to do so will be ineligible for teaching assistantships within the department and the Graduate Program Committee will be notified. Change of advisor after the initial choice will be possible only by mutual consent or by petitioning the Departmental graduate Faculty.

Table 1. Hours required for a MS Degree In Microbiology & Molecular Genetics

Course Type	Minimum # hours Required for MS Degree	Maximum # hours Allowed Toward Degree
MICR 5000	10	20
MICR 5000 and above (Non zero ending)*	9	N/A
MICR & Other ¹ Prefix *	6	N/A
MICR 6120 ²	2	N/A
MICR 5160 ³	1	N/A
MICR 5252 ⁴	2	N/A
TOTAL	30	N/A

1 - These hours may include MICR and prefixes from other departments on campus as long as they are 5000 and above (non-zero ending) and approved by the thesis committee. See the suggested list below.

2 - Current topics in Microbiology (Journal Club). Students enrolling in this class must present a journal article the semester of enrollment.

3 - Microbiology Seminar. Students enrolling in this class must present a seminar the semester of enrollment.

4 - Techniques in Molecular Microbiology (boot camp).

* - 4000 level courses where graduate credit is/was given by this (previously) and other departments must be approved by the students graduate committee.

Master's degree students are required to; (a) convene a thesis committee and, (b) submit a plan of study by the end of their second semester. Also, the students must submit an outline of the research to be undertaken for the MS degree to their thesis committee within 6 months of establishment of their thesis committee. Members of the Graduate Faculty in Microbiology (excluding Adjunct Faculty) must compose a majority of the advisory (thesis) committee for any student receiving a graduate degree in Microbiology and Molecular Genetics. Master's students must have at least 3 members on their thesis committee, a majority of who should be from this department.

PhD Degree In Microbiology and Molecular Genetics Requirements for the PhD degree at Oklahoma State University are 90 credit hours for students entering with a bachelor's degree. This includes thesis research for which a minimum of 45 credit hours will be given as MICRO 6000. Entering Microbiology and Molecular Genetics PhD students shall register for 2 credit hours of MICRO 5052, Techniques in Molecular Microbiology (boot camp). A minimum of 27 hours of course work must be taken at the 5000 level or above. Of these hours, 12 must have MICRO prefixes and be non-zero ending. At least 9 additional hours of coursework at the 5000 level or above can include courses with major and non-major prefixes (also non-zero ending). See suggested list of courses below (page 6). An additional 6 hours of zero ending courses are required, 4 hrs from journal club (MICR6120) and 2 hrs from the microbiology seminar series (MICR5160). See Table 2. The student's dissertation committee must approve any proposed deviations from these requirements.

For those students entering with a 3-year B.S. degree plus a Master's degree, 90 credit hours are required for completion of the PhD degree. However, up to **9** credit hours from their

Master's degree may be applied toward non-zero ending graduate level courses within the PhD program (see Table 2). The decision to accept, or deny, graduate credit in these cases will be made by the student's dissertation committee. All other course expectations remain the same. The student's graduate committee must approve any proposed deviations from these requirements.

Table 2. Hours required for a PhD Degree In Microbiology & Molecular Genetics

Course Type	Minimum # hours Required for MS Degree	Maximum # hours Allowed Toward Degree
MICR 6000	45	72
MICR 5000 and above (Non zero ending)*	12	N/A
MICR & Other ¹ Prefix*	9	N/A
MICR 6120 ²	4	N/A
MICR 5160 ³	2	N/A
MICR 5252 ⁴	2	N/A
Other hrs ⁵	16	N/A
TOTAL	90	N/A

1 - These hours may include MICR and prefixes from other departments on campus as long as they are 5000 and above (non-zero ending) and approved by the thesis committee. See the suggested list below.

2 - Current topics in Microbiology (Journal Club). Students enrolling in this class must present a journal article the semester of enrollment.

3 - Microbiology Seminar. Students enrolling in this class must present a seminar the semester of enrollment.

4 - Techniques in Molecular Microbiology (boot camp).

5 - These may include zero and non-zero ending courses, MICR or other as the students graduate committee sees fit.

* - 4000 level courses where graduate credit is/was given by this (previously) and other departments must be approved by the students graduate committee.

Students entering with a 4-year bachelor's degree and a master's degree must complete 60 credit hours for the PhD degree at Oklahoma State University. Table 3 outlines their degree requirements.

All entering PhD students shall register for 2 credit hours of MICRO 5052, Techniques in Molecular Microbiology. This course is designed to familiarize students with faculty research and assist them in choosing a major adviser. They will be expected to choose a major adviser at the conclusion of the first semester. Both the graduate student and their new mentor in writing should promptly notify the graduate coordinator of this decision. Change of advisor after the initial choice will be possible only by mutual consent or by petitioning the Department Head and the Faculty.

Doctoral students are required to: (a) convene a dissertation committee and, (b) submit a plan of study by the end of the second semester after joining the department. Also, students must submit an outline of the research to be undertaken for the PhD degree within 12 months of

establishing the dissertation committee. Members of the Graduate Faculty in Microbiology (excluding Adjunct Faculty) must compose a majority of the advisory committee for any student receiving a graduate degree in microbiology. PhD students must have at least 5 dissertation committee members with at least one member from outside the department of Microbiology and Molecular Genetics.

Table 3 Hours required for a PhD Degree for Students entering with a 4-year BS degree plus an MS.

Course Type	Minimum # hours Required for MS Degree	Maximum # hours Allowed Toward Degree
MICR 6000	40	N/A
MICR 5000 and above (Non zero ending)*	9	N/A
MICR & Other ¹ Prefix*	6	N/A
MICR 6120 ²	2	N/A
MICR 5160 ³	1	N/A
MICR 5252 ⁴	2	N/A
TOTAL	60	N/A

1 - These hours may include MICR and prefixes from other departments on campus as long as they are 5000 and above (non-zero ending) and approved by the thesis committee. See the suggested list below.

2 - Current topics in Microbiology (Journal Club). Students enrolling in this class must present a journal article the semester of enrollment.

3 - Microbiology Seminar. Students enrolling in this class must present a seminar the semester of enrollment.

4 - Techniques in Molecular Microbiology (boot camp).

* - 4000 level courses where graduate credit is/was given by this (previously) and other departments must be approved by the students graduate committee.

We require continued maintenance of a GPA of 3.0 or better. MS students earning a C or worse or any PhD student who earns two grades that are C or worse will be placed on academic probation for the remainder of their graduate program. Students on academic probation who earn a C or lower will be dropped from the program.

D. Qualifying Exam

PhD students applying for candidacy must pass a qualifying examination. This examination should be taken by the end of the third year (8th semester, including summers). The purpose of the doctoral qualifying examination is to establish that the student's breadth and depth of understanding in the field of microbiology as well as their ability to think analytically and develop hypothesis based research ideas is sufficient for recommendation to advance to the status of PhD candidate.

The Written Proposal (Part A) For the exam, students will develop three topics, which are not on his/her current research project. These three topics will be presented to the student's committee members in abstract form, and then the committee will chose one of the topics for development of a full research proposal. This step must be done no later than the end of the 1st

month of the 8th semester in order to complete the qualifying examination by the end of the same semester.

The student will then prepare a hypothesis based full proposal in NSF or NIH format (the body of which should be no less than 15, and no more than 25, single spaced pages) on the chosen topic. Guidelines for these can be found at nsf.gov or grants.nih.gov, respectively.

The student will submit this proposal to their graduate committee within 12 weeks of the topic being chosen. Students must supply their committee with the completed proposal at least 7 days prior to defending the proposal orally before the committee. This proposal represents the written portion of the qualifying examination.

The Oral Defense (Part B) The student will be examined for their breadth of knowledge, analytical thinking, communication skills, and the ability to conduct independent research. This represents the oral portion of the qualifying examination.

Procedure for Appeal A student failing in the examination will be permitted to retake the examination within the next two months. A student failing twice will be automatically dismissed from the program.

E. Teaching Practicum

MS students are expected to teach at least one semester during their graduate program, while PhD students are expected to teach at least two semesters. Graduate student teaching evaluations, from both the instructor and the students will be reviewed by the Graduate Program Committee. It is also expected that graduate students will take advantage of professional educational training opportunities.

F. Seminars

Graduate students are to attend all departmental seminars and journal club sessions. Absences from seminars or journal clubs (such as those necessitated by teaching duties), must be excused by the seminar chairman before the seminar. Students are also expected to meet with each outside seminar speakers when provided the opportunity (such as a lunch). In addition, all incoming graduate students are required to attend a series of seminars given severally by each faculty member early in each Fall semester. Enrollment in MICR 5160 (Seminar) is required for the thesis defense seminar for all graduate students. Students entering the Ph.D. program with only a BS degree are required to enroll in MICR 5160 a minimum of one additional semester (1 credit hour) to present their thesis work after they advance to candidacy.

G. Annual External Research Presentations

For second year students, this requirement may be met by presentation at campus events such as the annual Graduate College symposium in the Spring or at the Oklahoma Academy of Science in the Fall. More senior graduate students are expected to give annual presentations at regional and national meetings of professional societies.

H. Publications

Before graduation, all MS students are expected to be the primary author on at least one published manuscript (accepted by a peer reviewed journal), while PhD students will be the primary authors on at least two publishable manuscripts (accepted by a peer reviewed journal).

I. Thesis and Final Defense

All Master's and Ph.D. Candidates must defend their thesis or dissertation in a final examination. The procedure for the final examination will be as follows and will have two parts:

A: The candidate will give a public seminar on his/her research work to inform the scholarly community of the findings and implications of their Thesis/Dissertation. Notice of the seminar will be distributed to all faculty, staff, and graduate students in the Department of Microbiology, the Graduate College, and all appropriate departments at least one week before their examination. Examinations cannot be held unless public notice is given within the University. All members of the student's committee will be present at the seminar;

B: An oral, examination conducted by the student's committee in which the student will defend his/her research findings and thesis or dissertation.

It is the expectation of the department that a Master's dissertation will result in at least one scientific publication in a peer-reviewed journal and a Ph.D. thesis in two.

IV Financial Support

All graduate students must be physically present to be on salary unless involved in pre-approved leave such as attendance at scientific meetings. If they are absent during the regular semester, their salary will be deducted accordingly. This applies to both teaching and research assistantships. Teaching assistants (TAs) are supervised by the faculty member teaching the course for which the student assists and/or the teaching laboratory coordinator. They must make themselves available for TA meetings, including those held the week prior to the start of classes.

Priority will be given to the 1st year graduate students who are qualified to serve as teaching assistants. This includes the international students who have passed the English exams conducted by the University for this purpose. Teaching assistant eligibility for any given semester will be determined by a mathematical formula which includes the following criteria where appropriate: Research Committee Report, TA evaluations from the previous semester, the previous number of semesters in which TAs were received (this will be deducted from the total score), attendance at seminar and journal club, GPA, and entering GRE total score.

Each M.S. level student will be offered teaching assistantships for a maximum of four semesters. They may choose to apply for these assistantships at any time during their study here. Each Ph.D. level student will be offered teaching assistantships for a maximum of six semesters. The six-semester support of a Ph.D. student who switched from a M.S. program will be inclusive of the ones he/she utilized as a M.S. student. It is expected that, for the rest of study period, their support will be derived from other sources such as research grants, fellowships, etc.

The guidelines for the appointment of teaching assistants may temporarily be superseded in case of departmental needs.

Students are discouraged from working more than a total .50 FTE and must not work over .75 FTE under any circumstance. Work outside the department is discouraged.

A. Tuition Waivers and Fellowships

OSU will waive the nonresident and the tuition for graduate students who are enrolled full-time. Requests are to be made to the Graduate College Website or the Microbiology Department.

The Edward A. and Mary M. Gula Fellowship is offered annually to one outstanding graduate student in the department and provides funds of \$2200. MS students can receive this award up to two years and PhD students up to three years. . For information on other types of tuition waivers, check with the graduate coordinator.

V. Other General Guidelines

A. English Proficiency

OSU policy requires all persons for whom English is a second language to demonstrate an acceptable level of spoken English before being employed in an instructionally-related capacity. Such employment requires demonstrated English proficiency on the Test of Spoken English (TSE) as determined by OSU. This test may be taken on campus at any of the testing sites provided by the Educational Testing Service. Students failing this exam will be required to enroll in English 0003. In order to serve in an instructionally-related capacity, students from whom English is a second language are also required to attend an orientation offered by the English Department. They will then enroll for the SPEAK test administered by the English Department. Once the SPEAK test is passed, students will be allowed to take the ITA exam which will also be required before receiving a teaching assignment. Students can learn more about these requirements through International Student Services or the English Department.

B. Enrollment

Full time enrollment for graduate students as considered by the Office of the Registrar is considered to be 6 or more credit hours for the fall and spring semesters for students with half time assistantships. Those holding less than a half time assistantship must enroll in 9 or more credit hours in the fall and spring. For summer, students with half time assistantships must enroll in at least 3 credit hours to be considered full time, while those with less than half time assistantships must enroll in a minimum of 4 credit hours. For the purpose of receiving monetary assistance through the Office of Student Financial Aid, enrollment status does not take into account assistantship status. Therefore, full time enrollment consists of 9 or more credit hours in the Fall and Spring semesters and 4 or more credit hours in the Summer term, regardless of assistantship status.

Graduate Assistants must meet minimum enrollment requirements of 6 hours in fall and spring semesters and 3 credit hours in the summer. Graduate students must complete a minimum of 6 credit hours in a 12-month period to be continuously enrolled. Graduate students must maintain continuous enrollment in thesis and/or research hours during the entire research phase of their graduate program. Students must enroll in at least 2 credit hours during the semester in which they take their final examination or meet other requirements. They must also be enrolled in at least 2 credit hours during the semester in which they graduate.

C. Academic Integrity

Professional integrity is essential for the progress of education, academics and science. There will be no tolerance for academic dishonesty or misconduct, including plagiarism, cheating or any other form. Students may refer to the Academic Dishonesty or Misconduct section in the OSU catalog and the Student Rights and Responsibilities Governing Student Behavior document (available from the Vice President of Student Affairs) for clarification.

D. Graduation

All requirements must be completed within the following periods calculated from initial enrollment in the program:

Masters Candidates 7 years
Doctoral Candidates 9 years

No course on the Plan of Study may be more than 10 years old at the time of graduation.

Students must file a diploma application at the beginning of the semester in which they are expecting to graduate. If they fail to graduate during that semester, a new diploma application must be filed.

Students who need to submit a revised plan of study should turn it in at the beginning of the semester of anticipated graduation. Published deadlines for theses and dissertation submission are strictly enforced. These deadlines and other calendar information can be found at the OSU Graduate College web site. A student must submit 4 Final Copies of theses or dissertation to the Graduate College.

E. Required Safety Training

All graduate students must receive quarterly safety training. In addition, all those working in labs must have HazCom training. If students are unable to attend the required safety training seminar each semester, then they must receive other approved safety training. Students should consult with Sallie Robinson (in the departmental office), Sandy Peterson (the departmental safety representative) or their major adviser for ways to receive alternative training.

All graduate students (and all other personnel who work in the department) must receive sexual harassment training. Students should contact Sallie Robinson in the departmental office to sign up for training.