

## MICROBIOLOGY AND MOLECULAR GENETICS M.S.

All students must meet the Requirement for the Master's Degree

### OVERVIEW

The Department of Microbiology and Molecular Genetics offers a Master of Science Degree. The M.S. degree is a thesis-based program. The program requires a minimum of 30 credits of research and coursework, a qualifying exam for candidacy, and the writing and defense of a thesis.

### SPECIFIC REQUIREMENTS

#### Requirements for Admission to Graduate Studies for the Degree of Master of Science in Microbiology and Molecular Genetics

- A Bachelor's Degree with a minimum cumulative grade point average of 3.00.
- Minimum course requirements: Completion of 2 semesters of undergraduate biology, general chemistry, organic chemistry and 1 semester of calculus; in addition, 1 course in genetics, one course in microbiology with a laboratory, and 1 course in cell biology.
- GRE/GMAT scores are NOT an admission requirement for the Master's Degree Program in Microbiology and Molecular Genetics program.
- Graduate student status will start 1 week prior to the start of Fall classes and will be expected to be maintained full time including summers until completion of their Master's Degree in Microbiology and Molecular Genetics.
- Students MUST be admitted through the Graduate College before taking any courses that will be applied to the Master's Degree requirements.

#### Application Process

- Completion of application to the Graduate College, meeting all Graduate College application requirements.
- Admission to the program will be contingent upon the capacity and interests of participating departmental laboratories.

#### Minimum Degree Requirements

A minimum of 30 credits are required for completion of the Master's Degree in Microbiology and Molecular Genetics. Of the 30 credits, at least 15 must be graded coursework (with at least 6 of those at 6000-level or above) and at least 8 must be Master's thesis research credits. Students must also meet the Graduate College requirements for the Master's Degree including maintaining a minimum GPA of 3.00.

Requirement Description		Credits
Students must complete the following courses:		
BIOC 6001	General Biochemistry I *Successful completion of BIOC 3005 can substitute for the BIOC 6001 requirement for previous UVM students only. However, these will NOT count towards the 30-graduate credit requirement for the degree.	3
MMG 6890	Graduate Teaching Practicum	3
NSCI 6270	Resp Conduct in Biomed Rsch	1
Students must complete at least 1 approved course in Bioinformatics Databases		
MMG 5310	Bioinformatics & Data Analysis	3
MMG 5320	Advanced Bioinformatics (MMG 5310 or equivalent experience required as a prerequisite)	3
Students must complete at least 1 upper-level course in Molecular Genetics		
MMG 6110	Adv Bacterial Genetics <small>Can also be taken to fulfill Microbiology requirements</small>	3
MMG 6330	Adv Genetics and Genomics	3
MMG 5270	Advanced Cancer Genetics	3
Students must complete at least 1 upper-level course in Microbiology		
MMG 5210	Gr Medical Microbiology	3
MMG 5220	Gr Medical Micro w/lab	0 or 4
MMG 5230	Immunology Concepts	3
MMG 6200	Cellular Microbiology	4
Remaining credits in the degree program should be selected from graduate courses approved by the student's Studies Committee.		3-4
At least 8 (and up to 14) credits of Master's Thesis Research (MMG 6391) are required. In addition, a written thesis and defense of this thesis must occur according to the guidelines laid out by the Graduate College.		

#### Studies Committee:

The student's Studies Committee will consist of the student's research mentor, a member of the Microbiology and Molecular Genetics graduate faculty, a faculty member from outside the Microbiology and Molecular Genetics Department to serve as the Chair of the Studies Committee, and a fourth member at the discretion of the student in consultation with their research mentor.

#### Thesis Writing and Defense:

Thesis writing cannot begin until a student has become a Candidate for the Degree of Master of Science in Microbiology and Molecular Genetics and has received approval from the student's Studies Committee.

**Comprehensive Examination**

By the end of the first year, M.S. candidates will write either an extensive literature review or research proposal that pertains to their research interests. Students can expect guidance from their advisor and Studies Committee in the writing of the proposal but must assume responsibility for the final version and must acquire sufficient mastery of their chosen subject area to defend the proposal. Students will present their written proposal to their Studies Committee. That Committee will determine if the written proposal is satisfactory and, if it is, schedule an oral defense. During the oral defense, the Committee shall be free to explore the knowledge of the student on a range of subjects related to the proposal, much as occurs during a thesis defense. If the written review/proposal is deemed unsatisfactory or if a student fails the oral defense, the candidate will be given one opportunity to rewrite or re-defend his/her/their proposal. If the student fails a second time, s/he/they will be dismissed from the M.S. program.

**Requirements for Advancement to Candidacy for the Degree of Master of Science in Microbiology and Molecular Genetics**

Advancement to candidacy requires satisfactory completion of the comprehensive exam.