

## MICROBIOLOGY AND MOLECULAR GENETICS AMP

All students must meet the Requirements for the Accelerated Master's Degree Program.

### OVERVIEW

The Accelerated Master's Degree Program (AMP) in Microbiology and Molecular Genetics is designed to offer select UVM undergraduate science majors the opportunity to obtain both their bachelor's degree and a master's degree in Microbiology and Molecular Genetics in a total of five years of study. The objective of this program is to provide a broad knowledge base of microbiological and molecular genetic concepts to increase their competitiveness to pursue additional graduate degrees (PhD, MD) or to prepare students for careers in pharmaceutical, biotechnology and related industries.

Students enrolled in this program can have up to six credits of graduate-level courses, which are taken during their senior undergraduate year, count towards both a bachelor's degree and the Master's Degree in Microbiology and Molecular Genetics. *An additional three credits of graduate level coursework taken their senior year can be applied towards the master's degree provided that these three credits are not used to fulfill undergraduate degree or credit requirements.* Students would then be expected to complete the remaining master's degree requirements during a fifth year of study. Full-time graduate student status will start the summer after their undergraduate graduation and will be expected to be maintained until completion of their Master's Degree in Microbiology and Molecular Genetics. Students interested in the Microbiology and Molecular Genetics AMP should contact the Program Director, Janet Murray Ph.D.

### SPECIFIC REQUIREMENTS

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

- Students should apply for admission into the Accelerated Master's Degree Program in Microbiology and Molecular Genetics with a minimum of 75 credits and before the start of their first semester Senior Year. Admission into this program requires the following:
- A minimum cumulative grade point average of 3.00.
- Enrollment in an undergraduate bachelor's degree program and completion of at least one year of Introductory Chemistry, one year of Organic Chemistry, one year of Calculus, MMG 101, MMG 104, BCOR 101, and BCOR 103 or MMG 196C.

- GRE/GMAT scores are NOT an admission requirement for the Accelerated Master's Degree Program in Microbiology and Molecular Genetics.
- **Students must identify a research mentor within the Department of Microbiology and Molecular Genetics in whose laboratory they will conduct their master's degree research.**
- Students MUST be admitted through the Graduate College before taking any courses that will be applied to the Master's Degree.
- Courses taken as an undergraduate that will then count towards the master's degree must be graded with letter grades (A-F, not P/F, S/U, SP/UP). Independent study, internship and research credits are not allowed to count towards the master's degree.
- If more than 9 credits of graduate level coursework are taken prior to receipt of the bachelor's, ONLY 9 credits will count towards the master's. There are no exceptions.
- Students are expected to initiate master's degree research in the summer following their undergraduate graduation. Students who graduate in January may initiate master's research in the spring semester and are expected to continue the research in the summer.

#### Application Process

- Completion of application to the Graduate College, meeting all Graduate College application requirements.
- Include at least three letters of recommendation. **One MUST be from your identified research mentor.**
- Include the "Accelerated Masters" form, which can be found at [http://www.uvm.edu/sites/default/files/AMP\\_Permission\\_Form.docx](http://www.uvm.edu/sites/default/files/AMP_Permission_Form.docx). This document must be signed by the indicated parties before being uploaded to your application.

#### Minimum Degree Requirements

A minimum of 30 credits are required for completion of the Accelerated Master's Degree in Microbiology and Molecular Genetics. Students must also meet the Graduate College requirements for the Master's Degree, including maintaining a minimum GPA of 3.0.

Courses should be selected from the following lists.

Students must complete the following courses:

BIOC 301*	General Biochemistry (Every Fall)	3
BIOC 302*	General Biochemistry (Every Spring)	3
MMG 310	Current Topics in MMG	2
MMG 232	Methods in Bioinformatics (Every Spring)	3
MMG 393	Graduate Teaching Practicum	3
Approved Graduate Ethics Course		1

\*Successful completion of BIOC 205/BIOC 206 can substitute for the BIOC 301/BIOC 302 requirement for previous UVM students only. However, these will NOT count towards the 30 graduate credit requirement for the degree.

Students must complete at least one upper level course in Molecular Genetics from the following selection of courses:

MMG 201	Molecular Cloning Laboratory (Every Fall)	4
MMG 211	Prokaryotic Genetics (Every Fall)	3
MMG 233	Genetics & Genomics (Every Fall)	3
MMG 312	Eukaryotic Molecular Genetics (Spring, Even Years)	3

Students must complete at least one upper level course in Microbiology from the following selection of courses:

MMG 220	Environmental Microbiology (Spring)	3
MMG 222	Clinical Microbiology (Every Spring)	4
MMG 225	Eukaryotic Virology (Fall, Even Years)	3
MMG 320	Cellular Microbiology (Spring)	4

Remaining credits in the degree program should be selected from lists above or the following approved list of courses. Special topics or other graduate courses maybe acceptable by prior approval from the Student's Studies Committee.

CLBI 301	Cell Biology (Every Spring)	3
MMG 223/MLRS 242	Immunobiology (Every Spring)	3
MMG 352	Protein:Nucleic Acid Interactions (Spring, Even Years)	3

At least six (and up to 12) credits of Master's Thesis Research ([MMG 391](#)) are required. In addition, a written thesis and defense of this thesis must occur according to the guidelines laid out by the Graduate College.

### Comprehensive Examination

By the end of the first semester in the Master's program, MS students 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 proposal. If the student fails a second time, s/he/they will be dismissed from the MS program.

### Requirements for Advancement to Candidacy for the Degree of Master of Science

Advancement to candidacy requires satisfactory completion of the comprehensive exam.

### Studies Committee

The student's Studies Committee will consist of the student's research mentor, a member of the MMG Graduate and Medical Student Education Committee, 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.