

## MICROBIOLOGY AND MOLECULAR GENETICS AMP

All students must meet the Requirement for the Accelerated Master's Degree Programs (<http://catalogue.uvm.edu/graduate/degree/requirements/requirementsforacceleratedmastersdegreeprograms/>)

### OVERVIEW

The Accelerated Master's Degree Entry 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 Master's degree in Microbiology and Molecular Genetics in a total of 5 years of study. The objective of this program is to provide a broad knowledge base of microbiological and molecular genetic concepts to increase students' competitiveness to pursue additional graduate degrees (Ph.D., M.D.) or to prepare students for careers in pharmaceutical, biotechnology and related industries.

Students enrolled in this program can have up to 9 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. Students would then be expected to complete the remaining Master's degree requirements during a 5<sup>th</sup> 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 Coordinator.

### 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 1<sup>st</sup> semester of their 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 1 year of Introductory Chemistry, 1 year of Organic Chemistry, 1 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 program.
- 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 3 letters of recommendation, 1 must be from your identified research mentor.
- Include the "Accelerated Masters Permission" form, which can be found on the Graduate College website. 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 Molecular Genetics. Students must also meet the Graduate College requirements for the Master's degree including maintaining a minimum GPA of 3.00.

Courses should be selected from the following lists.

|   |  |     |
|---|--|-----|
| Complete the following courses:   |  |     |
| BIOC 301  | General Biochemistry (every fall) *                            | 3   |
| BIOC 302  | General Biochemistry (every spring) *                          | 3   |
| MMG 231   | Bioinformatics&Data Anlysis (every fall)                       | 3   |
| MMG 393   | Graduate Teaching Practicum                                    | 3   |
| MMG 396   | Advanced Special Topics (Biomedical Data Analysis, every fall) | 2   |
| Approved Graduate Ethics Course   |  |     |
| *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 and thus cannot be used as part of the 9 credits that double count towards the bachelor's and master's degree. |  |     |
| Choose at least 1 of the following upper-level courses:   |  | 3-4 |

|   |   |     |
|---|---|-----|
| MMG 201   | Molecular Cloning Lab (every fall)              |     |
| MMG 211   | Prokaryotic Molecular Genetics (every fall)     |     |
| MMG 233   | Genetics and Genomics (every fall)              |     |
| Students must complete at least 1 upper-level course in Microbiology from the following selection of courses:   |   | 3-4 |
| MMG 220   | Environmental Microbiology (spring, even years) |     |
| MMG 222   | Advanced Medical Microbiology (every spring)    |     |
| MMG 225   | Eukaryotic Virology (fall, even years)          |     |
| MMG 320   | Cellular Microbiology (spring, odd years)       |     |
| Remaining credits in the degree program should be selected from the list above or the following approved list of courses. Special topics or other graduate courses may be acceptable by prior approval from the student's Studies Committee |   | 3   |
| CLBI 301  | Cell Biology (every spring)                     |     |
| MMG 223   | Immunology (spring, odd years)                  |     |
| MMG 232   | QR: Advanced Bioinformatics (spring, odd years) |     |
| At least 6 (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 1<sup>st</sup> semester in the Master's program, M.S. 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 1 opportunity to rewrite or re-define his/her proposal. If the student fails a 2<sup>nd</sup> time, s/he/they will be dismissed from the M.S. 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 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.