

# Biology MS, Cellular and Molecular Biology Emphasis

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The Department of Biology offers three ways of achieving the Master of Science degree. The first is a 30 credit hour non-thesis option suitable for those who may already have extensive research experience, for educators who seek to upgrade their academic skills but do not require research experience, or for those who need to broaden their biological background. The second is a 32 credit hour Professional Science track that includes a strong business component for students who are interested in learning more about the business aspects of companies. This track may not be appropriate for students who are interested in pursuing a PhD or working primarily as laboratory scientists. The third is a 30 credit hour traditional apprenticeship in research leading to a written thesis. All students admitted to the graduate program are considered to be in the non-thesis program unless they have been accepted into an individual faculty lab. Starting with a common core, both the thesis and non-thesis option may be developed into a final degree program in either of two broad areas in biology:

1. Cell and Molecular Biology or
2. Ecology, Evolution, and Systematics.

Non-thesis students may also elect to take courses in both areas. Only the non-thesis option is available in the Professional Science emphasis.

## M.S. Admission Requirements

Applicants to the M.S. program must submit completed application and personal data forms, three letters of recommendation from undergraduate faculty or work supervisors, and transcripts of all previous work. Submission of Graduate Record Examination scores, although not required, is highly recommended and will be helpful for positive consideration of admittance. Admission as a regular graduate student requires graduation from an accredited college with a minimum grade point average overall and in biology courses of 3.0 (where A = 4.0).

All foreign applicants, except those from countries where English is the primary language, must take the TOEFL. Ordinarily, a score of 213 on the computer-based exam (550 on the paper-based exam) or better is required.

In addition to the Graduate School admission requirements, applicants should have completed advanced undergraduate biology courses including genetics, biochemistry, and evolution. Courses in organic chemistry, college physics, and calculus are also expected, and a course in statistics is highly recommended.

Students admitted to the degree program who have not met some of the prerequisites may be asked to pass appropriate courses before graduating. These courses will be agreed upon by the student's advisor and the student during the first semester of enrollment. In particular, undergraduate deficiencies in genetics and either biochemistry or evolution shall be made up by taking the appropriate course(s). Three credits of BIOL 4920 Selected Topics can be given to graduate students for BIOL 2012 (Genetics) or BIOL 3302 (Evolution), if they receive a grade of B or better for all undergraduate course work and complete a graduate level paper assigned by the instructor. Instructor consent is required.

## General Requirements

All students are required to take at least 4 but not more than 8 hours of BIOL 6889, Graduate Seminar. However, Professional Science masters students must take only 4 credit hours total of BIOL 6889. Thesis students are required to take BIOL 5179, Ethical Issues in Biology. Students are expected to maintain a GPA of 3.0 or better. Students may choose to specialize in either Cellular and Molecular Biology (CMB) emphasis area or the Ecology, Evolution and Systematics (EES) emphasis area, and appropriate courses in each area will be recommended by the student's advisor. The Professional Science emphasis area in CMB has specific course requirements that are described below.

## Non-thesis Option

Including the general requirement, students must take at least 30 graduate credit hours, of which at least half must be at the 5000 or 6000 level. No more than 5 hours of BIOL 6905, Graduate Research, may be counted toward the degree.

## Thesis Option

The student and adviser work together to develop a research plan. The thesis proposal must be approved by the student's adviser and advisory committee before the student enrolls in more than 4 credit hours of BIOL 6905, Graduate Research, and before the student has completed 15 credit hours in the master's program. No more than 13 hours of BIOL 6905, Graduate Research, may be counted toward 30 hours of the degree. A thesis embodying results of original research shall be submitted to and approved by the Department of Biology and the Graduate School. This approval requires both a written thesis and oral presentation and defense.