

# Master of Science in Biology

## Administrative Unit

This program is administered by the Office of Graduate Studies and Research through the faculty of Biology, Department of Biology, College of Arts and Sciences.

## Objectives

The Master of Science program in Biology includes advanced education in experimental molecular and cellular and organismic biology. The program is designed primarily to prepare students for a professional career in an advanced field of biology. The program is used by students who want to gain additional background for teaching, as well by those who are preparing to go on to Ph.D. programs or professional schools.

## Admission Requirements

Acceptance to the Master of Science program requires 16 credits of biology, eight credits of chemistry and three credits of mathematics at the undergraduate level. Depending upon the student's undergraduate program and career goals, the advisory committee may require completion of additional courses at the undergraduate level.

## Core Requirements

A minimum of 30 graduate credits must be earned to qualify for the Master of Science degree. Of these, a minimum of 15-18 must be in Biology while 6-9 hours may be in supporting areas of study. The remaining 6 credits must be earned in independent study leading to an original thesis. This study is normally directed by the chair of the advisory committee. During the final semester of study, the student must defend the thesis before the advisory committee and other appropriate faculty. The first part of this defense, which consists of an oral presentation of the thesis work, is open to the public.

## Special Program Features

Where appropriate, individualized instruction is used in each student's program, so not all courses require regular attendance. Laboratory facilities are ideally suited for individualized instruction. Students will also be given an opportunity to gain experience in teaching by assisting in one or more undergraduate laboratory courses under the supervision of a faculty member.

## Program Recommendation

If they have not already done so, students must complete one year of organic chemistry, calculus, and physics before admission to regular graduate status. Students lacking specific upper level biology background such as biochemistry or genetics may take these courses for 4300-level graduate credit.

## Course Listings

### BIOL 6301 Studies In Virology (3)

Analysis and interpretation of modern studies of viral structure, replication and pathogenesis. Prerequisites: BIOL 4320, 4340 or equivalent. Offered alternate years.

**BIOL 6323 Immunology (3)**

Analysis and interpretations of studies of mammalian mechanisms of defense against infectious diseases and cancer. Prerequisites: BIOL 3300, 4320, 4340, or equivalent. Offered alternate years.

**BIOL 6330 Plant Physiology and Biochemistry (3)\***

Techniques, principles and analysis of problems in plant biochemistry and physiology. Prerequisite: BIOL 4320 or equivalent.

**BIOL 6332 Plant Taxonomy (3)**

Advanced studies and collection of a specific taxonomic group to be determined in consultation with the student. Prerequisite: BIOL 3330 and 3331 or equivalent.

**BIOL 6340 Molecular Genetics (3)**

Studies of gene transfer, mapping, expression and control mechanisms. Prerequisite: BIOL 3300, 3101, and 4320 or equivalent.

**BIOL 6350 Advances In Animal Physiology (3)**

Analysis and interpretation of studies in the laboratory and literature. Prerequisites: BIOL 4320 and 4352 or equivalent.

**BIOL 6356 Neuroscience (3)**

An analysis of the physiological bases of behavior, beginning with a study of the functioning of excitable cells and ending with a study of the neuroanatomy of the brain. Prerequisites: BIOL 4352 or permission of the instructor.

**BIOL 6371 Advances in Ecology (3)**

An in-depth investigation of current topics in ecology. Prerequisite are graduate standing and successful completion of an undergraduate course in ecology.

**BIOL 6375 Advances in Animal Behavior (3)**

An in-depth investigation of current topics in animal behavior. Prerequisites are graduate standing and successful completion of an undergraduate course in animal behavior.

**BIOL 6389 Selected Topics (1-3)**

Graduate courses which will be offered only once, will be offered infrequently, or are being developed before a regular listing in the catalog.

**BIOL 6391 Contract Study 1-3)**

For students who are pursuing independent study or research (as described in the contract study format).

**BIOL 6399 Masters Thesis (3 or 6)**

Meets the research requirements for the thesis option in master's degree programs.

*Undergraduate Courses that could be Included in a Graduate Degree Plan\**

BIOL 4131	Developmental Biology Laboratory
BIOL 4141	Laboratory in Genetics
BIOL 4153	Animal Physiology Lab
BIOL 4301	Virology
BIOL 4320	Cell Biochemistry
BIOL 4323	Immunology
BIOL 4330	Developmental Biology
BIOL 4340	Genetics
BIOL 4342	Evolution
BIOL 4352	Animal Physiology
BIOL 4354	Animal Behavior
BIOL 4356	Endocrinology
BIOL 4372	Ecology
BIOL 4389	Multi Course Listing
BIOL 4272	Field Biology

\* With Committee Permission. See course descriptions in the Undergraduate Catalog.