

# BIOLOGY, MS

The Master of Science program in Biology prepares students for employment in a variety of professional settings and for further study toward doctoral degrees. It is a comprehensive biological science program in which students may focus their studies in cellular/molecular biology, physiology/developmental biology, conservation ecology, or biochemistry. The program is appropriate for students holding a baccalaureate degree in biological science, or for bachelor's degree holders in other areas who have completed the prerequisite undergraduate courses.

The emphasis of the Biology MS degree program is to develop practical research skills and a thorough conceptual foundation in the field of biological science. Students in the program receive:

- Graduate-level coursework in a rigorous, yet flexible and broad-based curriculum.
- An academic environment that fosters collaboration among students.
- Personal attention from experienced faculty.
- Advising and mentoring in academic, volunteer, research and internship opportunities that enhance student skills before transitioning to doctoral programs, professional school, or the workforce.

The program is course-based and includes a one-semester research experience. Students who are prepared for additional research training may pursue a master's thesis under the sponsorship of a department faculty member.

## Admission

Applicants should consult the graduate admission resources (<https://www.roosevelt.edu/admission/graduate>) on the Roosevelt University website. Biology faculty members will evaluate each applicant's individual record of academic achievement, professional experience, and self-assessment. Weakness in one or a few areas of preparation will not preclude a positive admission decision.

## Application Materials

- **Graduate application:** Application to the College of Arts & Sciences at Roosevelt University.
- **Official transcript(s):** Official transcripts from all undergraduate and graduate institutions attended. Coursework completed outside the U.S. requires a foreign credential evaluation to be submitted.
- **Resume/Curriculum vita:** Students should provide a detailed account of their academic and extracurricular experiences. Include employment, teaching, leadership, and research experiences as appropriate.
- **Personal statement:** This brief (one-page) personal statement conveys the student's motivation for his/her chosen career. If the student has a personal statement from a central admissions service, this may be submitted.
- **Two letters of recommendation:** Two letters of recommendation appropriate for a professional school application. Referees may include professors, academic advisors, employment supervisors, or others familiar with students' preparation for graduate study.
- **Official GRE, MCAT, PCAT or DAT score (recommended):** Official score in one of the graduate admissions tests that are no more than three years old.

## Prerequisites

Applicants to the MS Biology program must hold a baccalaureate degree with a minimum cumulative GPA of 3.0 (4.0 scale) and must have completed the academic requirements described below.

- Mathematics through integral calculus
- Chemistry through the second semester of organic chemistry
- Physics through the second semester of physics with calculus
- Biology through introductory biology
- English Language Proficiency (for international students and individuals who completed a degree program outside the United States)

Students lacking these prerequisites may be admitted provisionally until they have been completed satisfactorily (grade of B- or better). None of the prerequisite courses may be used toward fulfillment of the requirements for the master's degree.

Graduate transfer credit toward the degree must be approved by the faculty in each concentration and is limited to 9 credit hours.

## Advising

New students must consult with the graduate program director upon admission to the graduate program. Each graduate student is required to meet with a graduate advisor at least once each semester to select appropriate courses for the following semester. Continuing students who have completed at least one semester of graduate study (or 6 credit hours) with a grade average of 3.0 or higher should consult with their advisors to discuss research and independent study opportunities.

## Requirements

The Master of Science degree in Biology requires a minimum of 36 credit hours, at least 27 of which must be completed at Roosevelt University. Students may focus their studies in the areas of cellular and molecular biology, physiology and developmental biology, conservation ecology, or biochemistry. See below for recommended courses in each area of focus.

## Research and Independent Study

All students must complete 3 credit hours of research training by enrolling in either Research in Biology under the sponsorship of a faculty member (BIOL 492 RESEARCH IN BIOLOGY) or in the scheduled Research Methods course (BIOL 468 RESEARCH METHODS). It is recommended that BIOL 492 RESEARCH IN BIOLOGY be taken for 3 credit hours in a single semester, but it may be taken in increments to total 3 credit hours. Following the initial research experience, qualified students may pursue advanced study toward a master's thesis by enrolling in 3 to 6 additional credit hours of thesis work (BIOL 485 THESIS).

Independent study in literature research (BIOL 495 INDEPENDENT STUDY), off-campus internships (BIOL 491 BIOLOGY INTERNSHIP) and course by arrangement options are also available. These options are included in the total graduate credit hours but do not substitute for research requirements. No more than 10 total credit hours may result from independent study or research unless approved by the graduate program director."

## Scheduled Courses

The remaining coursework for the degree may be chosen from the list below or from other scheduled courses in BIOL, CHEM or BCHM at the

400-level. Class schedules for each academic term will be determined in consultation with a faculty advisor.

### Required Courses

BIOL 492	RESEARCH IN BIOLOGY	3
or BIOL 468	RESEARCH METHODS	

### Biochemistry

BCHM 420	PHYSICAL CHEMISTRY FOR BIOSCIENCE
BCHM 444	BIOINORGANIC CHEMISTRY
BCHM 454	EXPERIMENTAL METHODS IN BIOCHEMISTRY & BIOTECHNOLOGY
BCHM 457	ADVANCED BIOCHEMISTRY
BCHM 464	PROTEIN STRUCTURE DETERMINATION
BCHM 493	BIOCHEMISTRY SEMINAR
BIOL 453	MOLECULAR BIOLOGY
BIOL 458	CELL BIOLOGY

### Cellular and Molecular Biology

BCHM 454	EXPERIMENTAL METHODS IN BIOCHEMISTRY & BIOTECHNOLOGY
BCHM 457	ADVANCED BIOCHEMISTRY
BIOL 449	INTRODUCTION TO BIONANOTECHNOLOGY
BIOL 451	GENERAL GENETICS
BIOL 453	MOLECULAR BIOLOGY
BIOL 458	CELL BIOLOGY
BIOL 450	CANCER BIOLOGY
BIOL 460	MICROBIOLOGY
BIOL 461	INFORMATION TECHNOLOGY FOR SCIENCES
BIOL 467	IMMUNOLOGY

### Conservation Biology

BIOL 414	QUANTITATIVE ECOLOGY & CONSERVATION (with field experience)
BIOL 422	BOTANY
BIOL 423	TROPICAL BIOLOGY (international field course)
BIOL 424	MARINE BIOLOGY
BIOL 432	ECOLOGY OF TALLGRASS PRAIRIES (with field experience)
BIOL 451	GENERAL GENETICS
BIOL 456	DEVELOPMENTAL BIOLOGY
BIOL 466	ECOL & EVOL OF MICRO ORG
BIOL 469	CONSERVATION BIOLOGY: AFRICA (lecture and international field experience)

### Physiology and Developmental Biology

BIOL 430	PHYSIOLOGY: MECHANISMS AND DISORDERS
BIOL 437	NUTRITION IN AMERICA
BIOL 439	EVOLUTIONARY PHYSIOLOGY
BIOL 443	CLINICAL BIOETHICS AND MEDICAL LITERATURE
BIOL 453	MOLECULAR BIOLOGY

BIOL 456	DEVELOPMENTAL BIOLOGY
BIOL 458	CELL BIOLOGY
BIOL 467	IMMUNOLOGY
BIOL 471	BIOLOGY OF AGING
<b>Total Credit Hours</b>	<b>36</b>