Biology, MS

The Master of Science 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 or Ecology, Evolution & Conservation Biology. 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.

Students in the program receive:

- Relevant coursework in a rigorous, yet flexible and broad-based curriculum.
- Research, internship, study abroad, community engagement and on-campus employment opportunities.
- Career development and preparation for doctoral programs, professional schools, and the scientific workforce.
- An academic environment that fosters collaboration among students.
- Personalized advising and mentoring from experienced faculty.

The program is course-based and includes a one-semester research experience. Students who are interested in additional research training may pursue independent study and/or 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 for information on the application process. The graduate program director and department faculty members will evaluate each applicant's individual record of academic achievement, professional experience, and self-assessment. Weakness in one or more areas of preparation will not preclude a positive admission decision. Admissions decisions are at the discretion of the graduate program director.

Application Materials

- **Graduate application:** Application (https://www.roosevelt.edu/admission/apply/) to the College of Arts & Sciences at Roosevelt University.
- **Official transcript(s):** Applicants must request official transcripts from all undergraduate and graduate institutions attended. Coursework completed outside the U.S. requires a foreign credential evaluation (https://www.roosevelt.edu/admission/international/foreign-credentials/).
- **Resume/Curriculum vita:** Applicants should provide a detailed account of their academic and extracurricular experiences. Include employment, teaching, leadership, and research experiences as appropriate.
- **Letter of intent:** Applicants must include a brief (one-page) personal statement which outlines their personal and professional goals, their interest in the program and their qualifications for admission. A personal statement from a central admissions service may be submitted.
- **Letter of recommendation:** Include or request at least two recommendation letters. Referees may include professors, academic advisors, employment supervisors, or others familiar with the applicant's preparation for graduate study.
- **Official GRE, MCAT, PCAT or DAT score (recommended, not required):** Official score in one of the graduate admissions tests that are no more than three years old.
- **Proof of English language proficiency (for international students):** See the University English Language Proficiency requirement (https://www.roosevelt.edu/admission/international/english-language-proficiency/) for details. Applicants can receive an admissions decision if this requirement is not met, but may need to complete ELP coursework before they begin graduate studies.

Prerequisites

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

- Mathematics - two courses, including at least one semester of calculus or statistics
- Chemistry - three courses, including two courses in general (inorganic) chemistry and one course in organic chemistry
- Physics - two courses, including coverage of classical mechanics, oscillations & waves, thermodynamics, electricity and magnetism
- Biology - three courses, including coverage of evolutionary biology & genetics, ecology, cellular & molecular biology, physiology and biochemistry

Students lacking prerequisite coursework may be admitted provisionally until outstanding courses 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.

Credit Policies

Graduate transfer credit (up to 9 credit hours) may be applied to the MS Biology degree within one semester of admission. Credits from a previously earned degree are not transferable. Exemptions to degree requirements (up to 9 credit hours) may be granted to students who have previously completed a graduate degree in a related area and maintain good academic standing after one semester of study at Roosevelt. Roosevelt undergraduate students who enter the MS Biology program through an accelerated degree pathway (or "4+1") may apply up to 10 credit hours of eligible coursework to both the BA/BS Biology and the MS Biology degrees. All adjustments to program credit hour requirements must be approved by the graduate program director.

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 faculty 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, internship, independent study and other career development 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. Each student will develop an academic plan in consultation with a faculty advisor. Students may focus their studies in the areas of Cellular & Molecular Biology, Physiology & Developmental Biology, or Ecology.
Evolution & Conservation Biology. 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 regularly 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 coursework for the degree will be chosen from the list below, from other scheduled courses (https://www.roosevelt.edu/coursefinder/) in BIOL, CHEM or BCHM at the 400-level or through individualized registration as described above.

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tr>
<td>BIOL 492</td>
<td>RESEARCH IN BIOLOGY</td>
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<tr>
<td>or BIOL 468</td>
<td>RESEARCH METHODS</td>
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**Cellular and Molecular Biology**

- BCHM 455  BIOCHEMISTRY
- BCHM 456  EXP. MTHDS BIOCHEM & BIOTECH
- BCHM 457  ADVANCED BIOCHEMISTRY
- 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 466  ECOL & EVOL OF MICRO ORG
- BIOL 467  IMMUNOLOGY

**Ecology, Evolution and 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 463  INTRODUCTION TO GENOME ANALYSIS
- BIOL 466  ECOL & EVOL OF MICRO ORG

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<tr>
<td>BIOL 469</td>
<td>CONSERVATION BIOLOGY: AFRICA (lecture and international field experience)</td>
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<td>BIOL 481</td>
<td>BIOLOGY OF BIRDS: ORNITHOLOGY</td>
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**Physiology and Developmental Biology**

- BIOL 404  HISTOLOGY & ULTRASTRUCTURE
- BIOL 430  PHYSIOLOGY: MECHANISMS AND DISORDERS
- BIOL 437  NUTRITION IN AMERICA
- BIOL 439  EVOLUTIONARY PHYSIOLOGY
- BIOL 443  CLINICAL BIOETICS AND MEDICAL LITERATURE
- BIOL 453  MOLECULAR BIOLOGY
- BIOL 456  DEVELOPMENTAL BIOLOGY
- BIOL 458  CELL BIOLOGY
- BIOL 467  IMMUNOLOGY
- BIOL 471  BIOLOGY OF AGING

Total Credit Hours 36

Your degree map is a general guide to each term on the academic pathway to your degree. It is based on the most current scheduling information from your academic program. Your program’s degree map is reviewed annually and updated as schedules change (although you retain the same course requirements as long as you are continuously enrolled in your degree program).

Always work closely with your academic advisor to understand curriculum requirements and scheduling, as each student’s academic plan can look slightly different. No more than two grades of C (not C-) may be applied toward the 36 hours used for the degree. A graduate course can only be repeated once; no more than two courses can be repeated.

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**Year 2**

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Total Credit Hours 36