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, thesis-based biological science program in which students focus their studies in Molecular & Cellular Biology (MCB), or Ecology, Evolution, & Conservation Biology (EEC). The program is appropriate for students holding a bachelor's 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 thesis-based and all students will complete a minimum 9 hours of research training. Students will match with faculty sponsors following preliminary experiences in BIOL 468 Research Methods and/or research rotations in the first year.

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 program faculty 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 and department chair.

APPLICATION MATERIALS

REQUIRED DOCUMENTS

- **Graduate application:** Application (https://www.roosevelt.edu/admission/apply/) to the College of Science, Health and Pharmacy at Roosevelt University.
- **Transcript(s):** Unofficial transcripts from all undergraduate and graduate institutions attended. International applicants must submit official transcripts, and all applicants must have official transcripts on file before starting graduate studies.
- **Resume/*Curriculum vita*:** A detailed account of academic and extracurricular experiences. Include employment, teaching, leadership, and research experiences.
- **Evidence of prior preparation:** Documentation of relevant scholarly and creative work, such academic research (theoretical or practical), term papers, undergraduate or graduate theses, educational materials, conference presentations, or other work products.
- **Proof of English language proficiency (for international students):** See the University English Language Proficiency requirement for details. Applicants can receive an admissions decision if this requirement is not met.

OPTIONAL DOCUMENTS

- **Letter of intent:** A brief (one-page) personal statement which outlines personal and professional goals.
- **Letter of recommendation:** 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*:*** 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 bachelor's degree with a minimum cumulative GPA of 2.8 (4.0 scale) and should 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.* Exceptions to specific course requirements may be granted to students who have previously completed graduate coursework in a related area and who maintain good academic standing after one semester of study at Roosevelt. Roosevelt undergraduate students who enter the MS Biology program through the Biology accelerated degree program (https://catalog.roosevelt.edu/undergraduate/health-science/accelerated/biology-bsba-biology-ms-accelerated-program/) (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 transfer credits and exceptions must be approved by the graduate program director or department chair.

Advising

New students must consult with a graduate student advisor upon admission to the program. Each graduate student is required to meet with an advisor at least once each semester to select appropriate courses for the following semester.

Requirements

The Master of Science degree in Biology requires a minimum of 36 credit hours, at least 9 of which must be research-related and 27 of which must be completed at Roosevelt University. Each student will develop an academic plan in consultation with an advisor and select a concentration of either Ecology, Evolution, and Conservation Biology (EEC) or Molecular and Cell Biology (MCB). A master's thesis is integral to the curriculum but may be substituted with research and independent study credits with approval of the program director. Students will match

with faculty sponsors following preliminary experiences in BIOL 468 Research Methods and/or research rotations in the first year.

See the list below for required core courses in each concentration and a list of potential electives in each area of focus. Students retain the same course requirements as when they first enroll, as long as they are continuously enrolled in the program. 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.

RESEARCH AND INDEPENDENT STUDY

As a program aimed to prepare students for careers in research or PhD programs, all students in MS Biology must complete a minimum of 9 credit hours of research training by enrolling in 3 credits of research rotations (BIOL 492 (https://catalog.roosevelt.edu/search/?P=BIOL%20492) RESEARCH IN BIOLOGY), the regularly scheduled 3 credit Research Methods course (BIOL 468 (https://catalog.roosevelt.edu/search/?P=BIOL%20468)RESEARCH METHODS), and at least 3 credits of BIOL 485 (https://catalog.roosevelt.edu/search/?P=BIOL%20485) THESIS. It is recommended that BIOL 492 (https://catalog.roosevelt.edu/search/?P=BIOL%20492) 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 experiences, qualified students will continue toward a master's thesis by enrolling in 3 - 6 additional credit hours of BIOL 485 (https://catalog.roosevelt.edu/search/?P=BIOL%20485) THESIS. Students opting out of a thesis must obtain program director approval. Research that was performed in BIOL 492 may be eligible to contribute towards the thesis, subject to thesis committee approval. Thesis proposal and public defense are required for successful completion of thesis credits.

SCHEDULED COURSES

The coursework for the degree in Biology will be chosen from the lists below, from other scheduled courses (https://banner.roosevelt.edu/ssbprod/bwskzenr.P_CourseFinder/) in BIOL, CHEM, or BCHM, or through individualized registration as described above.

Code	Title	Credit Hours
Molecular and Cellular Biology Concentration		
Required Courses		
BCHM 455	BIOCHEMISTRY	
BIOL 418	BIOSTATISTICS	
BIOL 453	MOLECULAR BIOLOGY	
BIOL 458	CELL BIOLOGY	
BIOL 468	RESEARCH METHODS	
BIOL 492	RESEARCH IN BIOLOGY	
BIOL 4XX	(Journal Club)	
BIOL 485	THESIS	
Electives		
BCHM 422	FERMENTATION SCIENCE	
BCHM 456	EXP. MTHDS BIOCHEM & BIOTECH	
BCHM 457	ADVANCED BIOCHEMISTRY	
BIOL 425	VIROLOGY	
BIOL 450	CANCER BIOLOGY	
BIOL 451	GENERAL GENETICS	
BIOL 460	MICROBIOLOGY	
BIOL 463	INTRODUCTION TO GENOME ANALYSIS	
BIOL 467	IMMUNOLOGY	
BIOL 483	SPECIAL TOPICS IN BIOLOGY	
Ecology, Evolution and Conservation Concentration		
Required Courses		
BIOL 4XX	(Topics in Ecology & Environmental Justice)	
BIOL 414	QUANTITATIVE ECOLOGY & CONSERVATION	
BIOL 418	BIOSTATISTICS	
BIOL 439	EVOLUTIONARY PHYSIOLOGY	
BIOL 468	RESEARCH METHODS	
BIOL 492	RESEARCH IN BIOLOGY	
BIOL 4XX	(Journal Club)	
BIOL 485	THESIS	
Electives		
BIOL 422	BOTANY	
BIOL 423	TROPICAL BIOLOGY	
BIOL 424	MARINE BIOLOGY	
BIOL 432	ECOLOGY OF TALLGRASS PRAIRIES	
BIOL 451	GENERAL GENETICS	
BIOL 463	INTRODUCTION TO GENOME ANALYSIS	
BIOL 469	CONSERVATION BIOLOGY: AFRICA	
BIOL 481	BIOLOGY OF BIRDS: ORNITHOLOGY	
BIOL 483	SPECIAL TOPICS IN BIOLOGY	
Total Credit Hours		**36**

The degree map is a *general* guide to each term on the academic pathway to the MS Biology degree. It is based on the most current scheduling information and assumes full-time study (although part-time study is allowed in this program). This degree map is reviewed annually and updated as schedules change. Concentrations in Ecology, Evolution, and Conservation (EEC) and Molecular and Cellular Biology (MCB) are included.

Please note: always work closely with your academic advisor and MS thesis advisor to understand curriculum requirements and scheduling, as each student's academic plan will look different.

Year 1

Fall	Credit Hours	Spring	Credit Hours
BIOL 4XX Topics in Ecology & Env. Justice (EEC) or BIOL 458 (MCB)	3	BIOL 439 (EEC) or BIOL 453 (MCB)	3
BIOL 418	3	BIOL 492	3
BIOL 468	3	BIOL 4XX Elective	3
	9		**9**

Year 2

Fall	Credit Hours	Spring	Credit Hours
BIOL 414 (EEC) or BIOL 4XX Elective (MCB)	5	BIOL 4XX Elective (EEC) or BCHM 455 (MCB)	3
BIOL 4XX (Journal Club)	1	BIOL 485	5

BIOL 485	3 BIOL 4XX (Journal Club)	1
	9	**9**

Total Credit Hours 36