Master of Science in BIOLOGY

The Master of Science in Biology is designed to provide students with advanced knowledge of both plant and animal biology and microbiology. The program requires a minimum of 30 credits. These must include at least one 3-credit course in four of the following six areas:

- Cell Biology/Biochemistry
- Molecular Biology
- Physiology
- Ecology
- Plant Biology
- Computational/Mathematical Biology

In order to complete the degree requirements, students must either complete a thesis on an experimental laboratory or field project; or a comprehensive examination and written scientific paper.

Admissions Requirements

Applicants are expected to have an accredited undergraduate degree in biology from an accredited institution. Candidates with other appropriate backgrounds will be considered. The following cognate undergraduate courses are required: general chemistry, organic chemistry, physics, and calculus. An undergraduate cumulative grade point average of at least 3.0 is expected.

In addition to the application form, three letters of recommendation, undergraduate and graduate transcripts, and Graduate Record Examination (GRE) General test scores are required for admission. GRE scores of 50 percentile or better on each of the general examinations are required. The subject test in Biology is recommended. All applicants who received an undergraduate degree from a school outside of the United States are required to submit scores from the Test of English as a Foreign Language (TOEFL).

Bridge Program: To ensure academic success in their graduate studies, students may be required to take additional undergraduate or graduate courses before beginning program curricula. Such courses are not counted toward degree requirements. The graduate courses will count in the calculation of the graduate grade point average (GPA).

Degree Requirements

Thesis: A minimum of 24 credits of course work, 6 credits of research, completion of a thesis and an oral defense of the submitted thesis. The thesis must be a scholarly paper demonstrating the ability to write clearly and scientifically; and based on experimental laboratory and/or field project research. Upon completion of the written thesis, it must be defended publicly.

A thesis committee, approved by the Director of the Division of Biological Sciences, must be formed. The thesis committee must be comprised of the primary advisor and at least one other faculty reader. All members of the committee must be members of the graduate faculty.

Comprehensive Exam: Completion of 30 credits of course work, pass a written comprehensive examination and complete a paper illustrating the ability to write a scientific data in a clear scholarly manner. A list of six completed courses must be submitted to the Director, who will obtain questions for the exam. The six questions are presented on a specific date. Two weeks (including three weekends) are provided to answer the six questions. Each question must be typewritten, double spaced, and 4-7 pages long, with a separate page for citations. The answers should satisfy high standards of scientific writing and should use primary scientific literature. The questions are graded on a PASS/FAIL basis by the faculty member who submitted the question. Five of the six questions must be answered correctly. The identity of the student will be anonymous to the faculty grader. Only one of the five questions can be retaken. In this instance, a new question is provided.

Revised September 2007
A student who submits a paper to a member of the Biology graduate faculty as part of a course may resubmit the same paper at a later date for re-evaluation by that faculty member. The faculty member will re-grade the paper indicating that it is acceptable to be used as an MS research paper. The paper must demonstrate the ability to use and cite primary scientific literature and be written in a clear and scientific manner.

The comprehensive exam is given twice a year, following the completion of the fall and spring semesters.

Program Requirements: Students who are unable to pass the thesis defense or the written comprehensive examination or who do not receive a passing grade of B or better on the writing requirement by the second try will be dismissed from the program.

Transfer Credits

Credits Already Taken: Up to nine (9) credits may be transferred for credit provided that they were taken at an accredited college or university in the United States or Canada, were not used in fulfillment of a previous degree awarded, earned a final grade of 3.0 or above on a scale whose maximum is 4.0, were earned in graduate level course(s) for which full academic credit was awarded, were in units of at least three (3) credits and were not earned more than seven years ago. Credits earned in quarter systems will be converted to equivalent semester credits.

Credits Not Yet Taken: Up to nine (9) credits may be transferred for credit provided that they are taken at an accredited college or university in the United States or Canada, earn a final grade of 3.0 or above on a scale whose maximum is 4.0, are in graduate level course(s) for which full academic credit is awarded, and are in units of at least three (3) credits. Credits earned in quarter systems will be converted to equivalent semester credits.

NJIT Graduate Academic Policies and Procedures

A complete listing of graduate academic policies and procedures is available at:
http://catalog.njit.edu/graduate/frontmatter/academicpolicy.php

Contact Information

Website: http://biology.njit.edu
Email: biology@njit.edu
Graduate Courses Satisfying Core Categories (Partial List)

**Cell Biology - Biochemistry**
- Cell Molecular Developmental Biology 120:524
- Cell Biology 120:526
- Biology of Cancer 120:548
- Pharmacology 120:573
- Biochemistry 160:581

**Molecular Biology**
- Molecular Biology-Eukaryotes 120:515
- Developmental Neurobiology 120:517
- Topics in Molecular Genetics 120:538
- Topics in Immunology 120:640

**Physiology**
- Neuroanatomy 112:501
- Neurophysiology 546:511
- Mammalian Physiology 120:512
- Neurophysiology & Behavior 830:597
- Neuroendocrinology 830:698

**Ecology/Evolution**
- Microbial Ecology 120:516
- Global Ecology 120:522
- Biogeography 120:523
- Evolution 120:532
- Biological Invasions 120:534
- Biology of Pollution 120:551
- Plant Responses to the Environment 120:584
- Topics in Advanced Ecology 120:588
- Physiological Ecology 120:593
- Systematics 120:594

**Plant Biology**
- Plant Morphology 120:503
- Plant Physiology 120:504
- Paleobotany 120:552
- Developmental Plant Physiology 120:563

**Computational Biology**
- Foundations of Computational Biology Biol 601
- Analytical Computational Neuroscience Math 635
- Computational Ecology Biol 638
- Foundations of Mathematical Biology Math 637
- Introduction to Biostatistics Math 663
- Clinical Trials Design and Analysis Math 665
- Math Models of Biological Waves Math 672
- Pattern Formation in Biological Systems Math 673
- Design and Analysis of Experiments Math 699
- Quantitative Neuroscience R546:605