

Master of Science in BIOLOGY

Rev: 2006/2007

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.

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