

NJIT

New Jersey Institute of Technology
A Public Research University

The Master of Science in
Computational Biology

Federated Department of Biology
NJIT College of Science and Liberal Arts
Rutgers University-Newark

Develop
new tools for
diagnosing and
curing disease
at the cutting
edge of science
and technology

Breakthroughs in the biological sciences combined with advanced computing and mathematics are launching a new age of discovery. The 21st century will see an unprecedented revolution in the health sciences as the human genome yields up its secrets, enabling new strategies for the prevention, diagnosis and cure of disease. Genetic research will translate into innovative approaches in the field of biotechnology. At the forefront of this effort are the professionals with the rare expertise to apply state-of-the-art computing, mathematical, and statistical methods to solve problems in biology and the health sciences. NJIT's Master of Science in Computational Biology program provides the educational background for this new breed of professionals needed by pharmaceutical corporations, biotechnology firms and academic research centers to translate genetic data into practical, life-enhancing applications.

Questions & Answers



Professionals who combine skills in computing, mathematics and biology are in high demand in academic and industrial R&D centers.

WHY PURSUE AN M.S. IN COMPUTATIONAL BIOLOGY

Huge amounts of new scientific information generated over recent years increasingly necessitate the use of sophisticated mathematical methods and models to solve research problems in the life sciences. Professionals who combine skills in computing, mathematics and biology are in high demand in academic and industrial R&D centers. NJIT's M.S. in Computational Biology, offered in partnership with Rutgers University – Newark, provides an educational background that blends biology with computer science and mathematics.

WHY STUDY COMPUTATIONAL BIOLOGY AT NJIT?

NJIT was one of a small number of universities selected by the Alfred P. Sloan Foundation to receive grant support for the development of a masters program in computational biology. The university has an established record of excellence in computing and applied mathematics, and is building a major research and educational focus in the life sciences in partnership with Rutgers University and the University of Medicine and Dentistry of New Jersey. In addition, New Jersey is home to the nation's largest concentration of life science industries, with more than 110 biotechnology companies as well as 21 of the nation's largest pharmaceutical companies. As the state's public technological research university, NJIT already has strong ties with the state's pharmaceutical and biotechnology industries.



DO STUDENTS HAVE OPPORTUNITIES FOR RESEARCH AND DOCTORAL STUDIES?

Students have the opportunity to work, one-on-one, with faculty researchers at NJIT's Center for Computational Biology and Bioengineering, on studies in such areas as DNA microarray technology, blood and other fluid flows in biological systems, computational modeling of neurons and neuron networks, rehabilitation technology, and drug design. Qualified and research oriented students will have the option of continuing their studies by pursuing a Ph.D. in Biology within the computational biology track. The university also sponsors an Industry Collaborative Ph.D. program that allows students to pursue a doctoral degree while working full-time in industry.

WHO TEACHES THE COURSES?

Distinguished faculty from both NJIT and Rutgers University teach the program's courses. www.njit.edu/els/sloan/sloanfac.html

WHO SHOULD ENROLL IN THE M.S. IN COMPUTATIONAL BIOLOGY?

The Master of Science in Computational Biology is designed to complement a background in biology, physics, chemistry, mathematics or computer science. Depending on the student's background, two different bridge programs are offered: one for a background in biological sciences, the other for prior training in mathematics/computer science/physics.

The university also sponsors an Industry Collaborative Ph.D. program that allows students to pursue a doctoral degree while working full-time in industry.

IS PART-TIME STUDY AVAILABLE?

As with all graduate programs at NJIT, the M.S. in Computational Biology can be pursued on a full- or part-time basis. Most courses are scheduled in evenings, weekends, or late afternoons to accommodate working professionals.



DOES THE PROGRAM OFFER FINANCIAL AID?

Various financial support and graduate award options are available to graduate students at NJIT, including teaching, research and graduate assistantships; fellowships; special awards; loans and work-study; cooperative education industry positions; and curricular practical training. A number of financial support options are available for targeted groups. These include Minority Academic Career (MAC) Fellowships, National Consortium for Graduate Degrees for Minorities in Engineering and Science (GEM) Fellowships, and NJIT Presidential Fellowships. For further information, see the Graduate Studies web site at www.njit.edu/Directory/Admin/Graduate_Studies/Welcome.html.

FOR FURTHER INFORMATION

M.S. in Computational Biology
Life Sciences Program at NJIT
Phone: (973) 596-3483
Email: lifesciences@admin.njit.edu
www.njit.edu/els/

PROGRAM SUMMARY

Degree Awarded: Master of Science in Computational Biology
Credits Required: 30
Program Objective: To prepare professionals with the background to integrate mathematical, statistical, and computer methods to solve biological, biochemical, and biophysical problems.

SUMMARY OF ADMISSIONS REQUIREMENTS

B.A. or B.S. from an accredited undergraduate program
GPA of 3.0 on a 4.0 scale required

AREAS OF CONCENTRATION

- Biostatistics
- Molecular Modeling and Drug Design
- Functional Genomics
- Computational Neuroscience

CORE COURSES

Biol 601	Foundations of Computational Biology
Biol 602	Current Trends in Computational Biology
Biol 603	Molecular Biology for Physical and Computational Scientists
CIS 505	Programming, Data Structures, and Algorithms
CIS 610	Data Structures and Algorithms
CIS 631	Data Management System Design
Biol 701	Master's Thesis or Project

NJIT does not discriminate on the basis of sex, sexual orientation, race, age, religion, national or ethnic origin, veteran's status or handicap in its educational programs, activities or employment policies. Campus facilities are accessible to the disabled.