BIOINFORMATICS GRADUATE PROGRAM

Master of Science Degree in
Biochemistry and Molecular Biology – Bioinformatics Track

• Preparation for careers in the fields of bioinformatics, computational biology, systems biology, medical informatics, biodefense, and biotechnology

• Multidisciplinary and flexible coursework includes topics such as proteomics, genomics, molecular evolution, pathway and network analysis, tools and resource development, and also a 16-week internship

• The University is located in Georgetown and is easily accessible via free buses from Metrorail. Tours of the campus can be scheduled by calling the Admissions Office at 202/687-3600 between 9:00 am and 5:00 pm.
Master of Science Degree in Biochemistry and Molecular Biology – Bioinformatics Track

Bioinformatics is an exciting, emerging field at the intersection of the biological and computational sciences. Bioinformatics encompasses the development and application of computational tools and techniques for the collection, analysis, management, and visualization of biological data, as well as modeling and simulation methods for the study of biological systems. Advances in high-throughput biotechnologies and large-scale biocuration have highlighted the critical role of bioinformatics in modern biotechnology, drug discovery, disease diagnosis, and systems medicine.

ABOUT THE PROGRAM
The one-year M.S. Degree in Biochemistry and Molecular Biology (Bioinformatics Track) is offered by the Department of Biochemistry and Molecular & Cellular Biology at Georgetown University Medical Center. The Department has a large, vibrant biotechnology program, a well-connected PhD program and a state of the art, well-funded, research program. The Department is home to the Protein Information Resource (PIR), a scientific leader in proteomics bioinformatics for more than four decades.

The Bioinformatics Track degree program includes coursework, hands-on computer labs, experience building projects, and a bioinformatics internship. Built upon the unique research strengths and extensive bioinformatics infrastructure at PIR and Georgetown University, the curriculum emphasizes bioinformatics of genomics, proteomics and systems biology.

UNIQUE STRENGTHS OF THE PROGRAM
• Flexible – Full-time and part-time options, elective courses, customized programs.
• Multi-disciplinary – Supported by the Departments of Biochemistry and Molecular & Cellular Biology, Oncology, Biostatistics, Computer Science, and Lombardi Cancer Center.
• Professional experience – A 16-week internship with working bioinformatics professionals in leading bioinformatics, biomedical and biotechnology institutions, including National institutes of Health, J. Craig Venter Institute (formerly TIGR), Protein Information Resource, Children’s National Medical Center, and local biotechnology companies.

MULTI-DISCIPLINARY TOPICS
• Bioinformatics and Systems Biology
• Genomic and Proteomic Informatics
• Biomedical Text Mining and Ontologies
• Data Integration and Data Mining
• Function Prediction and Protein Structure Analysis
• Molecular Evolution and Genetics
• Pathway and Network Analysis
• Algorithm and Resource Development

The faculty and guest lecturers include some of the top bioinformatics scientists involved in developing and maintaining internationally recognized bioinformatics databases and resources.

POTENTIAL
Bioinformatics is fundamental to the modern day study of biology and essential to 21st century biomedical research. With the data explosion of “omics” biotechnologies and the promise of systems biology and personal genomics, there is high demand for bioinformatics professionals with computing and bioscience skills in both academia and industry. Graduates may also pursue further study towards a PhD, MD, MBA or law degree.

APPLICATION DEADLINE AND HOW TO APPLY
• Rolling admissions application deadlines:
  Fall: July 1st
  Spring: December 1st
• Late applications considered subject to availability

APPLICATION REQUIREMENTS
Applicants to the program must be in the last semester of undergraduate study or hold a bachelor’s degree in biology, chemistry, computer science, mathematics or related subjects from an accredited college or university. Applicants with business or law degrees are also considered.

Requirements for the MS degree Programs:
• Grade point average of 3.0 or higher
• Original undergraduate transcripts
• Two letters of recommendation
• Personal statement
• TOEFL (for students from non-English speaking institutions)
• GRE recommended, but not required

DEGREE REQUIREMENTS
30 credits. The one-year program may be completed over a longer time frame for part-time students.

TYPICAL COURSE SELECTION

Fall Semester (16 credit hours)
BCHB-513  Core Concepts of Biochemistry (4)
BCHB-521  Bioinformatics (3)
BCHB-524  Bioinformatics Computing (3)
BCHB-526  Modern Methods of Biotechnology (3)
Electives (3) – From any courses offered by the Department of Biochemistry and Molecular & Cellular Biology, and most science graduate courses at Georgetown University.

Spring Semester (14 credit hours)
BCHB-580  Systems Biology and Bioinformatics (3)
BCHB-908  Bioinformatics Internship (4)
BCHB-541  Structural Molecular Biology (2)
BST-502  Applied Biostatistics (3)
PHAR-534  Ethical Issues in Scientific Research (2)

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TO LEARN MORE AND APPLY, VISIT:
http://bioinformaticsdegree.georgetown.edu