Bioinformatics, MS (Toronto)

The Master of Science in Bioinformatics seeks to provide students with core knowledge in bioinformatics programming, integrating knowledge from the biological, computational, and mathematical disciplines. Upon completion, students are equipped to apply bioinformatics and computational methods to biological problems. Students in the MS program have the opportunity to gain professional work experience via co-op.

The program consists of core coursework in computational methods, programming, and statistics, enhanced by electives in molecular biology, biochemistry, molecular modeling, web development, database design and management, data mining, and other related topics.

Program Requirements

Complete all courses and requirements listed below unless otherwise indicated.

Core Requirements

Code	Title	Hours
Programming		
BINF 6200	Bioinformatics Programming	4
Computational Methods		
BINF 6310	Introduction to Bioinformatics	4
Statistics		
MATH 7340	Statistics for Bioinformatics	4
Research and Seminar		
BIOL 6381	Ethics in Biological Research	2
Professional Development		
BINF 6964	Co-op Work Experience	0
or BINF 5964	Projects for Professionals	
BINF 7700	Bioinformatics Research Directions	4
BIOT 5219	The Biotechnology Enterprise	2
EESC 6500	Pathways to Professional Success	1
or BINF 6500	Professional Development for Co-op	

Concentration or Electives Option

A concentration is not required. Students who choose not to declare a concentration will complete the electives option.

- Bioinformatics Enterprise (p. 1)
- Biotechnology (p. 1)
- Omics (p. 2)
- Electives Option (p. 2)

Program Credit/GPA Requirements

32 total semester hours required
(Additional hours may be required based on choice of concentration)
Minimum 3.000 GPA required

CONCENTRATION IN BIOINFORMATICS ENTERPRISE

Code	Title	Hours
BIOT 5225	Managing and Leading a Biotechnology Company	3
BIOT 5228	Planning and Executing Biotechnology Projects	3
BIOT 5500	Concepts in Regulatory Science	3

CONCENTRATION IN BIOTECHNOLOGY

Code	Title	Hours
BIOT 5120	Foundations in Biotechnology	3
BIOT 5621	Protein Principles in Biotechnology	3
BIOL 6299	Molecular Cell Biology for Biotechnology	3

CONCENTRATION IN OMICS

Code	Title	Hours
BINF 6400	Genomics in Bioinformatics	4
BINF 6420	Omics in Bioinformatics	4
BINF 6430	Transcriptomics in Bioinformatics	4

ELECTIVES OPTION

Code	Title	Hours
Complete 11 semester hours of coursework from the electives list below.		11

ELECTIVES LIST

Complete the remaining semester hours from the approved electives list below. Students who declare the omics concentration are not required to complete electives.

Code	Title	Hours
BIOT 5145	Biotechnology Lab Skills	
BIOT 5225	Managing and Leading a Biotechnology Company	
BIOT 5227	Launching Your Science: Biotechnology Entrepreneurship	
BIOT 5330	Drug Safety and Immunogenicity	
BIOT 5340	Introduction to Biotherapeutic Approvals	
BIOT 5500	Concepts in Regulatory Science	
BIOT 5560	Bioprocess Fundamentals	
BIOT 5635	Downstream Processes for Biopharmaceutical Production	
BIOT 5640	Drug Product Processes for Biopharmaceuticals	
BIOT 5700	Molecular Interactions of Proteins in Biopharmaceutical Formulations	
BIOT 5810	Cutting-Edge Applications in Molecular Biotechnology	
BIOT 5850	Higher-Order Structure Analytics	
BIOT 6100	Agricultural Biotechnology	
BIOT 6214	Experimental Design and Biostatistics	
BIOT 6300	Pharmaceutical Microbiology	
BIOT 6320	Design and Development of Biopharmaceuticals	
BIOT 6340	Sterile Manufacturing Operations	
BIOT 7245	Biotechnology Applications Laboratory	
CHEM 5550	Introduction to Glycobiology and Glycoprotein Analysis	
CHEM 5620	Protein Chemistry	
INSH 5301	Introduction to Computational Statistics	