Bioinformatics

Program Requirements

The student is responsible for fulfilling both the participating unit requirements for the Master's degree, and the requirements of the Collaborative Program.

The minimum requirements of the collaborative program include successful completion of two required courses, and a master's thesis on an approved bioinformatics topic.

Required courses:

- 0.5 credit in BIOL 5515 Bioinformatics
- 0.5 credit in BIOL 5517 Bioinformatics Seminar
- Thesis - candidates must successful complete a research thesis on a topic in bioinformatics supervised by a faculty member of the Collaborative Program in Bioinformatics.

Notes:

1. Students in programs in Biology, Computer Science, Mathematics & Statistics may use BIOL 5515 Bioinformatics to count towards degree requirements; BIOL 5517 Bioinformatics Seminar must be taken in addition to the regular seminar course.
2. Students in Biomedical Engineering may use both BIOL 5515 Bioinformatics and BIOL 5517 Bioinformatics Seminar to count towards degree requirements.
3. In addition, the student's thesis committee or advisory committee may direct the student to take or audit further courses to complement the student's background and research program.

M.A.Sc. Biomedical Engineering with Specialization in Bioinformatics (5.0 credits)

Consult the Bioinformatics section for details regarding admission requirements to this program.

Requirements - by thesis (5.0 credits)

1. 0.5 credit in:		0.5
BIOM 5010 [0.5]	Introduction to Biomedical Engineering	
2. 1.0 credit in:		1.0
BIOL 5515 [0.5]	Bioinformatics	
BIOL 5517 [0.5]	Bioinformatics Seminar	
3. 1.0 credit in BIOM (BMG) courses		1.0
4. 2.5 credits in:		2.5
BIOM 5909 [2.5]	M.A.Sc. Thesis	
5. 0.0 credit in:		0.0
BIOM 5800 [0.0]	Biomedical Engineering Seminar	
Total Credits		5.0

M.Sc. Biology with Specialization in Bioinformatics (5.0 credits)

Requirements:

1. 1.0 credit in:		1.0
BIOL 5515 [0.5]	Bioinformatics	
BIOL 5517 [0.5]	Bioinformatics Seminar	
2. 4.0 credits in:		4.0
BIOL 5909 [4.0]	M.Sc. Thesis	
Total Credits		5.0

M.Sc. Mathematics and Statistics with Specialization in Bioinformatics (4.5 credits)

Requirements:

1. 1.0 credit in:		1.0
BIOL 5515 [0.5]	Bioinformatics	
BIOL 5517 [0.5]	Bioinformatics Seminar	
2. 1.5 credits in coursework		1.5
3. 2.0 credits in:		2.0
MATH 5909 [2.0]	M.Sc. Thesis in Mathematics (on an approved bioinformatics topic)	
Total Credits		4.5

1. Students must receive approval for course selection from their supervisor before registering in courses.
2. All master's students should normally participate in a seminar or research talks under the guidance of their supervisors.

M.C.S. Computer Science with Specialization in Bioinformatics (5.5 credits)

Requirements - Thesis Option (5.5 credits)

1. 1.0 credit in:		1.0
BIOL 5515 [0.5]	Bioinformatics	
BIOL 5517 [0.5]	Bioinformatics Seminar	
2. 2.0 credits in additional course work. Course work must include a minimum of 1.5 credits of OCICS courses in three different research areas (see OCICS course listing by research areas).		2.0
3. 2.5 credits in:		2.5
COMP 5905 [2.5]	M.C.S. Thesis (Each candidate submitting a thesis will be required to undertake an oral defence of the thesis.)	
Total Credits		5.5

Bioinformatics-Related Courses

Biology

BIOL 5105 (BIO 5302)	Methods in Molecular Genetics
BIOL 5201 (BIO 8301)	Evolutionary Bioinformatics
BIOL 5409 (BIO 5306)	Modelling for Biologists
BIOL 5501 (BIO 8100)	Directed Studies in Biology
BIOL 5502 (BIO 8102)	Selected Topics in Biology
BIOL 5516 (BNF 5107)	Applied Bioinformatics

Biomedical Engineering

BIOM 5400 (BMG 5317)	Medical Computing
BIOM 5405 (BMG 5111)	Pattern Classification and Experiment Design

Computer Science

COMP 5306 (CSI 5100)	Data Integration
COMP 5307 (CSI 5101)	Knowledge Representation
COMP 5704 (CSI 5131)	Parallel Algorithms and Applications in Data Science

COMP 5703 (CSI 5163)	Algorithm Analysis and Design
COMP 5108 (CSI 5126)	Algorithms in Bioinformatics

Mathematics and Statistics

STAT 5708 (MAT 5170)	Probability Theory I
STAT 5709 (MAT 5171)	Probability Theory II
STAT 5703 (MAT 5181)	Data Mining
STAT 5702 (MAT 5182)	Modern Applied and Computational Statistics
STAT 5600 (MAT 5190)	Mathematical Statistics I
STAT 5501 (MAT 5191)	Mathematical Statistics II
MATH 6507 (MAT 5319)	Topics in Probability

Systems and Computer Engineering

SYSC 5104 (ELG 6114)	Methodologies For Discrete-Event Modeling And Simulation
SYSC 5703 (ELG 6173)	Integrated Database Systems