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:
   - BIOM 5010 [0.5] Introduction to Biomedical Engineering
2. 1.0 credit in:
   - BIOL 5515 [0.5] Bioinformatics
   - BIOL 5517 [0.5] Bioinformatics Seminar
3. 1.0 credit in:
   - BIOM (BMG) courses
4. 2.5 credits in:
5. 0.0 credit in:
   - 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:
   - BIOL 5515 [0.5] Bioinformatics
   - BIOL 5517 [0.5] Bioinformatics Seminar
2. 4.0 credits in:

M.Sc. Mathematics and Statistics with Specialization in Bioinformatics (4.5 credits)
Requirements:
1. 1.0 credit in:
   - BIOL 5515 [0.5] Bioinformatics
   - BIOL 5517 [0.5] Bioinformatics Seminar
2. 1.5 credits in coursework
3. 2.0 credits in:

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:
   - 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).
3. 2.5 credits in:
   - 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
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>COMP 5703</td>
<td>Algorithm Analysis and Design</td>
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<tr>
<td>COMP 5108</td>
<td>Algorithms in Bioinformatics</td>
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<tr>
<td>STAT 5708</td>
<td>Probability Theory I</td>
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<td>STAT 5709</td>
<td>Probability Theory II</td>
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<td>STAT 5703</td>
<td>Data Mining</td>
</tr>
<tr>
<td>STAT 5702</td>
<td>Modern Applied and Computational Statistics</td>
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<tr>
<td>STAT 5600</td>
<td>Mathematical Statistics I</td>
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<tr>
<td>STAT 5501</td>
<td>Mathematical Statistics II</td>
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<tr>
<td>MATH 6507</td>
<td>Topics in Probability</td>
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<tr>
<td>SYSC 5104</td>
<td>Methodologies For Discrete-Event Modeling And Simulation</td>
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<tr>
<td>SYSC 5703</td>
<td>Integrated Database Systems</td>
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