Overview

Bioinformatics is an exciting field at the junction of computer science and biology. It deals with the application of computing and mathematical methods to the management, analysis and modelling of biological data, especially in relation to molecular biology.

Potential employers include research groups in the biotechnology and pharmaceutical industries and institutions such as universities, medical research institutes and research hospitals.

The Bioinformatics stream in the Graduate Diploma and Master of Information Technology programs are targeted at graduates who are interested in applying computer science and computer engineering skills to problems in the life sciences.

It covers the scientific foundations of bioinformatics (biotechnology and statistics), computer technologies important in bioinformatics (programming, scripting, machine learning, data mining and warehousing) and bioinformatics methods and applications in the analysis of sequence, structure and function of biological molecules.
Faculty
Faculty of Engineering

School
School of Computer Science and Engineering

Study Level
Postgraduate

Minimum Units of Credit
96

Specialisation Type
Specialisation
Available in Program(s)

Program(s) in which this specialisation is available

Master of Information Technology - MIT

8543 Information Technology

Faculty: Faculty of Engineering
Campus: Kensington
Units of Credit: 96
Typical Duration: 2 Years
Specialisation Structure

Students must complete 96 UOC.

Core Courses

Students must take 48 UOC of the following courses.

BINF9010  |  6 UOC
Applied Bioinformatics

COMP9021  |  6 UOC
Principles of Programming

COMP9024  |  6 UOC
Data Structures and Algorithms

COMP9311  |  6 UOC
Database Systems

COMP9331  |  6 UOC
Computer Networks and Applications

COMP9900  |  6 UOC
Information Technology Project

GSOE9820  |  6 UOC
Engineering Project Management

One of the following:
BINF6111  |  6 UOC
Genome Informatics Engineering Design Workshop

BINF6112  |  6 UOC
Computational Biology Engineering Design Workshop
Advanced Disciplinary Knowledge Electives

Students must take at least 30 UOC of the following courses.

COMP4121  |  6 UOC  
Advanced and Parallel Algorithms

COMP4161  |  6 UOC  
Advanced Topics in Software Verification

COMP4418  |  6 UOC  
Knowledge Representation and Reasoning

COMP6714  |  6 UOC  
Information Retrieval and Web Search

COMP9153  |  6 UOC  
Algorithmic Verification

COMP9242  |  6 UOC  
Advanced Operating Systems

COMP9243  |  6 UOC  
Distributed Systems

COMP9315  |  6 UOC  
Database Systems Implementation

COMP9318  |  6 UOC  
Data Warehousing and Data Mining

COMP9319  |  6 UOC  
Web Data Compression and Search

COMP9323  |  6 UOC  
Software as a Service Project
<table>
<thead>
<tr>
<th>Course Code</th>
<th>UOC</th>
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<tbody>
<tr>
<td>COMP9334</td>
<td>6</td>
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<tr>
<td>Capacity Planning of Computer Systems and Networks</td>
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<tr>
<td>COMP9336</td>
<td>6</td>
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<tr>
<td>Mobile Data Networking</td>
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<tr>
<td>COMP9417</td>
<td>6</td>
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<tr>
<td>Machine Learning and Data Mining</td>
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<tr>
<td>COMP9418</td>
<td>6</td>
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<tr>
<td>Advanced Topics in Statistical Machine Learning</td>
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<td>COMP9434</td>
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<tr>
<td>Robotic Software Architecture</td>
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<tr>
<td>COMP9444</td>
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<tr>
<td>Neural Networks and Deep Learning</td>
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<tr>
<td>COMP9517</td>
<td>6</td>
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<tr>
<td>Computer Vision</td>
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<td>COMP9900</td>
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<tr>
<td>Information Technology Project</td>
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<tr>
<td>COMP9991</td>
<td>6</td>
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<tr>
<td>Research Project A</td>
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<tr>
<td>COMP9992</td>
<td>6</td>
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<tr>
<td>Research Project B</td>
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<tr>
<td>COMP9993</td>
<td>12</td>
</tr>
<tr>
<td>Research Project C</td>
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</tbody>
</table>

**Prescribed Electives**
Students must take 18 UOC of the following courses. BINF6111 or BINF6112 (6 UOC) can also be counted as part of the Core Course as substitution.

**COMP9318 | 6 UOC**  
Data Warehousing and Data Mining

**COMP9417 | 6 UOC**  
Machine Learning and Data Mining

**MATH5846 | 6 UOC**  
Introduction to Probability and Stochastic Processes

**MATH5856 | 6 UOC**  
Introduction to Statistics and Statistical Computations

One of the following:

**BINF6111 | 6 UOC**  
Genome Informatics Engineering Design Workshop

**BINF6112 | 6 UOC**  
Computational Biology Engineering Design Workshop

**Project Option**

Students can substitute COMP9900 and 6 or 12 UOC of Advanced Disciplinary Knowledge courses with the following research project course combinations subject to meeting the following criteria:
- completed (or have advanced standing in) 72 UOC; and
- obtained agreement from a CSE academic supervisor; and
- maintained a distinction level performance in the program.

Students who complete these research projects are not required to complete COMP9900 Information Technology Project.

**COMP9991 | 6 UOC**  
Research Project A

**COMP9992 | 6 UOC**  
Research Project B
**Level 4 or Higher COMP Electives**

Students must complete a minimum of 24 UOC of the following courses, up to a maximum of 36 UOC.

- any level 4 Computer Science course
- any level 6 Computer Science course
- any level 9 Computer Science course

**Enrolment Disclaimer**

Unless advised otherwise by your program authority, you should follow the rules for the handbook for the year you commenced your program. You are also responsible for ensuring you enrol in courses according to your program requirements. myUNSW enrolment checks that you have met enrolment requirements such as pre-requisites for individual courses but not that a course will count towards your program requirements.
Pre-2019 Handbook Editions

Access past handbook editions (2018 and prior)

Pre-2019 Handbook Editions
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Authorised by Deputy Vice-Chancellor (Academic)
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