

COMP90016 Computational Genomics

Credit Points:	12.50
Level:	9 (Graduate/Postgraduate)
Dates & Locations:	2012, Parkville This subject commences in the following study period/s: Semester 1, Parkville - Taught on campus.
Time Commitment:	Contact Hours: 36 hours, made up of 12 hr-hour lectures (one per week) and 12 one-hour workshops (one per week) Total Time Commitment: 120 hours
Prerequisites:	None
Corequisites:	None
Recommended Background Knowledge:	One semester computer programming, or equivalent experience.
Non Allowed Subjects:	433-451 Computational Genomics
Core Participation Requirements:	For the purposes of considering request for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Students Experiencing Academic Disadvantage Policy, academic requirements for this subject are articulated in the Subject Description, Subject Objectives, Generic Skills and Assessment Requirements of this entry. The University is dedicated to provide support to those with special requirements. Further details on the disability support scheme can be found at the Disability Liaison Unit website: http://www.services.unimelb.edu.au/disability/
Coordinator:	Dr Linda Stern
Contact:	Dr Aaron Harwood email: aharwood@unimelb.edu.au (mailto:adrianp@unimelb.edu.au)
Subject Overview:	Topics covered include: <ul style="list-style-type: none"> # Computational issues in physical mapping of DNA, in genome annotation, and in analyzing gene expression data # Motif extraction; methods for determining phylogenetic trees # RNA structure determination # And protein structure determination
Objectives:	On completion of this subject students should be able to: <ul style="list-style-type: none"> # Describe current research issues in bioinformatics # Describe the most commonly used approaches to processing genomic data, their theoretical underpinnings, and their strengths and limitations # Outline a variety of algorithms used for processing genomic data # Select algorithms appropriate to a given application # Critically evaluate the results obtained using different bioinformatics techniques to process genomic data # Write a simple bioinformatics computer program and use bioinformatics programming libraries # Describe the role of information theory in analysis of biological data
Assessment:	Four assignments spread over the semester, totaling 5,000 words or equivalent (30%) And one 2-hour end-of-semester written examination (70%) To pass the subject, students must obtain a mark of at least 35/70 on the exam and 15/30 for the assignments.

Prescribed Texts:	None
Breadth Options:	This subject is not available as a breadth subject.
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Generic Skills:	<p>On completion of this subject, students should have the:</p> <ul style="list-style-type: none"> # Ability to undertake problem identification, formulation and solution # Ability to utilise a systems approach to complex problems and to design an operational performance # Ability to manage information and documentation # Capacity for creativity and innovation # Ability to communicate effectively with the engineering team and with the community at large
Related Course(s):	<p>Bachelor of Computer Science (Honours) Master of Biomedical Engineering Master of Engineering in Distributed Computing Master of Science (Bioinformatics) Master of Science (Computer Science) Master of Software Systems Engineering Postgraduate Certificate in Engineering</p>
Related Majors/Minors/ Specialisations:	<p>Computer Science Master of Engineering (Biomedical) Master of Engineering (Software)</p>