

521-308 Genome Science

Credit Points:	12.50
Level:	3 (Undergraduate)
Dates & Locations:	2009, This subject commences in the following study period/s: Semester 1, - Taught on campus.
Time Commitment:	Contact Hours: Two hours of lectures per week (total 24 hours) and three hours of computer-assisted practicals or applied bioinformatics project exercises per week (total 36 hours) Total Time Commitment: 120 hours
Prerequisites:	521-213 Integrated Biomedical Science I and 536-250 Integrated Biomedical Science II.
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	521-302 Functional Genomics and Bioinformatics (2009) is a non-allowed combination with 521-308.
Core Participation Requirements:	It is University policy to take all reasonable steps to minimise the impact of disability upon academic study and reasonable steps will be made to enhance a student's participation in the University's programs. Students who feel their disability may impact upon their active and safe participation in a subject are encouraged to discuss this with the relevant subject coordinator and the Disability Liaison Unit.
Coordinator:	Assoc Prof Matt Perugini
Subject Overview:	<p>The subject aims to develop knowledge and skills in and an understanding of the rationale and experimental strategies and computational sequence analyses being used in the major international genome programs (particularly the Human Genome Project) and an appreciation of the potential for future applications of this knowledge and relevance to the transcriptome, proteome and metabolome.</p> <p>The subject will be organised into three components: a lecture series, computer-based exercises, and an applied bioinformatics project.</p> <p>The lecture series will cover the following areas: an overview of the history, goals and discoveries of the Human Genome Project; general experimental strategies for complete structural characterisation of genomes; comparative genomics focusing on gene organisation and diversification in evolution; haplotypes and single nucleotide polymorphisms; principles of computational molecular biology (bioinformatics) directed towards DNA and protein sequence alignments, pattern recognition, evolutionary comparisons and structural genomics; gene expression analysis using microarray technology with applications to human disease; the Human Proteome Project and the development of a proteome knowledge base and model systems; methods for the analysis and quantitation of the proteome and protein-protein interactions; and metabolomic profiling and applications to drug discovery. It will also cover ethical issues relating to biomedical research, publications and scientific conduct.</p> <p>The computer-based exercises will aim to develop skills in sequence data retrieval, sequence alignments and pattern recognition.</p> <p>The applied bioinformatics project is designed to provide students with skills in bioinformatics, library research, oral communication, report writing and team work in a relevant area of genome science.</p>
Assessment:	Practical and computer-based exercises during the semester (10%); a 1-hour written examination held mid-semester (10%); a 10-minute applied bioinformatics project oral presentation during the semester (15%); a 1500-word applied bioinformatics project report due during the semester (15%); a 2-hour written examination in the examination period on the theoretical and practical components of the subject (50%).

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
Notes:	This subject is only available to Bachelor of Biomedical Science students.
Related Course(s):	Bachelor of Biomedical Science