

505-944 Bioinformatics and Statistical Genetics

Credit Points:	12.500
Level:	Graduate/Postgraduate
Dates & Locations:	2008, This subject commences in the following study period/s: Semester 2, - Taught on campus. Distance
Time Commitment:	Contact Hours: None Total Time Commitment: 8-12 hours total study time per week
Prerequisites:	505-105 Mathematics Background for Biostatistics 505-106 Epidemiology 505-107 Principles of Statistical Inference 505-940 Linear Models 505-941 Categorical Data and GLMs 505-975 Probability and Distribution Theory
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	None
Core Participation Requirements:	<p><p>For the purposes of considering request for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005), and Student Support and Engagement Policy, academic requirements for this subject are articulated in the Subject Overview, Learning Outcomes, Assessment and Generic Skills sections of this entry.</p> <p>It is University policy to take all reasonable steps to minimise the impact of disability upon academic study, and reasonable adjustments will be made to enhance a student's participation in the University's programs. Students who feel their disability may impact on meeting the requirements of this subject are encouraged to discuss this matter with a Faculty Student Adviser and Student Equity and Disability Support: http://services.unimelb.edu.au/disability</p></p>
Coordinator:	Biostatistics Collaboration of Australia
Subject Overview:	<p>The subject begins with a brief review of elementary molecular biology: DNA, RNA, the “central dogma”, meiosis, mitosis and genes. Some fundamental mathematical tools for statistical analysis are also reviewed. The course then covers some bioinformatics relevant to gene discovery: sequence alignment and database searching, concentrating on the statistics used to guard against false discovery. The core of the course is concerned with statistical genetics. This includes Mendelian genetics, Models of recombination and techniques for discovering connections between genes and disease: variance components and twin studies, association and linkage analysis.</p> <p>Subject Objectives: To provide an introduction to the fields of bioinformatics and genetic epidemiology from a statistical point of view. This will include an understanding of the basic concepts of molecular biology and pertinent areas of bioinformatics. The primary goal will be to achieve an understanding of genetics as a mathematical and statistical discipline.</p>
Assessment:	Five written assignments to be submitted during semester worth 20% each (approx 8 hrs work each).
Prescribed Texts:	Special Computer Requirements: Stata statistical software and Excel (or equivalent) Resources Provided to Students: Printed course notes and assignment material will be provided to students via post.
Recommended Texts:	Sham, P. <i>Statistics in Human Genetics</i> . Arnold: 1998.
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 students should have a basic understanding of Modern genetics and be able to apply appropriate statistical methods to the analysis of genetic data from both family and population-based studies of human subjects.</p> <p>Level: 500</p>
Links to further information:	<p>http://www.sph.unimelb.edu.au</p>
Notes:	<p>This subject is not available in the Master of Public Health.</p> <p>Subject Coordinator: Dr Graham Wood, Macquarie University</p>
Related Course(s):	<p>Master of Agricultural Science Master of Biostatistics Postgraduate Certificate in Biostatistics Postgraduate Diploma in Biostatistics</p>