POPH90124 Bioinformatics

Credit Points:	12.5
Level:	9 (Graduate/Postgraduate)
Dates & Locations:	2015, Parkville This subject commences in the following study period/s: Semester 2, Parkville - Taught online/distance.
Time Commitment:	Contact Hours: None Total Time Commitment: 170 hours
Prerequisites:	-

Subject	Study Period Commencement:	Credit Points:
POPH90015 Mathematics Background for Biostatistics	Semester 1, Semester 2	12.50
POPH90017 Principles of Statistical Inference	Semester 1, Semester 2	12.50
POPH90018 Data Management & Statistical Computing	Semester 1, Semester 2	12.50
POPH90148 Probability and Distribution Theory	Semester 1, Semester 2	12.50
POPH90120 Linear Models	Semester 1, Semester 2	12.50

Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	None
Core Participation Requirements:	None
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Subject Overview:	Bioinformatics is a multidisciplinary field that combines biology with quantitative methods to help understand biological processes, such as disease progression. This unit provides a broad-ranging study of this application of quantitative methods in biology. Content includes: biology basics; statistical genetics; web-based tools, data sources and data retrieval; the analysis of single and multiple DNA or protein sequences; Hidden Markov Models and their applications; evolutionary models; phylogenetic trees; transcriptomics (gene expression microarrays and RNA-seq); use of R in bioinformatics applications.

Learning Outcomes:	To provide an introduction to the field of bioinformatics from a statistical point of view. This will include an understanding of the basic concepts of molecular biology.
Assessment:	Assignments 60% (three written assignments, each worth 20%, approx 6 hrs each) to be submitted during semester. Final at-home examination 40% (approx 12 hrs).
Prescribed Texts:	Durbin R, Eddy S, Krogh A, Mitchison G. Biological Sequence Analysis: Probabilistic Modes of proteins and nucleic acids. Cambridge University Press, 1998. (ISBN 978-0521629713) 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:	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:	On completion students should have developed independent problem solving, facility with abstract reasoning, clarity of written expression, sound communication of technical concepts.
Links to further information:	http://www.sph.unimelb.edu.au
Notes:	This subject is not available in the Master of Public Health.
Related Course(s):	Master of Biostatistics Postgraduate Certificate in Biostatistics Postgraduate Diploma in Biostatistics