GENE30001 Evolutionary Genetics and Genomics

Credit Points:	12.50
Level:	3 (Undergraduate)
Dates & Locations:	This subject is not offered in 2013.
Time Commitment:	Contact Hours: 3 x one hour lectures per week. Total Time Commitment: Estimated total time commitment of 120 hours
Prerequisites:	Both **Subject** / **Study Period Commencement:** / **Credit Points:** GENE20001 Principles of Genetics — Not offered 2013 — 12.50 GENE20002 Genes and Genomes — Not offered 2013 — 12.50 Bachelor of Biomedicine students: Both **Subject** / **Study Period Commencement:** / **Credit Points:** GENE20001 Principles of Genetics — Not offered 2013 — 12.50 BIOM20001 Molecular and Cellular Biomedicine — Not offered 2013 — 25
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	None
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/
Contact:	Email: **crobin@unimelb.edu.au (mailto:crobin@unimelb.edu.au)**
Subject Overview:	The emphasis of this subject is on understanding how evolutionary forces shape the gene pool, on the use of molecular markers in genome mapping, in dissecting polygenic traits by mapping quantitative trait loci, and in other applications such as phylogenetics and conservation biology. The topics covered will be classical population genetics, the impact of natural selection, processes of speciation, conservation genetics, evolution of development, phylogenetic reconstruction, development of saturated linkage maps, physical mapping of genomes, mapping quantitative trait loci, comparative genomics, functional genomics and high-throughout methods of scoring genetic polymorphisms.
Objectives:	Upon completion of this subject, students should have: understood how genes, gene pools, and genomes change through evolutionary time; acquired an up-to-date understanding of the relationship between molecular genetics and evolutionary biology; developed a capacity to critically review the written literature and to access web-based databases of genomic information; understood how genes, gene pools and genomes change through evolutionary time; developed a critical appreciation for the methods used to detect and quantify the major

	evolutionary forces; comprehended the logic used in inferring evolutionary processes from patterns of genetic variation in space and time; and appreciated the connections between evolution and conservation biology, development and phylogenetics.
Assessment:	A written class test during semester (20%); three assignments of not more than 500 words each due during the semester (30% in total); a 2-hour written examination in the examination period (50%)
Prescribed Texts:	None
Breadth Options:	This subject potentially can be taken as a breadth subject component for the following courses: # **Bachelor of Arts (https://handbook.unimelb.edu.au/view/2013/B-ARTS)** # **Bachelor of Commerce (https://handbook.unimelb.edu.au/view/2013/B-COM)** # **Bachelor of Environments (https://handbook.unimelb.edu.au/view/2013/B-ENVS)** # **Bachelor of Music (https://handbook.unimelb.edu.au/view/2013/B-MUS)** You should visit **learn more about breadth subjects (http://breadth.unimelb.edu.au/breadth/info/index.html)** and read the breadth requirements for your degree, and should discuss your choice with your student adviser, before deciding on your subjects.
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Generic Skills:	Completion of this subject is expected to enhance the generic skills of a student in: the ability to understand how complex new scientific data is acquired and applied to old and new problems in biology; the ability to read complex literature and be able to interpret this in order to answer detailed questions on both theory and methodology; an appreciation for how modern science is informed by cross-disciplinary studies leading to applications in agriculture, industry and human biology; the ability to use information technology to acquire relevant knowledge; the statistical analysis of data.
Notes:	This subject is available for science credit to students enrolled in the BSc (both pre-2008 and new degrees), BASc or a combined BSc course. This subject is available for credit in the Bachelor of Biomedicine. Previously known as 652-301 Genomes and Evolution (prior to 2009). This subject is required for a Genetics major.
Related Majors/Minors/ Specialisations:	Biotechnology (pre-2008 Bachelor of Science) Ecology and Evolutionary Biology Genetics Genetics Genetics Molecular Biotechnology (specialisation of Biotechnology major) Plant Cell Biology and Development (specialisation of Cell and Developmental Biology major) Science credit subjects* for pre-2008 BSc, BASc and combined degree science courses Science-credited subjects - new generation B-SCI and B-ENG. Core selective subjects for B-BMED.
Related Breadth Track(s):	General Genetics