

# BIOL10003 Genes and Environment

<b>Credit Points:</b>	12.50									
<b>Level:</b>	1 (Undergraduate)									
<b>Dates &amp; Locations:</b>	This subject is not offered in 2014.									
<b>Time Commitment:</b>	Contact Hours: 3 x one hour lectures per week, 1 hour per week of tutorials or workshops. 2 hours of practical work per fortnight and 3 hours per week of e-learning including independent learning tasks, pre and post laboratory activities. Total Time Commitment: Estimated total time commitment of 120 hours									
<b>Prerequisites:</b>	None									
<b>Corequisites:</b>	None									
<b>Recommended Background Knowledge:</b>	None									
<b>Non Allowed Subjects:</b>	Credit cannot be gained for this subject and any of <table border="1" data-bbox="387 797 1485 1003"> <thead> <tr> <th>Subject</th> <th>Study Period Commencement:</th> <th>Credit Points:</th> </tr> </thead> <tbody> <tr> <td>BIOL10005 Genetics &amp; The Evolution of Life</td> <td>Semester 2</td> <td>12.50</td> </tr> <tr> <td>GENE10001 Genetics in the Media</td> <td>Semester 1</td> <td>12.50</td> </tr> </tbody> </table>	Subject	Study Period Commencement:	Credit Points:	BIOL10005 Genetics & The Evolution of Life	Semester 2	12.50	GENE10001 Genetics in the Media	Semester 1	12.50
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BIOL10005 Genetics & The Evolution of Life	Semester 2	12.50								
GENE10001 Genetics in the Media	Semester 1	12.50								
<b>Core Participation Requirements:</b>	For the purposes of considering applications for Reasonable Adjustments under the Disability Standards for Education (Cwth 2005) and Students Experiencing Academic Disadvantage Policy, this subject requires all students to actively and safely participate in laboratory activities. Students who feel their disability may impact upon their participation are encouraged to discuss this with the Subject Coordinator and the Disability Liaison Unit. <a href="http://www.services.unimelb.edu.au/disability/">http://www.services.unimelb.edu.au/disability/</a>									
<b>Contact:</b>	Biology Laboratory Level 5 Redmond Barry Building <b>Tel:</b> (03) 8344 4881 <b>Fax:</b> (03) 9347 0604 <b>Email:</b> <a href="mailto:biology-info@unimelb.edu.au">biology-info@unimelb.edu.au</a> ( <a href="mailto:biology-info@unimelb.edu.au">mailto:biology-info@unimelb.edu.au</a> )									
<b>Subject Overview:</b>	The objective of this subject is to familiarise students with model systems for research in biomedicine; bacteria: beneficial and harmful bacteria; viruses and infectious molecules; fungal pathogens and the role of fungi in medicine; evolution of primates and humans. The modern concepts of genetics, human evolution and model organisms used in biomedicine research.  Topics include the genetic consequence of meiosis; inheritance; chromosomes, genes/alleles, dominance relationships, autosomal/sex-linked inheritance; one locus, blood groups, pedigree analysis, examples of human genetic disease; more than one locus, gene interaction, linkage, multifactorial/quantitative inheritance, heritability; DNA structure and function, replication, transcription, translation, mutation; genes and development; tools used for molecular genetic analysis: restriction enzymes, PCR, gel electrophoresis, aims of the Human Genome Project; recombinant DNA technology; genes in populations; human diversity, polymorphisms, selection, the theory of evolution; species; biodiversity and genetic resources.									
<b>Learning Outcomes:</b>	At the completion of this subject, students should be able to <ul style="list-style-type: none"> <li># understand the various transmission and invasion strategies of parasites.</li> <li># understand the taxa of parasites and the importance of sexual and asexual reproduction to them.</li> <li># understand how natural selection works and resistance evolves.</li> </ul>									

	<ul style="list-style-type: none"> <li># understand the evolutionary history of humans</li> <li># describe the basic mechanisms of inheritance, including the relationship between phenotype and genotype, transmission genetics, recombination and multifactorial inheritance</li> <li># explain the structure of DNA, its replication and the molecular basis of gene expression,transcription, translation, the genetic code and mutation.</li> <li># describe tools used in molecular genetic analysis and aims of the Human Genome Project</li> <li># describe the nature of genetic variation in populations, natural selection, microevolution, reproductive isolation and speciation</li> <li># explain the evidence for the evolution of life including molecular, fossil and phylogenetic data with emphasis on primate evolution</li> <li># appreciate the biodiversity of life including the importance of bacteria, viruses and fungi in biomedical science</li> </ul>
<b>Assessment:</b>	A 45 minute, multiple choice test held mid-semester (10%); a combination of assessment of practical skills within the practical class, completion of up to 5 on-line pre-practical tests, written work within the practical not exceeding 500 words and up to 5 short multiple choice tests (25%) an assignment based on the practical content and not exceeding 1000 words ( 10%), completion of 5 Independent Learning Tasks throughout the semester (5%) a 3 hour examination on theory and practical work in the examination period (50%). Satisfactory completion of practical work is necessary to pass the subject (i.e. an 80% attendance at the practical classes together with a result for the assessed practical work of at least 50%).
<b>Prescribed Texts:</b>	D Sadava, D M Hillis, H G Heller, M R Berenbaum, Life. 10th Ed. Sinauer/Freeman, 2013
<b>Breadth Options:</b>	This subject is not available as a breadth subject.
<b>Fees Information:</b>	Subject EFTSL, Level, Discipline & Census Date, <a href="http://enrolment.unimelb.edu.au/fees">http://enrolment.unimelb.edu.au/fees</a>
<b>Generic Skills:</b>	<p>At the completion of this subject students should be able to:</p> <ul style="list-style-type: none"> <li># plan effective work schedules to be prepared for tutorials, practical classes and examinations.</li> <li># be familiar with electronic forms of communication and be discerning in the use of the web for seeking information.</li> <li># integrate the computer software packages into the course to assist learning.</li> <li># be able to complete basic manipulations with laboratory equipment, for example the microscope and gel electrophoresis.</li> <li># develop skills in recording observations, analysis and interpretation of data</li> <li># develop basis skills in statistical analysis of genetic data.</li> <li># access basic information from the library both electronically and in a traditional way.</li> <li># begin to develop skills in working collaboratively with other students in a practical class.</li> </ul>
<b>Notes:</b>	<p>This subject is only available to students enrolled in the Bachelor of Biomedicine.</p> <p>This subject involves the use of animals that form an essential part of the learning objectives for this subject. Please note: There are some non-dissection alternatives for those who have strong philosophical objections and these and other alternatives can be discussed with the subject co-ordinator.</p> <p>Required Equipment - laboratory coat.</p>
<b>Related Course(s):</b>	Bachelor of Biomedicine