

# BIOL10003 Genes and Environment

<b>Credit Points:</b>	12.50						
<b>Level:</b>	1 (Undergraduate)						
<b>Dates &amp; Locations:</b>	2012, Parkville This subject commences in the following study period/s: Semester 2, Parkville - Taught on campus.						
<b>Time Commitment:</b>	Contact Hours: 3 x one hour lectures per week, 36 hours of practical activities pre-laboratory activities and computer workshops (independent learning tasks), averaging 3 hours per week and 6 one-hour tutorial/workshop sessions during the semester. 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 # 650-132 Biomed: Genetics & Biodiversity (prior to 2008) <table border="1" data-bbox="387 869 1485 1016"> <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> </tbody> </table>	Subject	Study Period Commencement:	Credit Points:	BIOL10005 Genetics & The Evolution of Life	Semester 2	12.50
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BIOL10005 Genetics & The Evolution of Life	Semester 2	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>Coordinator:</b>	Assoc Prof Dawn Gleeson						
<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>Director of First Year Studies in Biology</b> Dr Mary Familiari Email: <a href="mailto:m.familiari@unimelb.edu.au">m.familiari@unimelb.edu.au</a> ( <a href="mailto:m.familiari@unimelb.edu.au">mailto:m.familiari@unimelb.edu.au</a> )						
<b>Subject Overview:</b>	The objective of this subject is to familiarise students with 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; 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.						

<b>Objectives:</b>	<p>At the completion of this subject students should be able to</p> <ul style="list-style-type: none"> <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>	<p>A 45 minute, multiple choice test held mid-semester (10%); work in practical classes during the semester, made up of a combination of written work not exceeding 1000 words, assessment of practical skills within the practical class, or up to 5 short multiple choice tests (20%), completion of 5 independent learning tasks throughout the semester (5%); an assignment not exceeding 1000 words (5%), a 3-hour written examination on theory and practical work in the examination period (60%). A pass in the practical work is necessary to pass the subject.</p>
<b>Prescribed Texts:</b>	<p>D Sadava, D M Hillis, H G Heller, M R Berenbaum, Life. 9th Ed. Sinaver/Freeman, 2009</p>
<b>Breadth Options:</b>	<p>This subject is not available as a breadth subject.</p>
<b>Fees Information:</b>	<p>Subject EFTSL, Level, Discipline &amp; Census Date, <a href="http://enrolment.unimelb.edu.au/fees">http://enrolment.unimelb.edu.au/fees</a></p>
<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 basic 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, microscope slides, coverslips &amp; marker pen.</p>
<b>Related Course(s):</b>	<p>Bachelor of Biomedicine</p>