BIOL10003 Genes and Environment

Credit Points:	12.5
Level:	1 (Undergraduate)
Dates & Locations:	2016, Parkville This subject commences in the following study period/s: Semester 2, Parkville - Taught on campus.
Time Commitment:	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 170 hours
Prerequisites:	None
Corequisites:	None
Recommended Background Knowledge:	None
Non Allowed Subjects:	Credit cannot be gained for this subject and any of

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

Core Participation Requirements:	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. 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
Coordinator:	Assoc Prof Dawn Gleeson
Contact:	**biology-info@unimelb.edu.au (mailto:biology-info@unimelb.edu.au)**
Subject Overview:	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.
Learning Outcomes:	At the completion of this subject, students should be able to # understand the various transmission and invasion strategies of parasites.

	# understand the taxa of parasites and the importance of sexual and asexual reproduction to them. # understand how natural selection works and resistance evolves. # understand the evolutionary history of humans # describe the basic mechanisms of inheritance, including the relationship between phenotype and genotype, transmission genetics, recombination and multifactorial inheritance # explain the structure of DNA, its replication and the molecular basis of gene expression,transcription, translation, the genetic code and mutation. # describe tools used in molecular genetic analysis and aims of the Human Genome Project # describe the nature of genetic variation in populations, natural selection, microevolution, reproductive isolation and speciation # explain the evidence for the evolution of life including molecular, fossil and phylogenic data with emphasis on primate evolution # appreciate the biodiversity of life including the importance of bacteria, viruses and fungi in biomedical science
Assessment:	a 20 minute, multiple choice test held mid-semester (5%); work related to practical classes during the semester with a combination of assessment of practical skills within the practical class, completion of 4 or 5 on-line pre-practical tests; written work within the practical not exceeding 500 words; and 4 or 5 short multiple choice tests (25%); completion of 5 Independent Learning Tasks throughout the semester (5%); a written assignment not exceeding 500 words (5%), a 3 hour examination on theory and practical work in the examination period (60%). 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%).
Prescribed Texts:	D Sadava, D M Hillis, H G Heller, M R Berenbaum, Life. 10th Ed. Sinaver/Freeman, 2013
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:	At the completion of this subject students should be able to: # plan effective work schedules to be prepared for tutorials, practical classes and examinations. # be familiar with electronic forms of communication and be discerning in the use of the web for seeking information. # integrate the computer software packages into the course to assist learning. # be able to complete basic manipulations with laboratory equipment, for example the microscope and gel electrophoresis. # develop skills in recording observations, analysis and interpretation of data # develop basis skills in statistical analysis of genetic data. # access basic information from the library both electronically and in a traditional way. # begin to develop skills in working collaboratively with other students in a practical class.
Notes:	This subject is only available to students enrolled in the Bachelor of Biomedicine. 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. Required Equipment - laboratory coat. B-BMED students who fail this subject with a mark of 45-49%, who do not fail any other subjects in the same semester may be eligible for a progression supplementary exam for this subject in line with the **Assessment Procedure (https://policy.unimelb.edu.au/MPF1026)** (point 15). Students will be contacted via email by the University Results final release date if they are eligible.
Related Course(s):	Bachelor of Biomedicine