Genetics

Year and Campus:	2016
Coordinator:	A/Prof Alex Andrianopoulos
Contact:	Email: **alex.a@unimelb.edu.au (mailto:alex.a@unimelb.edu.au)**
Overview:	Students completing a Genetics major will be prepared for careers or advanced study which involve the application of fundamental genetics, genomics, evolutionary, population and ecological genetics to all areas of biology, biomedical sciences and biotechnology. Graduates will develop knowledge and skills in the theory of genetics and molecular biology, population genetics and evolution and in experimental design, data recording and analysis and scientific writing, which are essential preparation for roles in universities, research institutes, government departments, hospitals and in the biotechnology industry. This major will integrate knowledge across the breadth of genetics, including an integrated practical capstone subject in which the students develop an understanding of the application of experimental analysis to solving problems in biology. Students will gain experience preparing them for the workplace by participating in problem-solving, synthesis of information, written work, and independent as well as collaborative activities. The transferable skills developed in this major can be used in broad careers in science, including conservation, teaching, forensics, publishing, genetic counselling and research and in careers beyond the field of science.
Learning Outcomes:	*Genetics Major Graduates should demonstrate:* # a broad knowledge of genetic principles and of different methods of genetic analysis; # an appreciation of how genetic principles and experimentation can be used to understand the biology of diverse organisms at different levels; # ability to identify significant theoretical and technical advances in the discipline of genetics and the relationship between genetics and other disciplines in biology; # capacity to apply appropriate methods in genetics to solve problems in biology; # capacity for scientific reasoning, problem solving and research skills; # proficiency in the analysis and interpretation of data derived from direct experimentation and from the literature; # ability to identify and interpret scientific literature relevant to a topic in genetics; # effective writing and oral presentation skills to communicate research findings; # ability to work effectively, responsibly and safely in an individual or team context; work collaboratively to accomplish common goals; understand and apply laboratory safety measures; # Independence and self-direction in their learning and ability to set their own goals and effectively manage their time and priorities; # high level of professional integrity; understanding of the requirements for personal and collective laboratory safety; understanding of the ethical requirements regarding plagiarism and accurate data reporting and analysis.
Structure & Available Subjects:	Completion of 50 points of study at Level 3.
Subject Options:	All three of

Subject	Study Period Commencement:	Credit Points:
GENE30001 Evolutionary Genetics and Genomics	Semester 1	12.50
GENE30002 Genes: Organisation and Function	Semester 1	12.50
GENE30004 Genetic Analysis	Semester 2	12.50

Plus one elective selected from

Subject	Study Period Commencement:	Credit Points:
BCMB30003 Molecular Aspects of Cell Biology	Semester 1	12.50
CEDB30002 Concepts in Cell & Developmental Biology	Semester 1	12.50
ECOL30006 Ecology in Changing Environments	Semester 1	12.50
ZOOL30004 Evolution and the Human Condition	Semester 1	12.50
BOTA30003 Environmental Plant Physiology	Semester 1	12.50
MIIM30011 Medical Microbiology: Bacteriology	Semester 1	12.50
BOTA30002 Plant Evolution	Semester 2	12.50
MIIM30002 Principles of Immunology	Semester 1	12.50
BCMB30001 Protein Structure and Function	Semester 2	12.50
GENE30005 Human and Medical Genetics	Semester 2	12.50
BIOL30001 Reproductive Physiology	Semester 2	12.50

Related Course(s):	Bachelor of Biomedicine Bachelor of Science