

MC-SCIBIT Master of Science (Biotechnology)

Year and Campus:	2010 - Parkville
Fees Information:	Subject EFTSL, Level, Discipline & Census Date, http://enrolment.unimelb.edu.au/fees
Level:	Graduate/Postgraduate
Duration & Credit Points:	
Coordinator:	Professor David K. Gardner
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Course Overview:	<p>Biotechnology is the use and manipulation of living organisms, or substances obtained from these organisms, to make products of value to humanity. Biotechnology has become a fundamental area of applied science and covers a diversity of specialist fields. Disciplines in Biotechnology include; molecular biology, biochemistry, cell biology, microbiology, plant and environmental sciences, engineering, drug development, nanofabrication, reproductive sciences, stem cells, genetically modified organisms (GMOs) and pollution control. Modern medicine, agriculture, animal breeding, pharmaceuticals, food production and processing etc., all utilise various Biotechnology tools.</p> <p>This core discipline will focus on advances in key technologies, and will give the student the necessary skills base to go from 'molecules to medicine'. Together with developing an understanding of the actual scientific technologies involved in modern biotechnology, areas such as Trial Design, Regulatory Affairs, Quality Management and GMP will be covered, together with the actual scientific technologies involved in modern biotechnology.</p> <p>This professional entry program offers students the opportunity to undertake core science studies as well as professional tools modules, which provide high-level training in the areas of business, communications and science application.</p> <p>As this program does not contain an independent research component, it is not a pathway to research higher degree studies eg. PhD at The University of Melbourne</p>
Objectives:	<p>Upon completion of this course, students should have:</p> <ul style="list-style-type: none"> # a detailed understanding of advanced tools, resources and techniques in molecular biology; # an understanding of how these techniques are used to study gene and protein functions in cells and organisms; # an appreciation of how these techniques may be applied both in biotechnology and in advanced research; # an appreciation of the information resources available to assess the usefulness of a particular technique; and # acquired the knowledge to enable them to critically appraise new data arising from the use of these techniques and to interpret the implications of such data.
Course Structure & Available Subjects:	<p>Course structure (all subjects are 12.5 points, total points: 200)</p> <p>Discipline Core (62.5 points)</p> <p>Students must take:</p> <ul style="list-style-type: none"> # 600-608 Genomics and Bioinformatics # 600-650 Metabolomics and Proteomics # 600-606 Advanced Molecular Biology Techniques # 600-651 Microscopy for Biological Sciences # 654-604 From Lab to Life <p>Discipline Elective (37.5 points)</p>

All students must take three of the following subjects with the following exception: Students who have not completed the equivalent of 521-302 Functional Genomics and Bioinformatics or 652-302 Genes: Organisation and Function as part of their undergraduate studies will be directed at enrolment to enrol in one of 521-302 or 652-302 in their first semester of study. For these students, this 37.5 point component of their course will therefore consist of 521-302 or 652-302 and two of the following subjects:

- # 600-607 Bioprocess Engineering
- # 600-609 Genetically Modified Organisms
- # 600-652 Tissue Engineering and Stem Cells
- # 208-747 Food Biotechnology
- # 208-743 Food Safety and Quality
- # 534-313 Drugs in Biomedical Experiments
- # other approved electives can be selected in consultation with the Course Coordinator

Project Module (12.5 points)

- # 600-611 Industry Project

Professional Tools Module (87.5 points)

Professional Tools Core (75 points):

2 Business Tools Units

- # 600-614 Business Tools: Money, People and Processes
- # 600-622 Business Tools: The Market Environment

2 Science Tools Units

- # 600-615 Thinking and Reasoning with Data
- # 600-618 Ethics and Responsibility in Science

2 Communication Tools Units

- # 600-619 Scientists, Communication and the Workplace
- # 600-616 Science in Context

Professional Tools Elective (12.5 points)

Students must take 1 of the following Science Tools subjects:

- # 615-505 e-Science
- # 600-617 Systems Modelling and Simulation
- # 615-668 Critical Analysis in Science

Subject Options:

Discipline Core

Subject	Study Period Commencement:	Credit Points:
BTCH90009 Genomics and Bioinformatics	Semester 1	12.50
SCIE90002 Metabolomics and Proteomics	Semester 2	12.50
BTCH90005 Advanced Molecular Biology Techniques	Semester 2	12.50
BIOL90001 Microscopy for Biological Sciences	Semester 1	12.50
SCIE90011 From Lab to Life	Semester 1	12.50

Discipline Elective

Subject	Study Period Commencement:	Credit Points:
BTCH90006 Bioprocess Engineering	Semester 1	12.50
BTCH90010 Genetically Modified Organisms	Semester 1	12.50

	BTCH90008 Tissue Engineering and Stem Cells	Semester 2	12.50
	FOOD90011 Food Biotechnology	Semester 1	12.50
	FOOD90008 Food Safety and Quality	Semester 2	12.50
	PHRM30009 Drugs in Biomedical Experiments	Semester 1, Semester 2	12.50
Project Module			
	Subject	Study Period Commencement:	Credit Points:
	MULT90012 Industry Project in Science	Semester 2	12.50
Professional Tools			
	Subject	Study Period Commencement:	Credit Points:
	BUSA90403 Business Tools: Money People & Processes	Semester 2	12.50
	BUSA90471 Business Tools: The Market Environment	Semester 1	12.50
	MAST90044 Thinking and Reasoning with Data	Semester 1	12.50
	SCIE90005 Ethics and Responsibility in Science	Semester 2	12.50
	SCIE90006 Scientists, Communication & the Workplace	April	12.50
	SCIE90004 Science in Context	Semester 2	12.50
	SCIE90007 E-Science	Semester 2	12.50
	615-668 Critical Analysis in Science	Not offered 2010	12.50
	MAST90045 Systems Modelling and Simulation	Semester 1	12.50
Entry Requirements:	A bachelor degree with a major in a Life Science or Chemistry and at least 65% in the major or equivalent. As part of their degree studies, applicants must have completed an appropriate sequence of genetics or biochemistry related subjects or equivalent to at least second year level.		
Core Participation Requirements:	It is University policy to take all reasonable steps to minimise the impact of disability upon academic study and reasonable steps will be made to enhance a student's participation in the University's programs. Students who feel their disability may impact upon their active and safe participation in a course are encouraged to discuss this with the relevant course coordinator and the Disability Liaison Unit.		
Graduate Attributes:	Graduates will: have the ability to demonstrate advanced independent critical enquiry, analysis and reflection; have a strong sense of intellectual integrity and the ethics of scholarship; have in-depth knowledge of their specialist discipline(s); reach a high level of achievement in writing, project activities, problem-solving and communication; be critical and creative thinkers, with an aptitude for continued self-directed learning; be able to examine critically, synthesise and evaluate knowledge across a broad range of disciplines; have a set of flexible and transferable skills for different types of employment; be able to initiate and implement constructive change in their communities, including professions and workplaces.		
Links to further information:	http://graduate.science.unimelb.edu.au		