R05 PB Master of Science (Biotechnology)

Year and Campus:	2009
Overview:	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. 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. 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. **Course structure** *(all subjects are 12.5 points, total points: 200)* ***Discipline Core (62.5 points)*** Students must take: o 600-608 Genomics and Bioinformatics (this subject will not be available until semester 1, 2010) o 600-650 Metabolomics and Proteomics o 600-606 Advanced Molecular Biology Techniques o 600-651 Microscopy for Biological Sciences o From Lab to Life (this subject will not be available until semester 1, 2010) ***Discipline Elective (37.5 points)*** Students must take 3 of the following subjects: o 600-607 Bioprocess Engineering o 600-609 Genetically Modified Organisms o 600-652 Tissue Engineering and Stem Cells o Drug Discovery and Development (this subject will not be available until semester 2, 2010) ***Project Module (12.5 points)*** o 600-611 Industry Project (this subject will not be available until semester 2, 2010) ***Professional Tools Module (87.5 points)*** *Professional Tools Core* (75 points): *2 Business Tools Units* o 600-614 Business Tools: Money, People and Projects o Business Tools: The Market Environment (this subject will not be available until semester 1, 2010) *2 Science Tools Units* o 600-615 Thinking and Reasoning with Data o 600-618 Ethics and Responsibility in Science *2 Communication Tools Units* o 600-619 Science and Communication o 600-616 Science in Context *Professional Tools Elective (12.5 points)*

	Students must take 1 of the following *Science Tools* subjects: o eScience (this subject will not be available until semester 2, 2010) o 600-617 Systems Modelling and Simulation o Critical Analysis in Science (this subject will not be available until semester 2, 2010)
Objectives:	Upon completion of this course, students should have: # 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.
Subject Options:	

Subject	Study Period Commencement:	Credit Points:
600-615 Thinking and Reasoning with Data	Semester 1	12.50
600-619 Science and Communication	Semester 1	12.50
600-614 Business Tools:Money, People & Projects	Semester 2	12.50
600-616 Science in Context	Semester 2	12.50
600-650 Metabolomics and Proteomics	Semester 2	12.50
600-606 Advanced Molecular Biology Techniques	Semester 2	12.50
600-618 Ethics and Responsibility in Science	Semester 2	12.50
600-607 Bioprocess Engineering	Semester 1	12.50
600-609 Genetically Modified Organisms	Semester 1	12.50
600-652 Tissue Engineering and Stem Cells	Semester 2	12.50
600-617 Systems Modelling and Simulation	Semester 1	12.50
600-651 Microscopy for Biological Sciences	Semester 1	12.50

Links to further information:	http://graduate.science.unimelb.edu.au/
Related Course(s):	Master of Science