Graduate Diploma in Biotechnology (LS76)

Year offered: 2011  
Admissions: Yes  
CRICOS code: 016975B  
Course duration (full-time): 2 semesters (1 year)  
Course duration (part-time): 4 semesters (2 years)  
Domestic Fees (indicative): 2011: Full fee tuition $9,750 (indicative) per semester  
International Fees (indicative): 2011: $12,000 (indicative) per semester  
Domestic Entry: July (Note: Students commencing in July, enrol in Semester 2 units first) *Also see "ENTRY REQUIREMENTS" below  
International Entry: July (Note: Students commencing in July, enrol in Semester 2 units first) *Also see "ENTRY REQUIREMENTS" below  
Total credit points: 96  
Standard credit points per full-time semester: 48  
Standard credit points per part-time semester: 24  
Course coordinator: Dr Mark O'Brien  
Campus: Gardens Point  

Course Design  
The program of study for an individual student will be decided in consultation with the course coordinator and will take into account the student’s background in the cell and biomolecular sciences and areas of interest in biotechnology.  

The Graduate Diploma in Biotechnology builds upon foundation concepts presented in the Graduate Certificate. The Graduate Diploma in Biotechnology offers students opportunities to pursue study in several relevant focus areas including the theoretical and practical aspects of biotechnology. It also covers the business of biotechnology, marketing, commercialisation, as well as the legal and ethical aspects of biotechnological applications.  

Further Information  
For further Information about this course, please contact:  
Dr Mark O'Brien  
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Course structure - Full-time  
Year 1, Semester 2 (MODULE 1)  
LSN101 Molecular Biosciences  
LSN102 Cellular Biosciences  
LSN103 Postgraduate Learning and Research Skills  
LSN483 Molecular Biology Techniques  
Year 2, Semester 1 (MODULE 2)  
LSP127 Business Aspects of Biotechnology  
Either  
LSN583 Genetic Research Technology  
Or  
LSN585 Plant Genetic Manipulation  
In consultation with the course coordinator, choose 24 credit points from the following units:  
LQB582 Biomedical Research Technologies  
LSN583 Genetic Research Technology  
LSN584 Medical Cell Biology  
LSN585 Plant Genetic Manipulation  
LWN135 Law, Justice and New Genetic Technologies  
Year 2, Semester 2 (MODULE 1)  
LSN103 Postgraduate Learning and Research Skills  
LSN483 Molecular Biology Techniques  
Year 3, Semester 1 (MODULE 2)  
LSP127 Business Aspects of Biotechnology  
Either  
LSN583 Genetic Research Technology  
Or  
LSN585 Plant Genetic Manipulation  
Year 3, Semester 2 (MODULE 2)  
In consultation with the course coordinator, choose 24 credit points from the following units:  
LQB681 Biochemical Research Skills  
LQB682 Protein Biochemistry and Bioengineering  
LSN103 Postgraduate Learning and Research Skills  
MGN409 Introduction to Management  

Potential Careers:
Biochemist, Biotechnologist, Medical Biotechnologist, Microbiologist, Molecular Biologist, Plant Biotechnologist, Research Assistant, Scientist, Virologist.

UNIT SYNOPSES

LQB582 BIOMEDICAL RESEARCH TECHNOLOGIES
This unit will study the technical principles and practical techniques that are essential for advancing research and development in biochemistry and biotechnology.

Prerequisites: LQB381 or LSB308
Antirequisites: LSB527
Credit points: 12
Contact hours: 4 per week
Campus: Gardens Point
Teaching period: 2011 SEM-1

LQB681 BIOCHEMICAL RESEARCH SKILLS
In the real world, the design and completion of successful research and/or business projects demand that individuals gather information, solve problems, work effectively as a part of a team and analyse and communicate results in a critical manner. This unit offers opportunities for you to develop these skills that are valued highly by potential employers and research project leaders. The aim of this unit is to assist you to demonstrate and strengthen a number of generic research skills in a mentored problem-based learning environment that mirrors a real-world research team and the challenges that they face.

Prerequisites: LQB381 or LSB308
Students with equivalent study can apply for a requisite waiver
Equivalents: LSB607
Credit points: 12
Contact hours: 5 per week
Campus: Gardens Point
Teaching period: 2011 SEM-2

LQB682 PROTEIN BIOCHEMISTRY AND BIOENGINEERING
This unit is designed to give you the essential concepts and techniques driving research and industrial biotechnology so that you will be equipped for multiple careers in the biological sciences. The skills you develop will allow you to enter a practical laboratory environment or to apply your knowledge in related areas of evaluations of technologies and intellectual property.

Prerequisites: LQB381 or LSB308 or LSB325 or (LQB101 and LQB102)
Antirequisites: LSB605, LSB608
Credit points: 12
Contact hours: 5 per week
Campus: Gardens Point
Teaching period: 2011 SEM-2

LSN102 Cellular Biosciences and LQB483 Molecular Biology Techniques, will help you to achieve those goals. This unit aims to facilitate your active learning (knowledge, understanding and application) of cell and molecular biology appropriate for a postgraduate degree in biotechnology.

Corequisites: LSN102, LSN483
Assumed knowledge: Students should enrol in either LSN102 or LSN483 in the same semester if not already completed
Credit points: 12
Contact hours: 5 per week
Campus: Gardens Point
Teaching period: 2011 SEM-2

LSN102 CELLULAR BIOSCIENCES
Central to your understanding of the fundamental theory underlying medical and plant biotechnology is an understanding of normal and disease processes, and the events and changes that occur in structure and function at the cellular level. This unit gives you the opportunity to explore these key aspects before proceeding to more advanced concepts in biotechnology. This unit aims to provide high level understanding of cellular processes and responses, as a fundamental basis for further postgraduate studies in cellular and molecular biosciences.

Corequisites: LSN101, LSN483
Credit points: 12
Contact hours: 4 per week
Campus: Gardens Point
Teaching period: 2011 SEM-2

LSN103 POSTGRADUATE LEARNING AND RESEARCH SKILLS
This unit assists you in developing a range of generic and specific skills and attributes to be a successful postgraduate student. On completion of the unit, you will: (i) know how to manage information tools and resources effectively in order to advance your university study and become an independent and competent learner (ii) build and increase your knowledge and competence in using basic software applications and general knowledge of information communication technologies and (iii) develop key skills in project design and management. This unit consists of a series of workshops, seminars and on-line tutorials presented by a team of teaching and learning support staff from across the university.

Credit points: 12
Contact hours: 4 per week
Campus: Gardens Point
Teaching period: 2011 SEM-2

LSN483 MOLECULAR BIOLOGY TECHNIQUES
Fundamental and advanced skills in molecular biology are essential prerequisites for biotechnology. Through close alignment of theoretical concepts and practical skills, this strongly lab-oriented postgraduate unit allows you to develop expertise in modern recombinant DNA techniques and an understanding of strategies used to identify and manipulate genes. Integration between theory and practice in this unit is designed to develop competence, independence and high-order critical thinking skills so as to
fully prepare you for the suite of advanced units in the Postgraduate Coursework Biotechnology programs. The overall aim of this unit is to develop concepts and laboratory skills in the characterisation and analysis of nucleic acids and recombinant DNA technologies and to extend these technologies into the understanding and application of the different strategies for gene discovery.

Corequisites: LSN101, LSN102  Assumed knowledge: Students should enrol in either LSN101 or LSN102 in the same semester if not already completed.  Equivalents: LQB483, LSB468  Credit points: 12  Contact hours: 5 per week  Campus: Gardens Point  Teaching period: 2011 SEM-2

LSN583 GENETIC RESEARCH TECHNOLOGY
The tools available for the discovery and manipulation of new genes are increasing exponentially and, in turn, this is having a significant impact in many areas of the life sciences. The true potential for this ultimately relies on the ability to link genes and their function. There are many strategies, both targeted and global, which facilitate an understanding of gene and genome structure function relationships. These strategies rely on integrated technologies based on molecular genetics, molecular biology and genetic engineering. The identification of function leads then to unlimited potential for detection and manipulation of these genes in human, animal and plant systems.

Credit points: 12  Contact hours: 4 per week  Campus: Gardens Point  Teaching period: 2011 SEM-1

LSN584 MEDICAL CELL BIOLOGY
This unit builds and extends the understanding of basic theoretical and practical aspects of molecular cell biology developed in previous cell and molecular biology units. Medical Cell Biology develops and extends the context of the cellular environment and its central role within the organism providing all of the biological functions required by the organism to survive, defend and protect itself from disease and trauma. An understanding of cell biology theory and molecular mechanisms of animal development and disease is essential for introduction to higher level units in medical biotechnology.

Prerequisites: LSN101 and LSN102  Antirequisites: LSB503, LSB449, LQB584  Credit points: 12  Contact hours: 4 per week  Campus: Gardens Point  Teaching period: 2011 SEM-1

LSN585 PLANT GENETIC MANIPULATION
The potential of plant biotechnology can only be recognised as a result of the significant advances being made in technologies enabling the genetic manipulation of plants. Familiarity with the strategies, techniques and breadth of applications is essential as a basis for anyone planning a career in plant biotechnology. The unit is designed with a significant emphasis on achieving technical expertise in plant genetic manipulation and control of gene expression.

Credit points: 12  Contact hours: 4 per week  Campus: Gardens Point  Teaching period: 2011 SEM-1

LSP127 BUSINESS ASPECTS OF BIOTECHNOLOGY
Supporting a successful biotechnology industry in Australia requires an entrepreneurial framework to be developed which assists the efforts of both researchers and innovators. This unit integrates those essential entrepreneurial techniques of launching a biotechnology business. The unit focus is on the research and development of industrial products and commercialising innovations developed in this industry. On completion of this unit the student will be able to identify and analyse entrepreneurial opportunities and evaluate these opportunities within biotechnology together with the ability to identify and comprehend the steps involved in setting up a new biotechnology enterprise.

Credit points: 12  Contact hours: 5 per week  Campus: Gardens Point  Teaching period: 2011 SEM-1

LWN135 LAW, JUSTICE AND NEW GENETIC TECHNOLOGIES
Our ability to test, screen and manipulate the human genome is made possible by recent technological breakthroughs in science. The science of genetics is not new, but its public profile has never been higher. Current initiatives in genetic knowledge have been described as an international voyage of scientific discovery. The scientific findings are prompting major rethinking of concepts of law and justice. The legal community faces a perpetual challenge in keeping pace with the revolution in genetics. This unit looks at some legal implications of this revolution and charts the major responses of our legal system to modern genetics and biotechnology.

Credit points: 12  Contact hours: 26 hrs in total  Campus: Gardens Point  Teaching period: 2011 SEM-1

MGN409 INTRODUCTION TO MANAGEMENT
This unit examines the following: the functions and roles of managers; concepts and principles and their practical applications; the key management functions; areas of planning, organising, staffing, directing and controlling; production/operations management and the management of quality; entrepreneurship and business planning; and important problems, opportunities and trends facing managers in Australia analysed from the viewpoint of relevant academic disciplines.

Antirequisites: GSN401 and GSZ401  Credit points: 12  Contact hours: 3 per week  Campus: Gardens Point  Teaching period: 2011 SEM-1 and 2011 SEM-2