Bachelor of Technology Innovation (Biomedical Science) (ST50)

Year offered: 2011
Admissions: Yes
CRICOS code: 070694G
Course duration (full-time): 4 years
Domestic Fees (indicative): 2011: CSP $2,178 (indicative) per semester
International Fees (indicative): 2011: $12,250 (indicative) per semester
Domestic Entry: February
International Entry: February and July
QTAC code: 418311
Past rank cut-off: 76
Past OP cut-off: 12
OP Guarantee: Yes
Assumed knowledge: English (4,SA), Maths B (4,SA), Chemistry (4,SA)
Preparatory studies: For information on acquiring assumed knowledge visit http://www.qut.edu.au/assumed-knowledge
Total credit points: 384
Standard credit points per full-time semester: 96
Course coordinator: Associate Professor Chris Collet
Campus: Gardens Point

Why Choose This Course
If you like to work in a dynamic world of translating discovery and creativity into commercial products, meeting people, and working in a high-powered team environment to build money-making enterprises, then this course is for you. The Bachelor of Technology Innovation will allow a rapid entry into the high-flying world of commercialisation and technology transfer. This new degree builds upon the successful Bachelor of Biotechnology Innovation which has seen graduates realise outstanding job outcomes, often successfully competing against graduates with PhDs and MBAs.

Professional Recognition
On graduation, you will be eligible to join professional organisations relevant to your disciplinary specialisation, the Association of Professional Engineers, Scientists and Managers, Australia and the Australian Institute of Management.

Your Course
Year 1
You will be able to choose subjects from across a range of science and technology areas to help you define your choice of disciplinary major. The introductory core studies will provide you with a solid foundation in your chosen disciplinary skills and build the basis for future studies.

Year 2
You will be introduced to advanced theoretical concepts and practical skills that serve to build your expertise in the science and technology disciplines. A thorough understanding of science and technology theory and practice is necessary to understand, evaluate and communicate aspects of innovation to the business world.

Year 3
In third year, you will complete your science and technology disciplinary advanced studies and take basic and advanced business units that encompass the business of innovation, intellectual property law and professional skills development. Through the action learning framework of the Student Enterprise Scheme, professional skills development will concentrate on communication and team-building skills. These exercises will help prepare you for industry-based consultancy style projects and extra-curricular networking events and an industry career.

Year 4
You will undertake integrative business units that develop the entrepreneurial mindset needed for a career in innovation commercialisation. You will further develop your professional skills through networking events. Student teams will source an industry-based consultancy-style project that will serve to provide real world experience and ready you for your future career.

Biomedical Science Major Course Structure

<table>
<thead>
<tr>
<th>Year 1, Semester 1</th>
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</thead>
<tbody>
<tr>
<td>MAB141 Mathematics and Statistics for Medical Science</td>
</tr>
<tr>
<td>SCB110 Science Concepts and Global Systems</td>
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<tr>
<td>SCB111 Chemistry 1</td>
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<tr>
<td>SCB112 Cellular Basis of Life</td>
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<tr>
<th>Year 1, Semester 2</th>
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<tbody>
<tr>
<td>LSB255 Human Anatomy</td>
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<tr>
<td>PCB150 Physics 1H</td>
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<tr>
<td>SCB121 Chemistry 2</td>
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<tr>
<td>SCB122 Cell and Molecular Biology</td>
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<tr>
<th>Year 2, Semester 1</th>
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<tbody>
<tr>
<td>LQB383 Molecular and Cellular Regulation</td>
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<tr>
<td>Unit Code</td>
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<tr>
<td>LQB386</td>
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<td>LQB388</td>
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<td>LSB325</td>
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<td>LQB483</td>
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<td>LSB425</td>
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**Year 2, Semester 2**

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<tr>
<th>Unit Code</th>
<th>Unit Title</th>
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<tbody>
<tr>
<td>LQB583</td>
<td>Genetic Research Technology</td>
</tr>
<tr>
<td>LQB584</td>
<td>Medical Cell Biology</td>
</tr>
<tr>
<td>LQB586</td>
<td>Clinical Microbiology 2</td>
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<tr>
<td>LSB525</td>
<td>Clinical Biochemistry 1</td>
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**Year 3, Semester 1**

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<tr>
<th>Unit Code</th>
<th>Unit Title</th>
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<tbody>
<tr>
<td>BSB115</td>
<td>Management</td>
</tr>
<tr>
<td>STB551</td>
<td>Engaging with the Innovation Industry</td>
</tr>
<tr>
<td>LQB583</td>
<td>Genetic Research Technology</td>
</tr>
<tr>
<td>LQB584</td>
<td>Medical Cell Biology</td>
</tr>
<tr>
<td>LQB586</td>
<td>Clinical Microbiology 2</td>
</tr>
<tr>
<td>LSB525</td>
<td>Clinical Biochemistry 1</td>
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**Elective**

- LSB625 Clinical Physiology
- LSB658 Clinical Physiology

**Year 3, Semester 2**

<table>
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<tr>
<th>Unit Code</th>
<th>Unit Title</th>
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<tbody>
<tr>
<td>BSB126</td>
<td>Marketing</td>
</tr>
<tr>
<td>MGB223</td>
<td>Entrepreneurship and Innovation</td>
</tr>
<tr>
<td>LQB488</td>
<td>Medical Physiology 2</td>
</tr>
<tr>
<td>LQB684</td>
<td>Medical Biotechnology</td>
</tr>
<tr>
<td>LSB625</td>
<td>Clinical Biochemistry 2</td>
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**Year 4, Semester 1**

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<tr>
<th>Unit Code</th>
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<tbody>
<tr>
<td>AMB240</td>
<td>Marketing Planning and Management</td>
</tr>
<tr>
<td>LWS007</td>
<td>Introduction To Intellectual Property Law</td>
</tr>
<tr>
<td>MGB324</td>
<td>Managing Business Growth</td>
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<tr>
<td>STB709-1</td>
<td>Innovation and Commercialisation Project</td>
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**Year 4, Semester 2**

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<tbody>
<tr>
<td>BSB311</td>
<td>Innovation Commercialisation Strategies</td>
</tr>
<tr>
<td>MGB225</td>
<td>Intercultural Communication and Negotiation Skills</td>
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**UNIT SYNOPSIS**

**AMB240 MARKETING PLANNING AND MANAGEMENT**

This unit extends the student's knowledge of the fundamental marketing concepts and theories introduced in the Faculty Core unit in Marketing, by adding further breadth and depth of knowledge of marketing and developing skills in the application of this knowledge to marketing planning and management within the business environment. Emphasis is on the role of the marketing manager at the product management level in undertaking analysis, planning, implementation and control of marketing activities. 

**Prerequisites:** BSB126 or CTB126  
**Equivalents:** AMX240, CTB240  
**Credit points:** 12  
**Contact hours:** 3 per week  
**Campus:** Gardens Point and Caboolture  
**Teaching period:** 2011 SEM-1 and 2011 SEM-2

**BSB115 MANAGEMENT**

The unit provides an introduction to the theories and practice of management and organisations. Emphasis is on the conceptual and people skills that are needed in all areas of management and in all areas of organisational life. The unit acknowledges that organisations exist in an increasingly international environment where the emphasis will be on knowledge, the ability to learn, to change and to innovate. Organisations are viewed from individual, group, corporate and external environmental perspectives.

**Antirequisites:** BSD115  
**Equivalents:** BSX115, CTB115  
**Credit points:** 12  
**Contact hours:** 3 per week  
**Campus:** Gardens Point and Caboolture  
**Teaching period:** 2011 SEM-1, 2011 SEM-2 and 2011 SUM-1

**BSB126 MARKETING**

This introductory subject examines the role and importance of marketing to the contemporary organisation. Emphasis is placed on understanding the basic principles and practices of marketing such as the marketing concept, market segmentation, management information systems and consumer behaviour. The unit explores the various elements of the marketing mix, with special reference to product, price, distribution, and promotion, including advertising and public relations. By way of introduction only, key issues relating to services marketing, e-marketing and strategic marketing are also canvassed.

**Antirequisites:** BSB116,BSD126  
**Equivalents:** BSX126,
CTB126  Credit points: 12  Contact hours: 4 per week  
Campus: Gardens Point and Caboolture  
Teaching period: 2011 SEM-1, 2011 SEM-2 and 2011 SUM

BSB311 INNOVATION COMMERCISATION STRATEGIES
Students study strategies and approaches used in industry and government organisations for the research, development and commercialisation of biotechnology innovations. The unit offers the opportunity to read widely as well as in depth about the commercialisation of molecular biology and biotechnology research. Theoretical concepts are integrated with prepared case studies prior to guest speaker seminars. 
Prerequisites: MGB223 or LSP127  Credit points: 12  
Contact hours: 3 per week  
Campus: Gardens Point  
Teaching period: 2011 SEM-2

LQB383 MOLECULAR AND CELLULAR REGULATION
Molecular and Cellular Regulation is a second year unit and is a continuation and expansion of topics introduced in SCB112 Cellular Basis of Life and SCB122 Cell & Molecular Biology. Molecular and Cellular Regulation strengthens the focus on the molecular and genetic aspects of cellular processes and the consequences to the organism of failure of these basic processes. Topics taught relate to gene structure and regulation in prokaryotes and eukaryotes and the role of gene expression in the development of complex organisms. Related concepts such as cell signalling, communication, proliferation and survival are further developed in this unit. 
Prerequisites: SCB122 or LSB238  Antirequisites:  
LQB468 and LSB338  Credit points: 12  
Contact hours: 4 per week 
Campus: Gardens Point  
Teaching period: 2011 SEM-1

LQB386 MICROBIAL STRUCTURE AND FUNCTION
Aspects of microbiology impinge upon many facets of daily life, for example, human health, genetic engineering, the food industry and the built and natural environment. The unit introduces you to and provides you with a solid foundation in the basic microbiology required for progression to advanced studies in Microbiology. This unit provides knowledge about safe handling and study of microorganisms that is also very important in many other disciplines, because microorganisms are used as models and tools in a wide range of study areas. 
Prerequisites: SCB112 and (SCB121 or SCB113)  
Antirequisites: LSB328  Credit points: 12  
Contact hours: 4 per week  
Campus: Gardens Point  
Teaching period: 2011 SEM-1

LQB388 MEDICAL PHYSIOLOGY 1
This unit deals specifically with the physiological systems that are responsible for the maintenance of health in humans. In the course of the semester students will investigate half the systems that constitute the human body (with the remainder dealt with in the second semester unit Physiology 2 [LQB488]). The unit offers a useful frame of reference for students enrolled in courses such as animal biology, biochemistry, microbiology, molecular biology, nutrition and human movements. Together with Physiology 2 [LQB488] this unit is a prerequisite to the third level unit, Applied Physiology [LQB588] and will be of particular interest to students considering medicine as a postgraduate career option. 
Prerequisites: LSB111 or LSB131 or LSB142 or LSB255 or LSB258 or SCB120  
Antirequisites: LSB358  Credit points: 12  
Contact hours: 4 per week  
Campus: Gardens Point  
Teaching period: 2011 SEM-1

LQB483 MOLECULAR BIOLOGY TECHNIQUES
Molecular biology and recombinant DNA technologies have important roles in many areas within the life sciences, including medicine, agriculture, cell biology, environmental science and forensics. Through close alignment of theoretical concepts and practical skills, this lab-based unit expands on molecular themes introduced in earlier cell and molecular biology units to develop expertise in modern recombinant DNA techniques and an understanding of strategies used to identify and manipulate genes. The close relationship between theory and practice in this unit is designed to develop competence, independence and critical thinking that will provide students with a solid foundation for advanced molecular biology studies presented in several third level units.  
Prerequisites: LSB238 or SCB122  
Antirequisites: LSB468, LSN468, LSN483  
Assumed knowledge: LQB383 is recommended prior study  
Credit points: 12  
Contact hours: 4 per week  
Campus: Gardens Point  
Teaching period: 2011 SEM-2

LQB484 INTRODUCTION TO GENOMICS AND BIOINFORMATICS
The completion of the Human Genome project, along with similar projects on other organisms of a prokaryote and eukaryote nature, marked the beginning of a major revolution in fundamental biology that changed our understanding of the natural world. To understand how information on genome structure-function relationships (ie bioinformatics) is being used in areas such as gene discovery, disease diagnosis and drug development, students need to understand how the information content of DNA and proteins is extracted and analysed. This unit introduces students to the approaches to database mining and genome exploration.  
Prerequisites: LSB383 or LSB338 or LSN101 and LSN102  
Antirequisites: LSB537, LSB619, LSB469  
Credit points: 12  
Contact hours: 4 per week  
Campus: Gardens Point  
Teaching period: 2011 SEM-2
LQB486 CLINICAL MICROBIOLOGY 1
Micro-organisms are very important as pathogens of humans and animals, and their accurate clinical diagnosis is essential for appropriate treatment and management of infections. This unit builds upon the foundational topics in microbiology that you learned in LQB386 (Microbial Structure and Function) and starts preparing you for a career in a microbiology laboratory in clinical practice, industry or research. The unit will advance your knowledge and skills in classical methods of isolation and identification of bacteria in clinical specimens and introduce aspects of microbial pathogenesis and antibiotic sensitivity. The unit will provide you with an understanding of clinically important viruses, and will commence your training in diagnostic parasitology.

Prerequisites: LQB386 or LSB328
Antirequisites: LSB435, LSB547
Credit points: 12
Contact hours: 4 per week
Campus: Gardens Point
Teaching period: 2011 SEM-2

LQB488 MEDICAL PHYSIOLOGY 2
An appreciation of how the human body works is an essential prerequisite to understanding the basis of health, disease, diagnostic technologies and treatment strategies. This unit deals specifically with the physiological systems that are responsible for the maintenance of health in humans. It therefore provides a useful frame of reference for students enrolled in biomedical science, pharmacy, human movement studies, nutrition and dietetics or any of the life science majors. The aim of this unit is to introduce you to the normal physiology of the human body in order to facilitate an understanding of how injury or disease affect health as well as the mechanism of action of drugs and other therapeutic interventions.

Prerequisites: LSB111, LSB131, LSB142, LSB255, LSB258, NRB270 or SCB120
Antirequisites: LSB458
Credit points: 12
Contact hours: 4 per week
Campus: Gardens Point
Teaching period: 2011 SEM-2

LQB583 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.

Prerequisites: LQB483
Credit points: 12
Contact hours: 4 per week
Campus: Gardens Point
Teaching period: 2011 SEM-2

LQB584 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: LQB383 or LSB338
Antirequisites: LSB449, LSB503, LSN584
Credit points: 12
Contact hours: 4 per week
Campus: Gardens Point
Teaching period: 2011 SEM-1

LQB586 CLINICAL MICROBIOLOGY 2
Clinical microbiology laboratories throughout the world are recognising the need to maximise their diagnostic capabilities for accurate and early detection and management of medically-important parasitic, fungal and bacterial diseases of humans. This unit emphasises a strong commitment to professional practice by: (i) providing you with a comprehensive, in-depth knowledge and understanding of infectious disease states and their etiology, (ii) developing high level generic and specific laboratory-based skills in diagnostic microbiology and (iii) developing and refining critical thinking skills so that experimental results may be observed and recorded intelligently and reported with a high degree of confidence in their validity and rigor.

Prerequisites: LQB486
Antirequisites: LSB547 and LSB647
Credit points: 12
Contact hours: 4 per week
Campus: Gardens Point
Teaching period: 2011 SEM-1

LQB684 MEDICAL BIOTECHNOLOGY
Medical Biotechnology will provide you with a thorough understanding of diagnostics and therapeutics in the commercial environment of biotechnology. A comprehension of approaches and the applications used as therapeutic interventions in medicine is necessary for this understanding. This unit focuses on current state-of-the-art applications within therapeutic biotechnology as directed to novel drug discovery and drug optimisation and to the development of novel therapeutic strategies, such as gene therapy, transplantation and immunotherapy. It will prepare you for subsequent involvement in medical research and/or employment in medical laboratories.

Prerequisites: LQB584 or LSB503 or LSB449
Antirequisites: LSN684
Assumed knowledge: A background understanding of Cell and Molecular Biology as...
provided in LQB383, LQB483 and LQB584 is assumed knowledge. Equivalents: LSB609 Credit points: 12
Contact hours: 5 per week Campus: Gardens Point Teaching period: 2011 SEM-2

LSB255 HUMAN ANATOMY
A detailed understanding of human anatomy is fundamental to the knowledge base of the medically orientated biological scientist. This unit introduces you to both theoretical and practical aspects of gross, systemic and microscopic anatomy of the human body with emphasis on the microscopic anatomy. The unit builds upon knowledge gained in previous units which introduced you to basic principles of cell structure and function. Knowledge gained in this unit provides a basis for more advanced studies in cellular pathology, histochemistry and cytology. Prerequisites: SCB112 or LSB118 or LSB182 Antirequisites: LSB152 Credit points: 12 Contact hours: 4 per week Campus: Gardens Point Teaching period: 2011 SEM-2

LSB325 BIOCHEMISTRY
The study of biochemistry and cell biology, along with anatomy and physiology, provides students with the knowledge required for the proper understanding of the structure and function of the human body and its organ systems in health and disease, as a preparation for their clinical studies. Prerequisites: SCB121 or SCB113 Antirequisites: LQB381, LQB481 Credit points: 12 Contact hours: 4 per week Campus: Gardens Point Teaching period: 2011 SEM-1

LSB425 QUANTITATIVE MEDICAL SCIENCE
This unit integrates physics, chemistry, biochemistry, maths and statistics for applications to chemical analysis, as preparation to clinical biochemistry. Prerequisites: LSB325 and MAB141 Antirequisites: LSN425 Credit points: 12 Contact hours: 5 per week Campus: Gardens Point Teaching period: 2011 SEM-2

LSB525 CLINICAL BIOCHEMISTRY 1
This course of study (along with LSB625 Clinical Biochemistry 2) provides the graduating scientists with sufficient biochemical knowledge and laboratory experience to work effectively in both the smaller general-purpose laboratory performing a limited number of biochemical tests and the larger specialised laboratory performing in-depth studies of all aspects of clinical biochemistry. Prerequisites: LSB425 Credit points: 12 Contact hours: 5 per week Campus: Gardens Point Teaching period: 2011 SEM-1

LSB625 CLINICAL BIOCHEMISTRY 2
This unit builds on and extends LSB525 Clinical Biochemistry 1 to provide you with sufficient biochemical knowledge and laboratory experience to work effectively in either smaller general-purpose laboratory performing a limited number of biochemical tests or larger specialised laboratory performing in-depth studies of all aspects of clinical biochemistry. LSB625 is completed in the final semester of the LS37 course and builds on the theoretical aspects of biochemistry introduced in LSB325, the practical skills developed in LSB425 and the theoretical and practical elements of LSB525. Prerequisites: LSB525 Credit points: 12 Contact hours: 5 per week Campus: Gardens Point

LSB658 CLINICAL PHYSIOLOGY
The aims of this unit are to help you develop a full understanding of how the pathophysiology of the major disorders of the human body derives from a knowledge and understanding of anatomy and physiology, and critical thinking and complex reasoning skills that provide you with a strong basis for cogently discussing and understanding case histories, their diagnoses and treatments. Prerequisites: (LSB255 or LSB142 or LSB131) AND (LQB388 or LSB250 or LSB451 or LSB231) Corequisites: LSB488 Antirequisites: LSB467 Assumed knowledge: Students should enrol in LQB488 in the same semester if not previously completed Credit points: 12 Contact hours: 5 per week Campus: Gardens Point Teaching period: 2011 SEM-2

LWS007 INTRODUCTION TO INTELLECTUAL PROPERTY LAW
Intellectual property protection is undoubtedly of paramount importance in the research, development and commercialisation of emerging technologies. Managers and researchers need to be aware of the different types of property that can be protected and how the property needs to be protected. There have also been significant developments in the field of intellectual property law in recent years. The concepts taught in Introduction to Intellectual Property Law are of significant relevance to persons intending to practice in the emerging fields of science. Credit points: 12 Contact hours: 3 per week Campus: Gardens Point Teaching period: 2011 SEM-1

MAB141 MATHEMATICS AND STATISTICS FOR MEDICAL SCIENCE
This unit includes: mathematics (functions, limits and continuity; differentiation of functions and applications of differentiation; solutions of equation by iteration; interpolation methods; integration and applications of integration); statistics (data collection; exploring, presenting and modelling data; Normal distribution; hypothesis testing and confidence intervals for means and proportions; one-
way and two-way ANOVA; simple and multiple regression; design of experiments). These topics are presented in the context of medical science. Students must have completed four semesters of Senior Mathematics B with an exit level of Sound Achievement or better, or have passed MAB105.

**Antirequisites:** MAN101, MAB101, LQB284  **Assumed knowledge:** Grade of at least Sound Achievement in Senior Mathematics B (or equivalent) or MAB105 is assumed knowledge.  **Equivalents:** MAB140  **Credit points:** 12  **Contact hours:** 4 per week  **Campus:** Gardens Point  **Teaching period:** 2011 SEM-1 and 2011 SEM-2

**MGB223 ENTREPRENEURSHIP AND INNOVATION**
This unit introduces students to the nature and characteristics of entrepreneurship and innovation and explores the inter-relationship between the two within contemporary economies from managerial perspective. Learning will be directed towards developing the theoretical and applied knowledge, skills, and attitudes that will support and enhance innovation and enterprise creation activity, through the development of a business plan. The unit is designed for those individuals interested in creating a new venture or working in industries as employees of venture owners or those that serve this sector. Students will have opportunity to build a comprehensive plan of their business concept.

**Prerequisites:** BSB115 or CTB115  **Equivalents:** CTB223, MGX223  **Credit points:** 12  **Contact hours:** 3 per week  **Campus:** Gardens Point and Caboolture  **Teaching period:** 2011 SEM-1 and 2011 SEM-2

**MGB225 INTERCULTURAL COMMUNICATION AND NEGOTIATION SKILLS**
The course develops students’ abilities to identify and resolve problems in cross-cultural communication or negotiation situations where cultural differences have created misunderstandings or undesirable or unexpected outcomes. It first explores the concept of 'national culture' by considering the work of major theorists of cultural value dimensions - from Hall to Schwartz. Students are encouraged to analyse communication/negotiation process issues in terms of these value dimensions and to practise managing the process of communication/negotiation to improve their outcomes.

**Prerequisites:** BSB115, CTB115, BSB119 or BSB124  **Antirequisites:** MGB312  **Equivalents:** IBB205, MGX225  **Credit points:** 12  **Contact hours:** 3  **Campus:** Gardens Point and Caboolture  **Teaching period:** 2011 SEM-1 and 2011 SEM-2

**MGB324 MANAGING BUSINESS GROWTH**
This unit is designed to provide skills in the analysis, solutions and implementation of the general management issues that SME owners have to manage in their growing operations. The unit brings together the different functional aspects of managing an established SME and how they are best managed from the owner's (general manager's) point of view. It also provides opportunity to bring students into contact with real world SME owners and their venture management issues.

**Prerequisites:** MGB223  **Equivalents:** MGB218, MGX324  **Credit points:** 12  **Contact hours:** 3  **Campus:** Gardens Point and Caboolture  **Teaching period:** 2011 SEM-1

**PCB150 PHYSICS 1H**
Professionals in the applied sciences require an understanding of the processes of making and recording measurements and an understanding of the physical principles that govern the behaviour of both the physical parameters being measured and the instrument being used to make the measurement. The aim of this unit is to introduce you to the processes of making measurements and estimating, processing and interpreting the uncertainties involved with these measurements. To enable you to understand the physical parameters being measured and also the limits of the measuring instrument; the physics of mechanics, heat, sound and light will be introduced and explained.

**Credit points:** 12  **Contact hours:** 5 per week  **Campus:** Gardens Point  **Teaching period:** 2011 SEM-1 and 2011 SEM-2

**SCB110 SCIENCE CONCEPTS AND GLOBAL SYSTEMS**
You will undertake interdisciplinary study of the physical, geological and biological concepts relating to the origins of life; from the creation of matter and planets, to the emergence of life in all its complexity, culminating in the evolution of earth ecosystems. Human influences, overlaid upon earth’s complex systems, will be examined as to their type, extent, and impact. In counterpoint, you will explore the breadth of philosophical developments underlying our search for knowledge; fundamental thoughts and ideas that span the last 2,500 years of human history. Ultimately, these concepts evolved through the development of a scientific method and we explore its workings in relation to the ongoing enterprise of human understanding.

**Credit points:** 12  **Contact hours:** 4.5 per week  **Campus:** Gardens Point  **Teaching period:** 2011 SEM-1

**SCB111 CHEMISTRY 1**
Chemistry is the central science. It affects society as well as the individual. It is the language and principal tool of the physical sciences, the biological sciences, the health sciences and the agricultural and earth sciences. A basic knowledge of chemistry is essential to all students in these areas. Knowledge of chemistry allows a better understanding of the human body and of the environment in which we live. The aim of this unit is to introduce you to the
basic concepts of general, inorganic, analytical and physical chemistry.  

**Antirequisites:** SCB113  Credit points: 12  Contact hours: 4.5 per week  Campus: Gardens Point  

**Teaching period:** 2011 SEM-1 and 2011 SEM-2

**SCB112 CELLULAR BASIS OF LIFE**  
Scientists from all disciplines need an appreciation and broad overview of the characteristics and functioning of the five groups of living organisms (bacteria, protists, fungi, plants and animals), and their interactions with the inanimate world. SCB112 Cellular Basis of Life is a first semester unit that is essential for many students undertaking courses requiring biological knowledge. Through integrated lecture and laboratory classes, this unit provides you with a foundation for later more advanced studies in your course or major (eg such as medical science, biomedical science, pharmacy, optometry, biochemistry, biotechnology, microbiology, geosciences, ecology, business and education among others). The aim of this unit is to introduce you to the wide diversity of living organisms while emphasising the unity of life processes at the cellular, biochemical and biophysical levels.  

**Antirequisites:** LQB182, LSB118  Credit points: 12  Contact hours: 4 per week  Campus: Gardens Point  

**Teaching period:** 2011 SEM-1 and 2011 SEM-2

**SCB121 CHEMISTRY 2**  
Chemistry is the central science. This is a unit of fundamental importance as it covers the background and general principles that underpin understanding in many science and health related disciplines. In this unit you will be introduced to fundamental aspects of chemistry including the nature of matter, atoms, molecules and ions. From this basis you will develop an understanding of the electronic structure of atoms, chemical bonding and molecular structure as well as the fundamentals of organic chemistry (often described as the chemistry of life). The aims of this unit are to generate an understanding of the importance of chemical bonding and molecular structure and how these factors effect the properties of organic and bioinorganic molecules; and to allow recognition of, and provide an understanding of, the nature of organic functional groups and their respective reactivity.  

**Prerequisites:** (SCB111 or PCB142) . SCB111 can be studied in the same teaching period **Antirequisites:** PQB105 and SCB113  Credit points: 12  Contact hours: 4.5 per week  Campus: Gardens Point  

**Teaching period:** 2011 SEM-1 and 2011 SEM-2

**SCB122 CELL AND MOLECULAR BIOLOGY**  
SCB122 Cell and Molecular Biology 1 equips students with a comprehensive understanding the molecular basis of the cell. This unit expands on the basic principles and concepts relating to cell structure, function, perpetuation and specialisation introduced in SCB112 and introduces students to fundamental molecular mechanisms central to the organisation of the cell. Students will be shown how macromolecular interactions are crucial to information flow and heredity. Students are taught the relationships between chromosomes, genes and cellular function and ultimately how these may determine an organism's phenotype. This unit underpins cell biology and molecular biology units that are offered in second year Life Science units. SCB122 is also ideal for interfaculty students (eg Education, Business, Arts) who will undertake no further life science studies.  

**Prerequisites:** SCB112, SCB112 can be studied in the same teaching period. **Antirequisites:** LSB238  Credit points: 12  Contact hours: 4.5 per week  Campus: Gardens Point  

**Teaching period:** 2011 SEM-1

**STB551 ENGAGING WITH THE INNOVATION INDUSTRY**  
Working in the innovation industry requires a suite of skills beyond an in depth technical and/or business knowledge of a disciplinary area. Successful facilitators of innovation exchange require well developed professional portfolios and high level capabilities in the generic or soft skills including communication (written, oral and aural), thinking approaches (analytical, critical and lateral), adaptability, flexibility, leadership, learning approaches and team-based skills. This unit helps prepare you to become a professional in the innovation industry whether as an entrepreneur seeking funding for development of intellectual property or as facilitator of innovation exchange between inventor, venture capital sources and the global marketplace.  

**Credit points:** 12  **Teaching period:** 2011 SEM-1

**STB709 INNOVATION AND COMMERCIALISATION PROJECT**  
The Innovation and Commercialisation Project is a capstone unit that provides a concrete opportunity for students to consolidate and contextualise the knowledge and skills they have acquired in the course and apply them to a substantial project. The unit serves to provide work experience and link University study with the professional practice of innovation commercialisation context. New venture areas of industry, focussed as they often are on emergent technologies and the commercialisation of innovation, require graduates capable of high levels of critical thinking and evaluation coupled with a sound technical and business knowledge and skills base of relevance to the particular innovation context. The capacity to conduct rigorous analysis into the research, development and commercialisation of products and processes is a fundamental aspect of converting real-world science and technology into products for the global marketplace.  

**Prerequisites:** STB551  Credit points: 12  **Teaching period:** 2011 SEM-1, 2011 SEM-2 and 2011 SUM
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