Bachelor of Applied Science (Medical Science) (LS37)

Year offered: 2011
Admissions: Yes
CRICOS code: 020331D
Course duration (full-time): 3 Years
Course duration (part-time): 6 Years
Domestic Fees (indicative): 2011: CSP $2,178 (indicative) per semester
International Fees (indicative): 2011: $12,625 (indicative) per semester
Domestic Entry: February
International Entry: February and July (Conditions apply for July entry)
QTAC code: 418201
Past rank cut-off: 79
Past OP cut-off: 11
OP Guarantee: Yes
Assumed knowledge: English (4, SA), Maths B (4, SA) and Chemistry (4, SA)
Preparatory studies: For information on acquiring assumed knowledge visit http://www.qut.edu.au/assumed-knowledge
Total credit points: 300
Standard credit points per full-time semester: 48
Standard credit points per part-time semester: 24
Course coordinator: Ms Anne-Marie Christensen
Campus: Gardens Point

Why choose this course?
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Professional Recognition
Graduates are immediately eligible for graduate membership of the Australian Institute of Medical Scientists (AIMS) and will have completed the academic requirements for admission as full members.

Other Course Requirements
Work Experience Program: This course includes a mandatory Summer Program between years two and three of the full-time course. During the Summer Program you will be required to undertake a minimum six-week work experience program in a practising pathology laboratory. Proof of successful vaccination against Hepatitis B must be provided at the end of first semester of the second year of the course.

Blue Card
A current blue card authorised with QUT may be required prior to commencing the clinical placement components of this course. For more information visit Blue Card and ensure that you allow adequate time for processing your application and issuing of the card in order to avoid clinical experience delays.

Limits on grades of 3
A new policy concerning grades of 3 came into effect from 1 January 2009 (QUT MOPP C/5.2). With effect from this date grades of 3 are no longer considered a conceded or low pass but are classified as a fail grade. Any grades of 3 awarded prior to 1 January 2009 retain the conceded pass status and will be counted for graduation purposes up to the maximum number of grades of 3 permitted for your course. Grades of 3 incurred in units that commence after 1 January 2009 will not count towards your degree. Further information is available on the Student Services website.

Deferment
Domestic students can defer their offer in this course for one year. In exceptional circumstances up to 12 months of additional deferment may be granted.

Find out more on deferment.

Continuing Students
Continuing students who are not undertaking a standard program of units as detailed below, or who need to complete units from the first year of the course structure, should consult the course coordinator for enrolment advice.

Further Information
For further information about this course, please contact:

Course Coordinator
Ms Anne-Marie Christensen
Phone: +61 7 3138 2782
Email: enquiry.scitech@qut.edu.au

Full-time Course Structure

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<th>Year 1, Semester 1</th>
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<tr>
<td>Course Code</td>
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<tr>
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<td>PCB150</td>
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<td>SCB112</td>
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<td>SCB113</td>
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<th>Year 1, Semester 2</th>
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<tr>
<td>Course Code</td>
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<td>LSB250</td>
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<td>LSB255</td>
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<td>SCB122</td>
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| Year 2, Semester 1 |
### Year 2, Semester 2
- LQB383 Molecular and Cellular Regulation
- LSB325 Biochemistry
- LSB365 Pathology

### Year 3, Semester 1
- LQB386 Microbial Structure and Function
- LSB365 Pathology

### Year 3, Semester 2
- LSB435 Diagnostic Microbiology 1
- LSB438 Immunology 1

### Year 4, Semester 1
- LQB383 Molecular and Cellular Regulation
- LSB325 Biochemistry

### Year 4, Semester 2
- LSB425 Quantitative Medical Science
- LSB465 Histopathology 1

### Year 5, Semester 1
- LSB525 Clinical Biochemistry 1
- LSB535 Microbial Immunology

### Year 5, Semester 2
- LSB625 Clinical Biochemistry 2
- LSB635 Diagnostic Microbiology 2
- LSB655 Haematology 2
- LSB665 Immunohaematology

### Year 6, Semester 1
- LSB555 Haematology 1
- LSB565 Histopathology 2

### Year 6, Semester 2
- LSB655 Haematology 2
- LSB665 Immunohaematology

### Part-time Course Structure - For students who will commence in 2011, & who commenced in 2009 & 2010

#### Year 1, Semester 1
- SCB112 Cellular Basis of Life
- SCB113 Chemistry for Health and Medical Science

#### Year 1, Semester 2
- SCB122 Cell and Molecular Biology
- SCB131 Experimental Chemistry

#### Year 2, Semester 1
- MAB141 Mathematics and Statistics for Medical Science
- PCB150 Physics 1H

#### Year 2, Semester 2
- LSB250 Human Physiology
- LSB255 Human Anatomy

#### Year 1, Semester 1
- MAB141 Mathematics and Statistics for Medical Science
- SCB112 Cellular Basis of Life

#### Year 1, Semester 2
- SCB113 Chemistry for Health and Medical Science
- SCB122 Cell and Molecular Biology

#### Year 2, Semester 1
- SCB113 Chemistry for Health and Medical Science
- SCB122 Cell and Molecular Biology
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: LSB468 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 micro-organisms that is also very important in many other disciplines, because micro-organisms 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

LSB250 HUMAN PHYSIOLOGY
A strong foundation in human physiology is crucial for students in Optometry, Podiatry and Medical Science. This unit will provide you with the necessary foundation for subsequent units in physiology, pathology or immunology. This unit is also appropriate for other students interested in studying medical physiology at an intermediate level and is also designed to encourage your interest in scientific research and current issues in medical physiology. The aim of this unit is for students to gain a strong a background in human physiology and to develop skills and gain knowledge that are relevant to the needs of future optometrists, podiatrists and medical scientists.

Prerequisites: SCB112 or LSB118 or LSB131 or LQB182
Antirequisites: LSB231
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 LQB182  
**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

**LSB365 PATHOLOGY**  
Pathology introduces students to the study of the disease processes underlying the major diseases of human organ systems. General disease processes of the major specific diseases of the organ systems are introduced, and then become the focus in systematic pathology. An understanding of general and systematic pathology is fundamental to the application of basic biomedical knowledge to clinically relevant states and the major diseases. This unit provides students with the foundation knowledge needed for subsequent clinical semesters. On completion of this unit, students should know, understand and be able to apply facts, concepts and terms related to disease processes and the major diseases occurring in the organ systems.

**Prerequisites:** LSB250 and LSB255  
**Antirequisites:** LSB111  
**Assumed knowledge:** Anatomy, basic histology and physiology is assumed knowledge  
**Credit points:** 12  
**Contact hours:** 5 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

**LSB435 DIAGNOSTIC MICROBIOLOGY 1**  
This unit builds on foundation topics in Microbiology 1 and starts preparing the student for a career in a routine diagnostic microbiology laboratory. The overall theme is the diagnosis of human infectious diseases with bacteriology and parasitology the two key focus areas. This unit emphasises a strong commitment to professional practice by developing high level generic and specific skills. Specific lecture and lab class discussion points include (where relevant): life cycles; pathogen acquisition; infectious disease diagnosis pathways; classification systems; clinical presentations; diagnostic protocols and patient management. Students are encouraged to think critically and to discuss issues in an interactive and supportive learning environment.

**Prerequisites:** LQB386  
**Antirequisites:** LQB486, LSB547  
**Credit points:** 12  
**Contact hours:** 5 per week  
**Campus:** Gardens Point  
**Teaching period:** 2011 SEM-2

**LSB438 IMMUNOLOGY 1**  
The immune system protects against a range of infectious and malignant diseases. However, it occasionally also attacks the host producing autoimmune disease or overreacts to environmental stimuli to cause allergic reactions. This unit provides a basic introduction to these topics and to the laboratory tests involved in assessing immune function.

**Prerequisites:** LQB386 and LSB250  
**Antirequisites:** LSN438  
**Credit points:** 12  
**Contact hours:** 5 per week  
**Campus:** Gardens Point  
**Teaching period:** 2011 SEM-2

**LSB465 HISTOPATHOLOGY 1**  
Histopathology and cytology are essential components of pathological diagnosis and major clinical disciplines in Medical Laboratory Science. The aim of the unit is to provide you with a knowledge of histological techniques and interpretation of histopathological tests, as well as the principles of cytopathological diagnosis.

**Prerequisites:** LSB365 and SCB113 and LSB255  
**Credit points:** 12  
**Contact hours:** 5 per week  
**Campus:** Gardens Point  
**Teaching period:** 2011 SEM-2

**LSB480 PROFESSIONAL PRACTICE**  
Six weeks of professional practice is undertaken at the end of the second year full time of the medical science course, during the summer vacation. This experience provides you with a supervised introduction to the pathology workplace and prepares you for the clinical units in the third year of the course. During this time you will be given limited supervised experience working at the bench, and you will gain a greater appreciation of the role of the laboratory scientist in a paramedical team. It will reinforce the importance of quality standards, and health and safety issues, as stressed at QUT, and it will place you in direct contact with prospective...
employers in the pathology industry. The professional practice unit aims to provide you with a supervised introduction to the pathology workplace.

**Prerequisites:** LSB425 and LSB435 and LSB465

**Assumed knowledge:** Students are expected to have completed four semesters of their course prior to enrolment in this unit.

**Credit points:** 12  
**Campus:** Gardens Point  
**Teaching period:** 2011 SUM

**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 SUM

**LSB535 MICROBIAL IMMUNOLOGY**

This unit builds on the concepts developed in Immunology 1 to introduce students to the life cycles of a variety of pathogens, particularly viruses, and the mechanisms employed by a host to avoid infection.

**Prerequisites:** LSB438  
**Credit points:** 12  
**Contact hours:** 5 per week  
**Campus:** Gardens Point  
**Teaching period:** 2011 SUM

**LSB555 HAEMATOLOGY 1**

This unit introduces the discipline of haematology and the routine procedures performed in the haematology section of a pathology department, and introduces the concepts of anaemia and its investigation. This unit provides a detailed understanding of the common erythrocyte disorders. Diagnostic procedures, aetiology, pathophysiology, clinical manifestations and treatment of each disorder are included.

**Prerequisites:** LSB425, LSB438 and LSB465  
**Assumed knowledge:** Students are expected to have completed four Semesters of their course prior to enrolment to this unit.

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

**LSB565 HISTOPATHOLOGY 2**

Histopathology is an essential component of pathology and one of the major clinical disciplines in Medical Laboratory Science. Students are introduced to advanced techniques and methods of handling histopathological specimens. Students acquire sufficient scientific and technical expertise to enable them to carry out and to understand a range of techniques used routinely in clinical histopathology and histology research laboratories.

**Prerequisites:** LSB365 and LSB465  
**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

**LSB635 DIAGNOSTIC MICROBIOLOGY 2**

This advanced level unit completes the preparation of the student for a career in a routine diagnostic microbiology laboratory by building upon foundation topics covered in LSB435. The overall theme is human infectious disease diagnosis with bacteriology, mycology and parasitology the three key focus areas. This unit continues a strong commitment to professional practice by developing high level generic and specific skills. Specific discussion points include (where relevant): life cycles, pathogen acquisition, infectious disease diagnosis pathways, classification systems, clinical presentations, diagnostic protocols and patient management. Students are encouraged to think critically and to discuss issues in an interactive and supportive learning environment.

**Prerequisites:** LSB438  
**Credit points:** 12  
**Contact hours:** 5 per week  
**Campus:** Gardens Point  
**Teaching period:** 2011 SEM-2

**LSB655 HAEMATOLOGY 2**

This unit is designed to provide you with an up to date understanding of the common white blood cell and haemostatic disorders routinely encountered in a haematology laboratory, as well as their diagnosis, treatment, significance and prognosis for the patient being investigated.

**Prerequisites:** LSB555  
**Assumed knowledge:** Students are expected to have completed five Semesters of their course prior to enrolment to this unit.

**Credit points:** 12  
**Contact hours:** 5 per week  
**Campus:** Gardens Point

**LSB665 IMMUNOHAEMATOLOGY**

This unit is designed to provide you with an understanding of the theoretical and practical aspects of transfusion medicine, as it applies to the provision of a safe transfusion service. This includes knowledge of blood and its components, the genetic and immunological aspects of antigens and antibodies relevant to transfusion,
compatibility testing and the clinical factors affecting transfusion practice decisions and outcomes. The knowledge, practical skills and competence gained will prepare you for employment as a medical scientist in transfusion services including pathology/hospital bloodbanks.

Prerequisites: LSB438 and LSB555  
Assumed knowledge: Students are expected to have completed 5 Semesters of their course prior to enrolment in this unit.

Credit points: 12  
Contact hours: 5 per week  
Campus: Gardens Point

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

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

SCB112 CELLULAR BASIS OF LIFE
Scientists from all disciplines need an appreciation and a 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: LSB105, LSB118  
Credit points: 12  
Contact hours: 4 per week  
Campus: Gardens Point  
Teaching period: 2011 SEM-1 and 2011 SEM-2

SCB113 CHEMISTRY FOR HEALTH AND MEDICAL SCIENCE
A challenging chemistry unit designed for students undertaking health and/or medical science degrees. A range of topics from sub-discipline areas of general, physical and organic chemistry are covered. General/physical chemistry content includes atomic and molecular structure, electronic structure, bonding, molecular geometry, stoichiometry, thermochemistry, gases, kinetics, equilibrium, acids, bases, buffers, and electrochemistry. Organic chemistry content includes functional group chemistry, reaction mechanisms, stereochemistry, chirality as well as topics of biological significance including the chemistry of peptides, sugars and DNA. The unit is complemented by a practical program involving a range of experiments illustrating important chemical concepts.

Antirequisites: PDB105, SCB111 and SCB121  
Credit points: 12  
Contact hours: 5 per week  
Campus: Gardens Point  
Teaching period: 2011 SEM-1

SCB122 CELL AND MOLECULAR BIOLOGY
SCB122 Cell and Molecular Biology 1 equips students with a comprehensive understanding of 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-2

SCB131 EXPERIMENTAL CHEMISTRY
Chemistry is the central science. A detailed study of chemistry and related disciplines requires the development of practical laboratory skills for synthesis and chemical analysis. This unit is designed specifically to develop these aspects of chemistry. This unit is a laboratory-based unit which is designed for students who intend to continue with experimental science units. The lectures complement the weekly practical sessions and teach the theory required to interpret experimental results. The aim of this unit is to develop a broad knowledge of, and the practical skills required for, scientific experiments in chemistry. The skills acquired in this unit are transferable to other practical sciences including medical science, biochemistry, molecular biology and pharmacy.

Prerequisites: SCB113 or PQB105 or (SCB111 and SCB121). SCB121 can be concurrently enrolled with SCB131

Credit points: 12    Campus: Gardens Point    Teaching period: 2011 SEM-2