Bachelor of Technology Innovation (Geoscience) (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: 394
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
Graduates are eligible for membership of the Australasian Institute of Mining and Metallurgy (AIME), Australian Institute of Geoscientists (AIG), and the Geological Society of Australia (GSA).

Your Course
Year 1
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.

Geoscience Major Course Structure

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<th>Year 1 Semester 1</th>
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NOTE: Students with a Sound Achievement in Maths B and NOT wishing to major in Mathematics or Physics should enrol in MAB101

Students without a Sound Achievement (4 semesters) in Maths B should enrol in MAB105

Students with a Sound Achievement in Maths C and wishing to major in Mathematics or Physics should enrol in MAB121

Students without a Sound Achievement in Maths C and wishing to major in Mathematics...
or Physics should enrol in MAB120

Year 1 Semester 2

NQB201  Planet Earth
NQB202  History of Life on Earth
SCB123  Physical Science Applications
SCB222  Exploration of the Universe

Year 2 Semester 1

NQB311  Mineralogy
NQB314  Sedimentary Geology
Plus TWO units from the relevant options List which may include one unit from outside the Faculty
Relevant Options List for Year 2 Semester 1
NQB302  Earth Surface Systems
UDB281  Geographic Information Systems
Elective

Year 2 Semester 2

NQB411  Petrology of Igneous and Metamorphic Rocks
NQB412  Structural Geology and Field Methods
Plus TWO units from the relevant options List which may include one unit from outside the Faculty
Relevant Options List for Year 2 Semester 2
NQB403  Soils and the Environment
NQB413  Stratigraphy
Elective

Year 3 Semester 1

BSB115  Management
NQB502  Field Methods in Natural Resource Sciences
NQB513  Geophysics
STB551  Engaging with the Innovation Industry

Year 3 Semester 2

BSB126  Marketing
MGB223  Entrepreneurship and Innovation
NQB615  Geochemistry
Plus ONE from the following three units:
NQB612  Basin Analysis and Petroleum Geology
NQB613  Plate Tectonics
NQB614  Groundwater Systems

Year 4 Semester 1

AMB240  Marketing Planning and Management
LWS007  Introduction To Intellectual Property Law
MGB324  Managing Business Growth
STB709-1  Innovation and Commercialisation Project

Year 4 Semester 2

BSB311  Innovation Commercialisation Strategies
MGB225  Intercultural Communication and Negotiation Skills
STB709-2  Innovation and Commercialisation Project
STB709-3  Innovation and Commercialisation Project

UNIT SYNOPSES

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 SUM-1

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 COMMERCIALISATION 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

**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

**MAB101 STATISTICAL DATA ANALYSIS 1**

Experiments, observational studies, sampling, and polls; data and variables; framework for describing and manipulating probability; independence; Binomial and Normal distributions; population parameters and sample statistics; concepts of estimation and inference; standard error; confidence intervals for means and proportions; tests of hypotheses on means and proportions (one sample and two independent samples); inference using tables of counts; modelling relationships using regression analysis; model diagnosis; use of statistical software.

**Antirequisites:** BSB123, EFB101, MAB141, MAN101, MAB233  
**Assumed knowledge:** Grade of at least Sound Achievement in Senior Mathematics B (or equivalent) or MAB105 is assumed knowledge.  
**Credit points:** 12  
**Contact hours:** 4 per week  
**Campus:** Gardens Point  
**Teaching period:** 2011 SUM-2, 2011 SEM-1 and 2011 SEM-2

**MAB105 PREPARATORY MATHEMATICS**

This unit is intended to cater for the needs of students whose background in mathematics is either weak or does not reach the equivalent of Senior Mathematics B. It is intended to provide the concepts and skills needed for successful study of those units within the university which assume a background equivalent to Senior Mathematics B. This unit is incompatible with a grade of High Achievement in Senior Mathematics B. The aim of this unit is to develop your mathematical skills in and understanding of algebra, functions and graphing, differential and integral calculus of one variable and to interpret and solve simple, real world problems using these skills.

**Assumed knowledge:** Year 10 Level 6 Mathematics is assumed knowledge.  
**Credit points:** 12  
**Contact hours:** 4 per week  
**Campus:** Gardens Point  
**Teaching period:** 2011 SUM-2, 2011 SEM-1 and 2011 SEM-2

**MAB120 ALGEBRA AND CALCULUS**

This unit introduces and reviews the elementary concepts of function, calculus, matrices and vectors with special reference to applications in science, technology and business where appropriate. Topics covered include the algebra of complex numbers, elementary functions (polynomial, trigonometric, exponential and logarithmic) and their properties, differentiation and integration methods and principles, geometric and algebraic applications of vectors and the solution of linear systems using matrices.

**Antirequisites:** MAN120  
**Assumed knowledge:** Grade of at least Sound Achievement in Senior Mathematics B (or equivalent) or MAB105 is assumed knowledge.  
**Credit points:** 12  
**Contact hours:** 4 per week  
**Campus:** Gardens Point  
**Teaching period:** 2011 SUM-2, 2011 SEM-1 and 2011 SEM-2

**MAB121 CALCULUS AND DIFFERENTIAL EQUATIONS**

Building upon the foundations established in MAB120 or Senior Maths C, this unit addresses the significant role of mathematical modelling using differential equations for the description and resolution of simple and complex problems relevant to real world situations. The formulation and solution of such problems is supported by appropriate advanced mathematical concepts used for function approximation, differentiation and integration. Undertaking
this unit will allow you to develop your problem solving skills, especially in the context of advanced mathematical techniques applied to ordinary differential equations used to model real world problems. You will also gain a deeper understanding of the concepts of the derivative and the integral, and how these may be used in applied contexts.

Antirequisites: MAN121 Assumed knowledge: Grade of at least Sound Achievement in Senior Mathematics C (or equivalent) or MAB120 or MAB100 or MAB125

Equivalents: MAB111, MAB126, MAB131, MAB182

Credit points: 12 Contact hours: 4 per week Campus: Gardens Point Teaching period: 2011 SEM-1, 2011 SEM-2 and 2011 SUM

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: 4 per week Campus: Gardens Point 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

NQB201 PLANET EARTH
Earth Science impacts every aspect of modern life. Hence, the concepts of Earth Science are fundamental not only to the field of Geology, but also to Environmental Science, natural resource management, civil engineering and society at large. Planet Earth provides an introduction to Earth Science, including earth materials, geologic history, geological process at the Earth's surface, and the complex interplay between the lithosphere, atmosphere, hydrosphere and biosphere through geologic time. Thus, Planet Earth is a foundation unit for further studies in Geology and Environmental Science and also serves as a broad introduction to the world we live on.

Equivalents: NRB230 Credit points: 12 Contact hours: 4 per week Campus: Gardens Point Teaching period: 2011 SEM-2

NQB202 HISTORY OF LIFE ON EARTH
This unit aims to provide you with an understanding of the processes of evolution and the changing environmental conditions through time that influenced the patterns of the evolution of life on this planet. The unit will provide you with practical experience in fossil plant and animal identification, classification and morphological interpretation. It will also enable you to apply palaeontological information to interpret the evolutionary history of higher taxa and the changing ancient depositional environments through time.

Equivalents: NRB240 Credit points: 12 Contact hours: 4 per week Campus: Gardens Point Teaching period: 2011 SEM-2

NQB302 EARTH SURFACE SYSTEMS
Understanding long and short term climate and environmental change is now recognised as crucial to the interpretation of our biotic, geomorphic and cultural landscapes. To fully understand environment change it is important to recognise the interconnectedness between the atmosphere, hydrosphere, lithosphere, biosphere and humanity’s place within these spheres over various temporal and spatial scales. Developing knowledge of past and present climate change and landscaping processes helps to predict future process pathways for natural resource management, civil engineering, risk analysis, and
impact assessment in the context of both natural and anthropogenic induced change.

**Assumed knowledge:** NQB201 is assumed knowledge.

**Equivalents:** NRB301  Credit points: 12  Contact hours: 4 per week  Campus: Gardens Point  Teaching period: 2011 SEM-1

**NQB311 MINERALOGY**

Minerals are the building blocks of rocks which comprise the solid Earth. The study of minerals is essential for understanding the structure and composition of the Earth and the detailed processes of the rock cycle. Mineralogy forms the basis for petrology (the study of the genesis of rocks) and geochmistry, and is thus essential for Geoscience. The unit may also be of interest to chemists.

**Equivalents:** NRB333  Credit points: 12  Contact hours: 4 per week  Campus: Gardens Point  Teaching period: 2011 SEM-1

**NQB314 SEDIMENTARY GEOLOGY**

This unit provides students with an introduction to sedimentology; both sediments and sedimentary rocks. The unit focuses on the link between the range of features preserved in sedimentary rocks and what those features tell us about sedimentary processes, depositional environments and the burial history of the rocks. The sedimentological processes and depositional environments observed in the modern world are discussed and used as a foundation for interpreting the evidence preserved in the ancient sedimentary rock record, in turn revealing much about earth processes in geologic history.

**Assumed knowledge:** NQB201 is assumed knowledge.

**Equivalents:** NRB331  Credit points: 12  Contact hours: 4 per week  Campus: Gardens Point  Teaching period: 2011 SEM-1

**NQB403 SOILS AND THE ENVIRONMENT**

This unit will provide you with grounding in soil science (pedology) by emphasising pedological principles, their application to environmental soil analysis and management, and knowledge of ecosystem function of soil in a changing environment. This one of the most critical resources to consider within the context of climate change and is an essential component of environmental scientific studies. It also compliments and provides a basis for further biogeoscientific studies in the SC01 degree. Your knowledge of past and present soil processes will help you to predict process pathways and outcomes for the purposes of environmental planning and management, risk analysis, and impact assessment involving soils. It also contributes to your understanding of field survey and interpretation of soil phenomena in ecological, geological and environmental contexts.

**Prerequisites:** NQB302 or NRB301 or (ENB272 and ENB274)  Credit points: 12  Contact hours: 4 per week

**Campus:** Gardens Point  **Teaching period:** 2011 SEM-2

**NQB411 PETROLOGY OF IGNEOUS AND METAMORPHIC ROCKS**

Igneous and metamorphic rocks compose the bulk of the Earth. Understanding what these rocks are and how they form is an essential part of the study of geology and is fundamental to a wide range of higher level units. This unit builds upon the knowledge and skills acquired in the prerequisite unit (NQB311 Mineralogy) by focusing on the description, classification and origins of igneous and metamorphic rocks. This unit aims to allow you to develop the theoretical and practical skills necessary to describe, classify and interpret igneous and metamorphic rocks.

**Prerequisites:** NQB311 or NRB333  **Equivalents:** NRB436  Credit points: 12  Contact hours: 4 per week  Campus: Gardens Point  Teaching period: 2011 SEM-2

**NQB412 STRUCTURAL GEOLOGY AND FIELD METHODS**

Structural geology, the deformation of earth materials, is one of the main elements in the core curriculum in geology. It is also essential to other subdisciplines of geology, such as foundation engineering and petroleum and mineral exploration. Geologists need to be able to describe and map structures, to understand the mechanical principles of rock deformation, and to be able to manipulate and calculate structural data. This unit fosters the skill of critical three- and four-dimensional analysis that usually sets geoscientists apart from other scientists and technologists.

**Prerequisites:** NQB314 or NRB331  **Equivalents:** NRB434  Credit points: 12  Contact hours: 4 per week  Campus: Gardens Point  Teaching period: 2011 SEM-2

**NQB413 STRATIGRAPHY**

Sedimentary rocks that cover most the Earth's surface are arranged into layers that record the history of the Earth's surface for large periods of geological time. The study of sedimentary rock layers (strata) is called stratigraphy. The types of sedimentary rocks that are preserved in particular strata are direct indications of the conditions that prevailed during their formation. The study of stratigraphy can help unravel the geological history of the area. Hence, stratigraphy is a fundamental part of the education of any geoscientist, and especially of those who wish to be involved in fossil fuel exploration and water resource management.

**Prerequisites:** NQB314 or NRB331  **Equivalents:** NRB437  Credit points: 12  Contact hours: 4 per week  Campus: Gardens Point  Teaching period: 2011 SEM-2

**NQB502 FIELD METHODS IN NATURAL RESOURCE SCIENCES**
Field experience is an essential part of the professional training of geologists, environmental scientists, ecologists, and natural resource specialists in general. The theory and practice of methods to interpret, measure, map, and monitor important natural resource features and characteristics are essential to the study of geological, ecological, and environmental systems. Methods of survey, mapping and interpretation are necessary skills for resource assessment, geo-exploration, environmental impact assessment, land evaluation, baseline studies, and ecological investigations. There are varying emphases on these outcomes depending on the type of field survey you undertake in this unit.

**Prerequisites:** (NQB412 or NRB434) and (NQB321 or NRB437) and (NQB513 or NRB534). NQB513 can be studied in the same teaching period as NQB612.

**Equivalents:** NRB636

**Credit points:** 12

**Contact hours:** 4 per week

**Campus:** Gardens Point

**Teaching period:** 2011 SEM-1

**NQB513 GEOPHYSICS**

Geophysics is an integral branch of geology, providing many of the most useful methods of imaging the subsurface of the earth. These methodologies are useful in disciplines as diverse as plate tectonics, oil and mineral exploration, hydrogeology, environmental geology, engineering geology, and seismic hazards. The aim of the unit is to provide you with the core knowledge and skills of geophysical measurements, processing of data, and geological interpretation of geophysical data.

**Prerequisites:** (NQB201 or NRB230) and (NQB412 or NRB434)

**Equivalents:** NRB534

**Credit points:** 12

**Contact hours:** 4 per week

**Campus:** Gardens Point

**Teaching period:** 2011 SEM-2

**NQB612 BASIN ANALYSIS AND PETROLEUM GEOLOGY**

The aim of the unit is to provide you with a fundamental working knowledge of sedimentary strata at regional and basin-wide scales, so as to allow you to solve problems in the exploration and modern environmental management sectors. This unit fosters the skill of critical three- and four-dimensional analysis that usually sets geoscientists apart from other scientists and technologists, and develops an understanding of exploration and production aspects of the fossil fuel industries. Undertaking this unit, you will acquire: the conceptual and technical tools to enable you to rationally interpret the distribution of rock units in space and time with emphasis on predicting the occurrences of petroleum resources; an understanding of the genesis and setting of hydrocarbon resources; and an understanding of the techniques of exploration, evaluation and utilisation of petroleum.

**Prerequisites:** (NQB413 or NRB437) and (NQB513 or NRB534).

NQB513 can be studied in the same teaching period as NQB612.

**Equivalents:** NRB636

**Credit points:** 12

**Contact hours:** 4 per week

**Campus:** Gardens Point

**Teaching period:** 2011 SEM-2

**NQB613 PLATE TECTONICS**

This unit considers geological observations in the context of a unifying theory. It examines lithospheric plates, plate geometries, Earth morphology, relative and absolute plate movements, stresses of plate interactions, types of plate boundaries, and orogenesis. It also examines the development of the most important geologic theory of the 20th century.

**Prerequisites:** (NQB412 or NRB434) and (NQB314 or NRB331) and (NQB411 or NRB436) and (NQB513 or NRB534).

NQB513 can be studied in the same teaching period as NQB613.

**Equivalents:** NRB635

**Credit points:** 12

**Contact hours:** 4 per week

**Campus:** Gardens Point

**Teaching period:** 2011 SEM-2

**NQB614 GROUNDWATER SYSTEMS**

This unit focuses on the origin, occurrence and movement of groundwater; aquifer properties; chemistry and quality of groundwater; exploration methods for groundwater; drilling methods and well testing equipment; assessment of groundwater problems, both supply and quality; and introduction to modelling of groundwater systems. Groundwater resources of Australia are covered and current issues. Lectures are supported by desktop exercises. Students will obtain practical experience with pump tests and computer modelling. There is interaction with government and private sector hydrogeologists, and a field site visit for hands-on well testing.

**Prerequisites:** NQB302 or NRB301 or ENB383

**Equivalents:** NRB633

**Credit points:** 12

**Contact hours:** 4 per week

**Campus:** Gardens Point

**Teaching period:** 2011 SEM-2

**NQB615 GEOCHEMISTRY**

Through lecture, discussion and problem solving exercises, this unit introduces the application of geochemistry, phase equilibria, and thermodynamics to demonstrate the origin and evolution of igneous and metamorphic rocks. Problem-solving exercises synthesise field, petrographic and geochemical data to develop quantitative petrogenetic models and enhance critical thinking and written communication skills. Field study is an important component of this unit.

**Equivalents:** NRB536

**Credit points:** 12

**Contact hours:** 4 per week

**Campus:** Gardens Point

**Teaching period:** 2011 SEM-1

**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 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 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: LQB182, LSB118 Credit points: 12 Contact hours: 4 per week Campus: Gardens Point
Teaching period: 2011 SEM-1 and 2011 SEM-2

SCB123 PHYSICAL SCIENCE APPLICATIONS
Physics principles underpin all of the sciences and ‘new technologies’. This unit adopts an investigative team-based approach to provide students with an appreciation of fundamental concepts in physical science, together with experience in the application of these concepts to a range of ‘real world’ problems. The unit should be taken in the first year of study as the fundamental principles introduced here will be built upon in later units in the context of each science student’s major discipline area. Employers in cutting-edge industries expect science graduates to have effective strategies for problem solving, skills for collaborative work and scientific communication and research skills. This unit aims to develop these skills by applying the fundamental concepts of physical science to problems in a team environment.

Credit points: 12 Contact hours: 4.5 per week
Campus: Gardens Point Teaching period: 2011 SEM-2

SCB222 EXPLORATION OF THE UNIVERSE
This unit provides an introduction to optical observational astronomy; instrumentation; celestial sphere and astronomical coordinates; observations of constellations, stars, planets, clusters and other interesting celestial objects. The theory includes: optics of telescopes; properties of light; determination of physical properties of stars; nebulae; stellar spectra and classification; historical models of the solar system; Kepler’s law, gravitation; physical geology of the planets and formation of the solar system; phenomena of astronomical origin; brief introduction to stars and galaxies. This course includes practical exercises and field trips.

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

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

**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

**UDB281 GEOGRAPHIC INFORMATION SYSTEMS**
This unit investigates the basic concepts of geographic information systems. Topics to be covered include components of GIS, spatial databases, data acquisition, reference frameworks, use of photographs and images, spatial analysis and graphic output design issues. The unit will highlight the importance of geographic information systems the unit will highlight the importance of geospatial positioning applications in society.

**Equivalents:** PSB631  
**Credit points:** 12  
**Contact hours:** 4 per week  
**Campus:** Gardens Point  
**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