This *Handbook* is also on Victoria University’s web site at: www.vu.edu.au

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**Caution:** This *Handbook* provides a guide to courses available within the Faculty of Science, Engineering and Technology at the University in 2004. The *Handbook* cannot hope to cover all of the various options adequately, although it attempts to be as accurate as possible, and students should always check with the relevant faculty or school officers in planning their courses. The *Handbook* also includes descriptions of courses that may be altered later or that may not in fact be offered due to insufficient enrolments or changes in teaching personnel. The fact that details of a course are included in the *Handbook* can in no way be taken as creating an obligation on the part of the University, faculty or school to teach it in any given year, or to teach it in the manner described. The University reserves the right to discontinue or vary courses at any time without notice.

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Contents

How to use this book ................................................................. 5

Faculty of Science, Engineering and Technology ..................... 7
Research ...................................................................................... 7
The Facilities of the Faculty ......................................................... 9
Bridging Programs ..................................................................... 10
Secondary School Programs ...................................................... 10
Dean’s Scholarships .................................................................. 10
Postgraduate Scholarships ....................................................... 10
Further Information ................................................................... 10
Staff ............................................................................................ 11
University Officers ...................................................................... 11
Principal Officers of the University ............................................ 11
Members of the Faculty of Science, Engineering and Technology ......................................................... 11
BHP Fire and Construction Research Unit ............................... 12

Undergraduate Studies ............................................................... 15

Faculty of Science, Engineering and Technology ..................... 15
Certificate in Foundation Studies .............................................. 15
Bachelor of Business Electronic Commerce/ Bachelor of Science ......................................................... 16
Bachelor of Engineering/Bachelor of Business Electronic Commerce .................................................... 16
Bachelor of Engineering/Bachelor of Science ......................................................... 17
Bachelor of Engineering/Bachelor of Laws ........................................... 18
Bachelor of Science/Bachelor of Psychology ........................................... 19
School of Architectural, Civil and Mechanical Engineering ....... 21
Bachelor of Engineering in Architectural Engineering............ 25
Bachelor of Engineering in Building Engineering .................. 27
Bachelor of Engineering in Building Surveying ....................... 28
Bachelor of Engineering in Civil Engineering ......................... 29
Bachelor of Engineering in Mechanical Engineering ............ 31
Bachelor of Engineering in Robotic Engineering ................... 32
Bachelor of Science in Engineering and Business ................. 33
Bachelor of Science in Environmental Engineering ............... 34

School of Electrical Engineering .............................................. 35
Bachelor of Engineering in Computer Engineering ............... 36
Bachelor of Engineering in Electrical and Electronic Engineering ......................................................... 38
Bachelor of Engineering in Microelectronic Systems .......... 39
Bachelor of Engineering in Telecommunications Engineering ......................................................... 39
Bachelor of Engineering in Software Engineering ............... 40
Bachelor of Engineering in Photonics .................................. 41
Bachelor of Engineering Science in Photonics ..................... 41
Bachelor of Science in Applied Physics and Computing .......... 42
Bachelor of Science in Computer Technology ..................... 43
Bachelor of Science in Optoelectronics ................................ 43
Bachelor of Science (Honours) in Computer Technology ...... 44
Bachelor of Science (Honours) – Physics .............................. 44

School of Computer Science and Mathematics ....................... 45
Bachelor of Science in Computer Science ............................. 45
Bachelor of Science in Computer and Mathematical Sciences 45
Bachelor of Science in Computer Science and Aviation ....... 47
Bachelor of Science (Honours) in Computer Science .......... 48
Bachelor of Science (Honours) in Computer and Mathematical Sciences ......................................................... 48

International Programs: Offshore Program ............................ 48
Conducted in Hong Kong ....................................................... 48
Bachelor of Science in Computer Science ......................... 48
Bachelor of Science in Computer Science and Aviation ...... 49
External Program Conducted in China ................................ 49
Bachelor of Science in Computer Science ......................... 49
Bachelor of Science in Computer Science ......................... 49

School of Biomedical Sciences ................................................. 50
Bachelor of Science in Biomedical Sciences ......................... 51
Bachelor of Science in Occupational Health and Safety ....... 53
Bachelor of Science (Honours) in Biomedical Sciences ....... 54

School of Molecular Sciences .................................................. 55
Bachelor of Applied Science in Chemistry .......................... 56
Bachelor of Science in Biotechnology ................................... 57
Bachelor of Science in Medical, Forensic and Analytical Chemistry ......................................................... 58
Bachelor of Science in Nutrition, Food and Health Science ... 58
Bachelor of Science (Honours) in Biology (Biotechnology) ... 60
Bachelor of Science (Honours) in Nutrition and Food Science ......................................................... 60
Bachelor of Science (Honours) in Chemical and Environmental Sciences ................................................... 60

Sustainability Group ................................................................. 62
Bachelor of Science in Ecology and Sustainability ............... 63
Bachelor of Science (Honours) in Ecology and Sustainability ......................................................... 65

Undergraduate Subject Details .................................................. 67

Postgraduate Studies ................................................................. 169

Food Safety, Authenticity and Quality Unit ............................. 169
Food Marketing Research Unit ................................................. 169

Centre for Environmental Safety and Risk Engineering .......... 169
Graduate Certificate in Performance-Based Building and Fire Codes ......................................................... 171
Graduate Diploma in Building Fire Safety and Risk Engineering ......................................................... 171
Master of Engineering in Building Fire Safety and Risk Engineering (Coursework) ................................... 172
Master of Science in Occupational Safety and Health ......... 172
Master of Science in Occupational Hygiene ....................... 172
Masters (by Research) ......................................................... 172
Doctor of Philosophy ............................................................ 172

Centre for Packaging, Transportation and Storage .............. 173
Graduate Certificate in Intermodal Freight Systems Management ......................................................... 173
Graduate Certificate in Bulk Freight Systems Management ......................................................... 173
Graduate Diploma in Intermodal Freight Systems Management ......................................................... 174

Centre for Telecommunication and Micro-Electronics .......... 175
School of Computer Science and Mathematics ................... 176
Postgraduate Programs by Research ...................................... 177
Doctor of Philosophy ............................................................ 177
Master of Science (Research) ................................................. 177
Graduate Diploma in Computer Science ............................. 177
How to use this book
Welcome to the Faculty of Science, Engineering and Technology Handbook 2004. The Handbook is designed to provide students with detailed information on course structure, subject content, on-Campus facilities and University regulations and procedures required for the successful completion of study.

The Introduction to this Handbook lists all undergraduate and postgraduate courses offered by the Faculty of Science, Engineering and Technology. The undergraduate section outlines the requirements and structure of all undergraduate courses offered by individual Schools within the Faculty of Science, Engineering and Technology. The credit point value for each subject is included with the course details. The course outlines are followed by a detailed description of all undergraduate subjects, which are listed in alphanumeric order according to their subject code. The postgraduate section follows the same format, outlining each course offered followed by a description of all postgraduate subjects.

The back sections of the Handbook include useful information about articulation and credit transfer, recognition of prior learning, admission and enrolment procedures and services available to students.

Handbook on the web
This Handbook is also on Victoria University's web site at: www.vu.edu.au

Credit points
Victoria University has a credit points system in which each subject is given a value according to its academic weighting. To complete each year of a course, students must complete subjects to the value of 120 points. For more information on credit points, see the Admissions, Enrolment and Academic Procedure and Regulations section in the back of this Handbook.

Please note
The attention of all students and prospective students is drawn to the possibility that due to circumstances that presently cannot be foreseen, the details of the programs, courses and subjects set out in this Handbook might change after the date of publication. Accordingly, before final decisions are made or enrolment occurs based on information contained in the Handbook, each student or prospective student should contact the Faculty Executive Officer on (03) 9688 4191 to ensure that the pertinent information is still accurate.
Welcome to the Faculty of Science, Engineering and Technology at Victoria University and to one of the most exciting periods in your life. Your studies over the next few years will, naturally, be very important and you will have to be fully committed to your studies if you are to succeed. However, I have no doubt that it will be worth it in the end. We will be doing all we can to help and this guide contains some information which should be of assistance.

The Faculty is divided into five Schools, namely: The Architectural, Civil and Mechanical Engineering, Computer Science and Mathematics, Electrical and Electronic Engineering, Biomedical Sciences and Molecular Sciences. There are also three Research Centres; Telecommunications and Micro-Electronics, Environmental Safety and Risk Engineering and Packaging, Transportation and Storage. In addition, the Faculty has the Food Marketing Research Unit, the Food Safety, Authenticity and Quality Unit, and the Sustainability Group which operate at the forefront of knowledge.

A joint venture between the University and the Austin Research Institute has resulted in the formation of the Victoria Institute of Biotechnology and the location of a Centre for Drug Development and Design on the Werribee Campus.

The Faculty of Science, Engineering and Technology provides students with a sound scientific training with strong emphasis on practical skills and problem solving that equips them well for a range of professional careers. It offers a comprehensive range of courses in science and engineering up to PhD level.

The courses have been developed to meet the vocational needs of students, and special care has been taken to consult the professional organisations to ensure that graduating students receive professional recognition for their qualifications. Students will find the staff of the Faculty willing to help and advise them during their studies. Staff members also take a keen interest in the job placement and careers of graduates.

There is more to university life than just study and I urge you to make the most of all social opportunities that Victoria University and student life has to offer. I would especially recommend that you become involved with any student society our Faculty has to offer.

Make the most of the opportunities that are before you and best wishes for your time with us now and beyond.

Research
Research in the Faculty is conducted by academic staff, visiting researchers, postdoctoral fellows and postgraduate students, and covers a variety of areas. Research by postgraduate students enrolled in higher degrees under the supervision of academic staff is an integral part of the Faculty's research effort. Through the students' research training the Faculty seeks not only to meet the immediate needs of the student and industry but also to play a major role in developing Australia's future research personnel and prospective academics.

Research Strategy Plan
The University's Research Management Plan proposes that the University aims for excellence in its research programs and seeks to be a major contributor to research and development activities related to scientific, technological, social and economic issues of relevance to the region and the nation. In particular, the University values the effect that research and development can have in solving community, business and industrial problems and strengthening community links with higher education institutions.

The Faculty of Science, Engineering and Technology, as a major research component of the University, seeks to make a significant contribution to the University's research plan through:

- the development of a broadly-based Faculty Research Strategy Plan based on the major research areas of environmental safety and risk engineering, biotechnology and food technology, mobile communication and signal processing, and packaging and handling, together with the strategic areas of growth in industrial automation and power systems, transport and distribution, and complementary research activities in building services, dynamics, vibration and modal analysis; computer imaging and vision systems; high performance computing and networking; and, urban water systems;
- increasing the competitive position of current strengths and developing new and expanding areas of research within the above major research areas and strategic areas of growth in such a way as to attract adequate research funds;
- developing cross-disciplinary research projects drawing on expertise from a number of departments including those from outside the Faculty;
- encouraging researchers with international or national reputations for excellence in their chosen fields to work as individuals or in small groups.
Major Research Areas

Environmental Safety and Risk Engineering
The University Centre for Environmental Safety and Risk Engineering undertakes multi-disciplinary studies that are concerned with the assessment of risks and the identification of cost-effective designs for infrastructure facilities related to safety. These facilities present a threat to the safety of life, property and the natural environment arising from fire and other hazards. Currently major research effort is directed at the development of cost-effective fire safety system designs for buildings. The Centre is also undertaking a major program of reform of existing building codes and the development of new fire engineering design codes for Australia.

Communication and Optical Technology
This field of research encompasses the major electrical engineering areas of mobile communications: system design, digital signal processing and communication software together with the powerful optical technology area of Applied Physics. All perspectives focus on developmental aspects including efficient modulation schemes for mobile channels, power amplifier linearisation, development of computer aided software engineering tools and expert systems for mobile network management.

Packaging, Transportation and Storage
This multi-disciplinary research area involves applications of disciplines such as dynamics, chemistry, food science, materials science, management, heat and mass transfer, robotics, environmental science to the technological advancement in the field of packaging, transportation and storage. The studies focus on numerical modelling and laboratory simulations of the physical distribution environment, evaluation and assessment of environmental impacts of packaging systems, interactions between product sensitivity and packaging performance, compatibility between product (e.g. food) and packaging materials, etc.

Biochemistry Research Group
Research within the Biochemistry Research Group (BRG) involves a broad range of biotechnology disciplines, including microbiology, cell culture, biochemistry, reproductive biology and molecular biology. Specific expertise within the BRG includes protein chemistry, enzymology, gene expression, genetic engineering, gene discovery, fermentation technology, food and anaerobic microbiology.

Chemical Synthesis and Analytical Science Research Unit
The Chemical Synthesis and Analytical Science (CSAS) research group encompasses research activity in the general area of synthetic organic chemistry and applied analytical chemistry.

Food Science Research Group
The Food Science Research Group (FSRG) is a recognised key research unit within the Faculty and one of the lead participants in the University's Key Research Area on The Integrated Food Value Chain. The unit facilitates an integrated, multidisciplinary approach to research and brings together much of the University's resident expertise in the broad areas of microbiology, molecular biology, biochemistry, biotechnology and food science and technology, as well as incorporating the expertise of the Biocatalytic Synthesis Unit (BISUN).

Reproduction and Family Health
The Reproductive and Family Health Research Unit examines the many facets of reproduction and family health while focussing on perinatal development. In particular it links physiology, psychology, pharmacology, nutrition and natural medicine to provide a multidisciplinary approach to investigate foetal programming of adult disease, the role of the placenta in foetal growth and development in diabetes, control of ovarian function, hormone replacement therapy, implantation, embryo development and the effect of stress on well being.

Strategic Areas of Growth

Conservation Biology Group
The Conservation Biology Group has broad research interests, encompassing topics of interest to students with a focus on the conservation of species, their habitats, and the biological impacts of pollution and other aspects of global change such as the greenhouse effect. Research in this group also includes the ecology of aquatic and terrestrial ecosystems, in some cases with an emphasis on practical implications for improved management practices.

Industrial Automation and Power Systems
Expert systems incorporating adaptive control and fuzzy logic controllers are applied to the control and supervision of generation, distribution and protection of power systems. Application of expert systems to control industrial process manufacturing plants are applicable to the petrochemical, and chemical steel production industries.

Transport and Distribution
The geographical location of the University places it at the transport hub for South East Australia with access to ports, airports, railroads and the trunk road network. Research has commenced with an initial focus on the Western Ring Road and a multidisciplinary emphasis on the analysis of the social, commercial and environmental influences of the road's construction.

Mathematical Sciences
Research is carried out in mathematical inequalities that have a large potential for application to practical problems. These have impacted the areas of numerical analysis, probability theory and statistics, information theory, coding and guessing and the qualitative theory of differential and integral equations, which provide models for a large number of physical and engineering phenomena. For details, see http://rgmia.vu.edu.au and http://ijpam.vu.edu.au. Statistics and mathematical areas of research are in system reliability and maintenance, in experiential design and techniques for quality monitoring, assessment and optimisation of industrial processes. Included also is the modelling and solution of combinatorial optimisation problems and the solution of linear and non-linear programming problems.

Computer Imaging and Vision Systems
Research is carried out on production and processing techniques which enhance communication and flexibility between devices and people. The five component research areas linked in this area are: parallel processing; image processing; computer networking; software engineering; and operator machine interfaces.

Visual Information Systems
Visual Information Systems manage a substantial amount of non-alphanumeric information, and represent a radical departure from the largely text-in/text-out paradigm of conventional information systems. The research focus here is on the search and extraction of semantically rich visual information from large multimedia databases. Specific research issues include: semi-automatic indexing for object-based image search, design of efficient storage organisation for executing multimedia queries, search space pruning using a multiple-media paradigm, and benchmarking of content-based image retrieval systems.
Image Processing
Industrial applications of digital image processing, in particular, x-ray microscopy, and also theoretical work in multidimensional image processing and object classification.

Multimedia Communications
Multimedia communications have become an integral part of our lives and predominate in all aspects of our daily lives. Our research comprises new multimedia communications paradigms and models, such as, the Multimedia Design Pyramid and the Multimedia Communications Circle for integrating knowledge of the art, science and technology of multimedia systems. Transmission of multimedia information over the Internet requires quality of service (QoS) guarantees. We are developing a holistic QoS model to give the user end-to-end QoS guarantees at affordable cost.

Dynamics, Vibration and Modal Analysis
This area is concerned with the methods of analysis of vibration and noise. It is focused on the modal analysis (i.e. the process of determining the vibration parameters) and the experimental methods of excitation and vibration in complex structures.

Urban Water Systems
Research is focused on the integrated planning and management of urban water systems. The current research projects include water supply planning and operation, reuse of greywater and stormwater, water quality in rivers, urban drainage and groundwater flow modelling.

Complementary Research Activities
Complementary Research Activities are conducted by groups which operate independently, but seek to relate their work to the University's Major and Strategic Research Areas. Research topics are listed in the School sections of the Handbook.

The Facilities of the Faculty

Computer Facilities
The Faculty gives high priority to the provision of quality facilities for computing-based instruction and research. The University's centrally-sited computing facilities are complemented by special dedicated facilities within the Faculty and the various Schools.

The Faculty provides computer laboratories which include a Microelectronic Design Laboratory with 26 Sun (UNIX) workstations and file-server, and two Computer Aided Design Laboratories with 40 PCs running a wide range of commercial design software.

These laboratories provide an extensive range of engineering application software. High-level software packages include, OPNET, MATLAB, HPSpice, MENTOR GRAPHIC, SUMMIT, CADENCE and SYNOPSYS Design Tools.

An Open-Access Notebook laboratory has been established with network ports for notebooks/laptops and desktop PCs which is available to all students.

The Faculty also provides a draughting facility which is used by first year students.

Laboratories
The Faculty provides special laboratories for mechanical engineering students in thermodynamics, heat-transfer, vibration and modal analysis, air conditioning, fluid mechanics, mechanics of machines, automatic control, computer applications, solid mechanics, dynamics and testing, ocean engineering, wind tunnels, cable testing and materials science.

The Faculty also provides special laboratories for civil and building engineering students in fluid statics and dynamics, structures, concrete mixing, testing, curing and geology, soil mechanics, building thermal services, and lighting. Industry standard software is used in all civil and building computing laboratories.

Special facilities for electrical and electronic engineering students are provided in the electronics, communication, mobile radio, control, industrial automation, power systems, microprocessor and computer technology and software engineering laboratories.

There are many computing laboratories provided for teaching and a number of dedicated laboratories for undergraduate and postgraduate project/thesis work and special-purpose research laboratories. The laboratories have the latest equipment such as: Pentium IV PCs; Sun UNIX workstations; color scanners and laser printers; professional video cameras and video capture cards. Most PCs run on Windows 2000 and Linux operating systems. Special purpose laboratories run under Windows XP or other UNIX operating systems.

Research facilities for staff and students include: multiprocessor Sparc; multimedia platforms, graphics-intensive computer platforms, and internet technology and applications focused research laboratories. These facilities are managed by the Systems Support Staff of the School of Computer Science and Mathematics.

For laboratory-based research, standard equipment is complemented by special facilities. Of special interest are the laboratories associated with Centres established within the Faculty. These centres are:

- the University's Research Centre for Environmental Safety and Risk Engineering;
- the University's Research Centre for Packaging, Transportation and Storage;
- Centre for Communication and Optical Technology;
- Centre for Industrial Automation and Power Systems;
- Vibration and Modal Analysis Group;
- Computer Imaging Group;

Through these Centres graduate students can gain access to the equipment and laboratories in associated organisations such as BHP, CSIRO and other universities.

Testing Facilities
The Engineering Research and Consultancy Unit is the commercial arm of the School of Architectural, Civil and Mechanical Engineering at Victoria University. It was established in 1982 to make the School's wide range of experimental facilities and engineering expertise available to industry and the community. Since then, the Unit has been involved in numerous projects and the School's laboratories have continually been upgraded with state-of-the-art equipment. The Unit's research and consultancy activities are managed by academic and consultancy staff, and supported by a well-equipped workshop and proficient technical staff. Whenever possible, undergraduate and postgraduate students are invited to participate in these projects. The Engineering Research and Consultancy Unit can provide expert advice as well as specialist research and consultancy services in Engineering-related fields such as Environmental & Structural Dynamics and Acoustics, Structural Mechanics, Fluid Dynamics and Aerodynamics, Water resources and Geomechanics, and Post-harvest technology. The Unit offers the additional advantage of a 125% tax concession for eligible research projects.
The Centre for Environmental Safety and Risk Engineering operates an Experimental Building-Fire Facility. The three-storied Facility which can be fitted out to represent a wide range of prototype building occupancies, is used to conduct realistic fire experiments in actual building layouts. The $1.5m Facility, located at the Country Fire Authority Training College at Fiskville (near Ballarat) was initially funded under an Australian Research Council Mechanism C Infrastructure Grant. Additional ARC Infrastructure Grants have been awarded to the Centre for the Facility. Significant resources and input were provided also by industry. Results obtained from the Facility are used to help develop and validate mathematical models for the growth and spread of fire in buildings and the response of building components to the presence of fire. In late 2001, the Centre received a $2,000,000 Systemic Infrastructure Initiative Grant from the Federal Government to build a large scale experimental building - fire facility over the top of the existing facility. It will isolate the existing facility from external conditions. This is a step in a planned program of enhancement to build the facility into a greatly enhanced national and international focus for research on fire. In addition a major Fire Research Furnace has been installed at the Centre's laboratory and office complex located at the Werribee Campus. A second, larger furnace has recently been installed in a new building. The furnaces will be used to assess the performances of elements of construction under fire conditions. A cone calorimeter has also been installed at the Werribee Campus.

The Centre for Packaging, Transportation and Storage provides access to excellent research and experimental facilities across the University in many of the disciplinary areas. Examples are facilities for permeation and migration studies, Electronic-nose facilities for off-flavour studies and a variety of equipment for studying mechanical and physical properties of modern packaging materials. The Werribee based modern equipped packaging facilities for permeation and migration studies, Electronic-nose provides access to excellent research and experimental facilities. Full scale performance testing, fragility analysis, simulation of transport and storage conditions, determination of cushioning and other material properties are just examples of experimental work that can be performed.

Secondary School Programs
The Faculty of Science, Engineering and Technology seeks to raise the awareness of students and teachers of our courses in the area through our Secondary School Programs. These programs are:

- **Travelling Career Troupe.** School visits by staff or students.
- **National Science Week.** Hands on activities held at our campuses.
- **Siemens Science Experience.** Hands on activities held at our campuses in late January.
- **VCE Chemistry and Genetics Practicals** are held for students on our campuses.
- **Free VCE Summary Lectures.** Held at our campuses in May and October.

For further information about any of these programs contact the Faculty Liaison Officer on (03) 9688-4241.

Dean’s Scholarships
(VTAC code 41431)
There are a number of Faculty scholarships ($2000 per year of course) available to VCE students entering the first year of all the courses offered by the Faculty of Science, Engineering and Technology.

Prerequisites for Deans Scholarships: ENTER score of at least 90.

In addition, applicants must refer to the specific prerequisites for their course preference.

Postgraduate Scholarships
In addition to Australian Postgraduate Research Awards, Postgraduate Industry Research Awards and Victoria University Graduate Scholarships, the Schools of the Faculty are also able to offer scholarships for specialist research within their Schools.

Enquiries for details of these latter scholarships should be directed to the Head of the School concerned.

Further Information
Further information about courses and research programs may be obtained from the Faculty of Science, Engineering and Technology Office, Victoria University, PO Box 14428 MC, Melbourne VIC 8001, telephone (03) 9688 4516 or by facsimile on (03) 9688 4513.
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Wee Sitt Lee BEng (Elect) Sing, MIEEE, NUS, PhD ANU, MIEEE

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Lige Xia BE Dalian, PhD ANU, MIEEE
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Professor

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Georgena Hennebery BSc(Hons)TUT

Administration Officer

Tina Kounadis
Undergraduate Studies

Faculty of Science, Engineering and Technology

Courses Offered
The Faculty of Science, Engineering and Technology offers the following undergraduate courses:

- Certificate in Foundation Studies
- Double Degree courses in
  - Engineering and Business E-Commerce
  - Engineering and Science
  - Engineering and Law
  - Science and Business E-Commerce
  - Science and Law
  - Science and Psychology

Certificate in Foundation Studies
Course Code: JCFY

Philosophy and Aims of the Course
Many students are interested in science, computing and/or engineering but have reservations about some of the fundamental study areas that define these disciplines. For various reasons, study areas such as chemistry, physics and mathematics are regarded as unapproachable.

To remedy this situation, the Faculty of Science, Engineering and Technology has established a year-long Foundation Studies program. The Foundation Studies has been designed to:

- strengthen a student's understanding of these 'difficult' study areas;
- endeavour to develop a student's confidence in these study areas, and;
- foster an intellectual vigour in tackling both further future tertiary courses and areas of employment that are built upon these study areas.

Upon successful completion of the Foundation Studies program prerequisite subjects, students are guaranteed entry into an undergraduate course offered by the Faculty of Science, Engineering and Technology at Victoria University.

Course Description
In general, the Foundation Studies program aims to provide an opportunity for students:

(i) who have not studied science and mathematics at year 12 level;
(ii) who have studied basic science and mathematics at year 12 level but did not achieve appropriate study scores to enable them to satisfy the entrance requirements for courses in the Faculty of Science, Engineering and Technology;
(iii) whose recent educational results have not been at the level of which they are capable of performing;
(iv) who are returning to study after some years away from formal education; or
(v) who wish to change direction in their education

To make certain that students receive a concerted education that will fulfil the entry requirements of the tertiary system whilst taking into consideration the educational background of the students, the majority of the foundation study areas are streamed. Different streams can be undertaken for different subjects if required.

These streams: beginners, intermediate and advanced; offered by the Foundation Studies program reflect and accommodate the broad cross section of the educational backgrounds of students.

Studies Streams
Beginners Stream
The beginners stream is designed for students that would like to pursue a tertiary qualification in a science, computing or an engineering discipline but:

- have had no prior contact with these disciplines, or;
- have previously experienced learning difficulties in the study of these disciplines.

The beginners stream is specifically designed to introduce students to the fundamental principles that underpin the disciplines of science and engineering; to provide students with the ability to recognise, utilise and interpret these principles; to prepare students for their further tertiary education and most importantly foster a process of sustained learning and research.

Recognising the possible lack of confidence and/or trepidation brought about by the unfamiliarity of these study areas, students within this stream will be provided with extensive tuition in small classes over extended semesters. The beginners stream will commence in March and conclude in early February of the following year.

Upon successful completion of prerequisite subject areas, students will gain guaranteed entry into one of the undergraduate courses offered by the Faculty of Science, Engineering and Technology.

Intermediate Stream
The intermediate stream is designed for students that would like to pursue a tertiary qualification in a science, computing or an engineering discipline but have not been successful in completing or meeting the pass requirements of related subject areas previously undertaken.

The intermediate level will run over 2 semesters, each of which will run for 12 weeks and will commence in March and conclude in November of the same year.

Advanced Stream
Students enrolled into the advanced stream of a particular subject will undergo an accelerated program. If all the topic areas within the study area(s) over semester 1 are successfully completed a student may be eligible to enter a 1st year undergraduate course or 1st year undergraduate core subjects within the Faculty of Science, Engineering and Technology at Victoria University in semester 2.

Choice of Stream
Suitability of entry into any of these streams will be assessed upon completion of an entrance test and an interview. Students that have not previously attempted study areas that parallel those they wish to undertake at foundation level may opt not to sit for the test and enter the beginners stream.

Each stream will be timetabled so as to allow students upon consultation with Foundation Studies staff to move into an alternate stream over the duration of the course.
Study Areas Choices
The following study areas are offered as part of Foundation Studies: Those with an asterix are streamed.

- Biology, Chemistry*, English Language & Communication Skills*, IT, Mathematics for Scientists*, Mathematics for Engineers* and Physics*

Students will generally enrol in four subject areas. Fewer subjects may be undertaken. This will be determined by considering the students previous academic records, the results of the entrance tests and via an interview with the student. A choice of either a Mathematics for scientists or engineers, typically must be undertaken by all students.

Location of Course
All study areas will be taught at the University's Footscray Park campus

Course Fee
Students who fit under the Federal Government Guidelines of disadvantage are HECS exempt with respect to the Foundation Studies program.

Application Procedures
Application to Foundation Studies is via direct application. Students will need to fill out an undergraduate application form available from Student Admissions, phone on 9365 2286 or download from the website www.vu.edu.au/admissions.

If you would like further information regarding the Foundation Studies program, please contact the Faculty of Science, Engineering and Technology on 9688 4516

Bachelor of Business Electronic Commerce/ Bachelor of Science
Course Code: BBES

Course Objectives
The combined course will provide students with a broad ranging program of study and learning aimed at satisfying the academic and professional requirements in both the appropriate field of science and of business. The double degree course will equip graduates to obtain employment in business and government, in major scientific organizations and elsewhere. It was improve learning by providing a fundamental framework for the application of business and scientific concepts and ideas and their co-integration which will ensure that students are capable of engaging successfully in these professional areas in a commercial environment.

Course Duration
The course is offered over four years on a full-time basis or part time equivalent.

All undergraduate degree subjects carry a value of 15 credit points. Each student must obtain 360 credit points through academic study to graduate. If undertaking Co-operative Education, an additional 120 credit points is required for graduation.

Admission Requirements
To qualify for admission to the course an applicant must have successfully completed a course of study at year 12 level or equivalent.

Bachelor of Engineering/ Bachelor of Business Electronic Commerce
Course Code: EBEB

Course Objectives
The combined course will provide students with a broad ranging program of study and learning aimed at satisfying the academic and professional requirements in a specialisation in business together with an appropriate field of engineering. The double degree course will equip graduates to obtain employment in business, government, and in major engineering organizations.

Course Duration
The course is offered over five years on a full-time basis or part time equivalent.

Each student must obtain 360 credit points through academic study to graduate.

Admission Requirements
To qualify for admission to the course an applicant must have successfully completed a course of study at year 12 level or equivalent.

In addition to satisfying the entry requirements for Australian resident students or demonstrating equivalence, overseas students must provide evidence of proficiency in the English language:
- International English Language Testing System - overall band score of 6-7 subject to individual profile; or
- Test of English as a Foreign Language – score of 550, plus a Test of Written English - score of 5.

Course Structure
The structure of the course is as follows:

Core Subjects
- BAO1101 Accounting for Decision Making
- BCO1102 Information Systems for Business
- BEO1103 Microeconomic Principles
- BEO1104 Macroeconomic Principles
- BEO1106 Business Statistics
- BHO1171 Introduction to Marketing
- BLO1105 Business Law
- BMO1102 Management and Organisation Behaviour

Specialisation Subjects - Electronic Commerce (Development Stream)
- BCO2149 Database Systems
- BCO2500 Electronic Commerce Technologies
- BCO2501 Electronic Commerce Business Interfaces
- BCO2502 Developing Electronic Commerce Systems
- BCO3150 Systems Implementation
- BCO3443 The Information Professional

Support Subjects
- BCO1147 Introduction to Programming
- BCO3149 Computing Project

Science Subjects
- SCS1006 Chemistry 1
- SMA1110 Mathematics 1
- SMA1120 Mathematics
- SBF1310 Biology 1
- SBF1320 Biology 2

Plus 150 credit points from the appropriate Year level of the Science specialisation
In addition to satisfying the entry requirements for Australian resident students or demonstrating equivalence, overseas students must provide evidence of proficiency in the English language:

- International English Language Testing System – overall band score of 6–7 subject to individual profile; or
- Test of English as a Foreign Language – score of 550, plus a Test of Written English – score of 5.

Course Structure
The structure of the course is as follows:

**Engineering Subjects**
360 credit points from the appropriate level of the Engineering specialisation.

**Business Subjects**
Core Subjects
- BAO1101 Accounting for Decision Making
- BCO1102 Information Systems for Business
- BEO1103 Microeconomic Principles
- BEO1104 Macroeconomic Principles
- BEO1106 Business Statistics
- BHO1171 Introduction to Marketing
- BLO1105 Business Law
- BMO1102 Management and Organisation Behaviour

Specialisation Subjects - Electronic Commerce
(Development Stream)
- BCO2149 Database Systems
- BCO2500 Electronic Commerce Technologies
- BCO2501 Electronic Commerce Business Interfaces
- BCO2502 Developing Electronic Commerce Systems
- BCO3150 Systems Implementation
- BCO3443 The Information Professional

or

Specialisation Subjects - Electronic Commerce
(Applications Stream)
- BCO2500 Electronic Commerce Technologies
- BCO2501 Electronic Commerce Business Interfaces
- BCO2502 Developing Electronic Commerce Systems
- BEO2404 Electronic Trading
- BHO2407 Marketing on the Internet
- BLO2406 Cyber Law

Business Support Subjects
- BCO1147 Introduction to Programming
- BCO3149 Computing Project

Bachelor of Engineering/ Bachelor of Science

Course Code: EBSE

Course Objectives
The combined Bachelor of Engineering/Bachelor of Science course will provide students with a broad ranging program of study and learning aimed at satisfying the academic and professional requirements in both science and the appropriate field of engineering. The double degree course will enable graduates to obtain employment in business and government, in major engineering organisations, private industry and elsewhere.

Course Duration
Five years of full time study.

Course Structure

Example: Course structure using Electrical and Electronic Engineering and Computer Science as the major Engineering and Science fields of study.

**Year 1**
- ACE1910 Communications for Science
- EEC1001 Programming Structures 1.1
- EEC1002 Programming Structures 1.2
- SMA1201 Mathematics 1AP
- SMA1202 Mathematics 1AQ
- SPH1601 Physics 1AP
- SPH1602 Physics 1AQ

**Year 2**
- EEA1001 Electrical Engineering 1.1
- EEA1002 Electrical Engineering 1.2
- EED1012 Design Practices
- EEE1001 Electronics 1.1
- EEE1002 Electronics 1.2
- EEE1611 Engineering in Society
- EET2002 Communication Systems 2.2
- EEEY2001 Computer Systems 2.1
- EEEY2002 Computer Systems 2.2
- SCM2111 Data Comms and Networks 1
- SCM2211 Database Systems 1
- SMA2201 Mathematics B

**Year 3**
- EEEA2001 Circuits and Control 2.1
- EEEA2002 Circuits and Control 2.2
- EEC3001 Software Systems 3.1
- EED2002 Design A 2.2
- EEEF2001 Electronics 2.1
- EEEF2002 Electronics 2.2
- EEEH2001 Digital Electronics 2.1
- EEEH2002 Digital Electronics 2.2
- EET3101 Communication Engineering 3.1
- EET3102 Communication Engineering 3.2
- SCM2112 Operating Systems
- SCM2218 Database Systems 2
- SCM2311 Object Oriented Programming 1
- SCM2313 Software Development

**Year 4**
- EEC3804 Computer Graphics
- EED3000 Design 3.0
- EEE3001 Electronic Circuits 3.1
- EEE3002 Electronic Circuits 3.2
- EEEH3201 Computer & Digital Design 3.1
- EEEH3202 Computer & Digital Design 3.2
- EET2502 Computer Communications
- SCM2312 Software Engineering 1
- SCM3311 Object Oriented Programming 2
- SCM5803 Data Structures & Programming
- SMA3311 Mathematics 3P

**Year 5**
- EEC3504 Computers and Society 3.2
- EEC3601 Windows Programming
- EEC3704 Network Software and Management 3.2
- EED4000 Design & Project Management 4.0
- EET4701 Communication Systems 4.1
- EET4702 Communication Systems 4.2
- SCM3211 Database Systems 3
- SCM3312 Intelligent Systems
- SCM3313 Software Engineering 2
- SCM3511 Image Processing 2
Bachelor of Engineering/ Bachelor of Laws
Course Code: EBBL

Course Objectives
The combined Bachelor of Engineering/ Bachelor of Laws course will provide students with a broad ranging program of study and learning aimed at satisfying the academic and professional requirements in both law and the appropriate field of engineering. The double degree course will equip graduates to obtain employment in law, business and government, in major engineering organisations, at the Bar and elsewhere.

Course Duration
Six years of full time study.

Course Structure
Example: Course structure using Electrical and Electronic Engineering and Law.

**Year 1**
ACE1801 Engineering Communications  
EEA1001 Electrical Engineering 1.1  
EEA1002 Electrical Engineering 1.2  
EEC1001 Programming Structures 1.1  
EEC1002 Programming Structures 1.2  
EED1012 Design Practices  
EEE1001 Electronics 1.1  
EEE1002 Electronics 1.2  
EEE1611 Engineering in Society  
SMA1201 Mathematics 1AP  
SMA1202 Mathematics 1AQ  
SPH1601 Physics 1SA  
SPH1602 Physics 1SB

**Year 2**
BLB1101 Aust Legal System in Context  
BLB1114 Legal Research Methods  
BLB1117 Contracts 2  
EAA2001 Circuits and Control 2.1  
EAA2002 Circuits and Control 2.2  
EED2002 Design A 2.2  
EEE2001 Electronics 2.1  
EEE2002 Electronics 2.2  
EET2002 Communication Systems 2.2  
SMA2201 Mathematics B

**Year 3**
BLB1113 Australian Administrative Law  
BLB1115 Torts  
BLB1116 Law, Discrimination and Society  
BLB1118 Constitutional Law  
SCS1110 Chemistry for Biological Sciences A  
SCS1120 Chemistry for Biological Sciences B

**Year 4**
BLB2119 Corporations Law 1  
BLB2120 Legal Writing and Drafting  
BLB2121 Legal Theory  
BLB2123 Advocacy and Communication  
EEE3001 Software Systems 3.1  
EED3000 Design 3.0  
EEE3001 Electronic Circuits 3.1

**Year 5**
BLB2124 Corporations Law 2  
BLB2125 Real Property Law  
BLB2126 Federal Constitutional Law  
BLB3134 Taxation Law  
EED4000 Design & Project Management 4.0  
EET4701 Communication Systems 4.1  
EET4702 Communication Systems 4.2

**Year 6**
BLB3127 Dispute Resolution and Civil Procedure  
BLB3128 Criminal Law  
BLB3130 Interviewing and Negotiating Skills  
BLB3131 Lawyers and Legal Ethics  
BLB4136 Equity and Trusts  
BLB4139 Evidence  
BLB4141 International Trade Law  
BLB4142 Advanced Legal Research Dissertation

Bachelor of Science/ Bachelor of Laws
Course Code: BLBS

Course Objectives
The combined Bachelor of Science/ Bachelor of Laws course will provide students with a broad ranging program of study and learning aimed at satisfying the academic and professional requirements in both law and the appropriate field of science. The double degree course will equip graduates to obtain employment in law, business and government, in major scientific organisations, at the Bar and elsewhere.

Course Duration
Five years of full time study.

Course Structure
Example: Course structure using Biomedical Sciences and Law.

**Year 1**
ACE1910 Communications for Science  
BLB1110 Aust Legal System in Context  
BLB1114 Legal Research Methods  
BLB1117 Contracts 2  
EAA2001 Circuits and Control 2.1  
EAA2002 Circuits and Control 2.2  
EED2002 Design A 2.2  
EEE2001 Electronics 2.1  
EEE2002 Electronics 2.2  
EET2002 Communication Systems 2.2  
SMA2201 Mathematics B

**Year 2**
BLB1102 Contracts 1  
BLB1115 Torts  
BLB1116 Law, Discrimination and Society  
BLB1118 Constitutional Law  
SCS1110 Chemistry for Biological Sciences A  
SCS1120 Chemistry for Biological Sciences B

**Year 3**
BLB1113 Australian Administrative Law  
BLB1115 Torts  
BLB1116 Law, Discrimination and Society  
BLB1118 Constitutional Law  
SCS1110 Chemistry for Biological Sciences A  
SCS1120 Chemistry for Biological Sciences B

**Year 4**
BLB2119 Corporations Law 1  
BLB2120 Legal Writing and Drafting  
BLB2121 Legal Theory  
BLB2123 Advocacy and Communication  
EEE3001 Software Systems 3.1  
EED3000 Design 3.0  
EEE3001 Electronic Circuits 3.1

**Year 5**
BLB2124 Corporations Law 2  
BLB2125 Real Property Law  
BLB2126 Federal Constitutional Law  
BLB3134 Taxation Law  
EED4000 Design & Project Management 4.0  
EET4701 Communication Systems 4.1  
EET4702 Communication Systems 4.2

**Year 6**
BLB3127 Dispute Resolution and Civil Procedure  
BLB3128 Criminal Law  
BLB3130 Interviewing and Negotiating Skills  
BLB3131 Lawyers and Legal Ethics  
BLB4136 Equity and Trusts  
BLB4139 Evidence  
BLB4141 International Trade Law  
BLB4142 Advanced Legal Research Dissertation
Year 4
BLB2119 Corporations Law 1
BLB2120 Legal Writing and Drafting
BLB2121 Legal Theory
BLB2123 Advocacy and Communication
BLB2124 Corporations Law 2
BLB2125 Real Property Law
BLB2126 Federal Constitutional Law
BLB3134 Taxation Law

Year 5
BLB3127 Dispute Resolution and Civil Procedure
BLB3128 Criminal Law
BLB3130 Interviewing and Negotiating Skills
BLB4136 Equity and Trusts
BLB4139 Evidence
BLB3131 Lawyers and Legal Ethics
BLB4141 International Trade Law
BLB4142 Advanced Legal Research Dissertation

Combinations for the Double Degree programs may be selected from the following:

Engineering
- Architectural Engineering
- Building Engineering
- Building Surveying
- Civil Engineering
- Computational Engineering
- Computer Engineering
- Electrical and Electronic Engineering
- Mechanical Engineering
- Microelectronic Systems
- Photonics
- Robotic Engineering
- Telecommunications Engineering

Science
- Biomedical Sciences
- Computer Science
- Computer Science and Aviation
- Computer and Mathematical Sciences
- Computer Technology
- Ecology and Sustainability
- Biotechnology
- Medical, Forensic and Analytical Chemistry
- Nutrition, Food and Health Science
- Photonics

Bachelor of Science/ Bachelor of Psychology
Course Code: SBSP

Course Objective
The combined Bachelor of Science/Bachelor of Psychology course will provide students with a broad ranging program of study and learning aimed at satisfying the academic and professional requirements in both law and the appropriate field of science. The double degree course will equip graduates to obtain employment in law, business and government, in major scientific organisations, at the Bar and elsewhere.

Course Duration
The course is offered over four years on a full-time basis or part time equivalent.

Course Structure
Example: Course structure using Psychology/ Biomedical Sciences

<table>
<thead>
<tr>
<th>Credit Points</th>
<th>Semester 1</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>SBM 1518 Human Physiology 1</td>
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<td></td>
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<td>Arts Elective (Arts electives range in contact hours from 3-5) Approx.</td>
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<tr>
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<tr>
<td></td>
<td>SBM 1528 Human Physiology 2</td>
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<td>SCS 1120 Chemistry for Biological Sciences B</td>
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<td></td>
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<td></td>
<td>SBM 2260 Diet and Nutrition</td>
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<td>SBM 3610 Biomedical science, ethics and values</td>
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<td></td>
<td>APP 3011 Psychology 3A</td>
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**Semester 7**

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<tr>
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<tr>
<td>SBM 3910</td>
<td>Project</td>
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<tr>
<td>SBM 3720</td>
<td>Immunology</td>
<td>15</td>
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<tr>
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**Semester 8**

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<tr>
<td>SBM 3264</td>
<td>Advanced nerve and muscle physiology</td>
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<tr>
<td>SBM 3660</td>
<td>Human developmental and clinical genetics</td>
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<td>Arts Elective</td>
<td>(Arts electives range in contact hours from 3-5) Approx</td>
<td>15</td>
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<tr>
<td>Total</td>
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<td>60</td>
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</tbody>
</table>

Arts electives include studies in Sociology, Communications & Professional Writing, Women's Studies, Asia-Pacific Studies and a number of languages.

*Arts electives must include APS2030 Quantitative Social Research Methods and APS2040 Qualitative Social Research Methods in either of second or third years.

Other biomedical science subjects may be chosen after consultation with and approval of the course co-ordinator.

**Psychology Electives for fourth year:**

- APP3015 Counselling theory and practice
- APP3016 Group Behaviour
- APP3017 Introduction to neuropsychology
- APP3018 Organisations and work
- APP3019 Psychobiology
- APP3020 Psychoanalysis
- APP3021 Psychology of adjustment
- APP3022 Stress, crisis and trauma
- APP3023 Psychological issues in the workplace
- APP3024 Aboriginal people and psychology

**Arts General Electives:**

First Year (These are all at St Albans Campus)

- ACC1047 Culture and Communication
- ACC1048 Media, culture and society
- ACL1001 Reading contemporary fiction
- ACL1002 Studying poetry and poetics
- ACN1001 Multimedia 1A
- ACM1002 Multimedia 1B
- ACP1053 Introduction to creative writing
- ACP1054 Introduction to media writing
- ACS1071 Spanish A: Basic Spanish 1
- ACS1072 Spanish B: Basic Spanish 2
- ACU1007 Aboriginal Australia
- ACU1008 Equality and Equity
- ACW1020 Sex and gender
- ACW1021 Fashioning gender
- ASA1030 Introduction to sociology of Asia-Pacific Societies
- ASA1040 Introduction to politics and political systems in the Asia-Pacific Region
- ASS1012 Sociology 1A - Introduction to Australian society and cultures
- ASS1013 Sociology 1B - Issues in Australian Society and Culture
- AXF1001 Knowing and Knowledge A
- AXF1002 Knowing and knowledge B

Other options in Asian Studies, Asian Languages, and history are available at Footscray Park.
School of Architectural, Civil and Mechanical Engineering

Courses Offered
The School of Architectural, Civil and Mechanical Engineering offers undergraduate courses leading to the award of Bachelor of Engineering, including:

- Architectural Engineering
- Building Engineering
- Civil Engineering
- Mechanical Engineering
- Robotic Engineering

A degree with Honours program is offered concurrently with the fourth year of the engineering degrees. Normally, students entering the final year of a full-time Bachelor of Engineering program (or its equivalent in part-time mode) will be offered honours candidacy if they have achieved at least a credit average over year levels one to three.

The Scope of Architectural Engineering
The degree in Architectural Engineering is an exciting new development involving studies in Architecture, advanced environmental services and life safety system design and the integration of Architecture and all engineered building systems.

The need for a degree in Architectural Engineering has arisen from the increasing complexity of all building systems during the past 10-20 years, and an increased level of client demand for buildings and building systems that better meet their needs.

At Victoria University, Architectural Engineering focuses on the development of planning and design skills for engineered environmental services and structural systems. The course blends selected ‘creative’ Architecture skills into an Engineering degree framework, so that graduates are better enabled to work closely and in harmony with Architects in the design of buildings to delight both clients and end users.

This choice reflects the world-wide trend and emergence of professional Engineering societies whose role is to ensure that the highest standards of design and construction of such engineered systems are achieved. In Australia, both the Society for Building Services Engineering (Institution of Engineers - Australia) and in Victoria, defined professional engineering design roles within the Victorian Building Control Act, are recent examples of this development.

Architectural Engineering graduates will have strong technical and communication skills, and a good understanding and appreciation of Architectural design practice as well as the economic, and social environment in which they will operate. The ongoing and increasing need for building infrastructure development will ensure there will be a significant demand both locally and overseas for graduates with such highly specialised skills, founded on a broad yet integrated building technology base.

Employment opportunities will exist with private consulting firms, contractors, and government agencies throughout Australia and overseas. Exciting and flexible opportunities exist for Architectural Engineering graduates to play a vital role in:

- the private sector including consulting, contracting, construction and project management firms specialising in the design and management of building environmental, structural and life safety systems in the multi-billion dollar national and international building industry;
- the public sector.

The Scope of Building Engineering
There is no further intake into this course.

Building engineers are involved in the entire building process, from planning and financial feasibility studies, to design of structures and services systems, site excavation and construction, and in the final commissioning of buildings and systems prior to occupation.

Building engineers require multi-disciplinary training that includes building construction technologies, construction and project management, legal and economic processes, basic structures, and thermo-fluid and electromagnetic systems involved in building construction. Building engineers must be expert in the planning and management of construction of building projects.

Building Engineering graduates have strong technical and communication skills, and a good understanding and appreciation of the environmental, economic, social and legislative environment in which they must operate.

The ongoing and increasing need for building infrastructure development will ensure there will be a significant demand for graduates with a broad yet integrated set of skills in this area, both locally and overseas.

Employment opportunities exist with private firms and contractors, government agencies and authorities throughout Australia and overseas. Exciting and flexible opportunities exist for Building Engineering graduates to play an important role in:

- the private sector (consulting, contracting, construction and project management firms specialising in multi-billion dollar national and international building industry);
- the public sector;
- diverse areas such as urban planning, risk assessment and management; and the operation of energy efficient buildings.

The Scope of Building Surveying
There is no further intake into this course.

Building Surveyors belong to a long established profession which operates at the highest level in the building industry. They ensure that all other building professionals meet the standards of safety and functionality required by the community. In 1996 performance based building regulations were introduced as an alternative to traditional ‘cook book’ regulations which limit the materials of construction and layouts of buildings. Performance involves the engineering design of novel building solutions which demonstrate safety to the regulatory authorities and also demonstrate maximum functionality and cost effectiveness to clients.

There is now a great demand for Building Surveyors to have skills in building engineering and law are provided in this new degree. This degree is the first engineering based Building Surveying qualification in Australia. The degree provides skills in the traditional building engineering areas of structures, building services, construction and project management. It also provides the skills for traditional and new performance building regulations, as well as for the new profession of fire engineering. Approximately 70 per cent of all building regulations concern fire safety. Few building surveyors and engineers have these new skills. Recent graduates who have undertaken studies in these new areas have been eagerly sought by employers. The broad range of skills taught in the degree provides graduates with a great variety of career opportunities in engineering, as well as in Building Surveying. The breadth of the degree will maximise graduates’ opportunities to obtain rewarding careers in a rapidly changing world. The degree provides a good base for continuing career education and development in engineering, management and law.
The Bachelor of Engineering in Mechanical Engineering program and to learn new skills as technology advances. Professional responsibility.

Communicate with each other, to avoid technological obsolescence required for the mechanical engineer's professional career. A broad education in engineering mechanics, electrical, and mechanical and electrical engineering.
The course integrates relevant subjects in engineering and computing to appeal to incoming good quality students with mechanical, electronic and computer interests along with the essential background in mathematics and physics.

Civil Engineering graduates should have strong technical and communication skills, and a good understanding and appreciation of the environmental, economic, social and political environment in which they must operate.

The increasing need for infrastructure provision allied with substantial forms of development should ensure there will be a significant demand for graduates with a truly integrated set of skills in these areas, both on the local scene and overseas. Employment opportunities exist with private consulting firms and contractors, government agencies and authorities in Australia and overseas.

The Scope of Civil Engineering

Civil engineering is defined as the study, design, construction, management, and maintenance of lasting community amenities and infrastructure systems. These include all buildings from houses to high-rise offices, roads, railways, waterways, reservoirs, aqueducts, sewers, and all other facilities which are used to improve convenience and quality of life for the present community and future generations.

There is widespread community concern about conservation issues and environmental degradation at local, national and global levels. At the same time, a rapidly increasing world population is imposing ever-increasing demands on the provision of infrastructure to satisfy basic and more advanced human needs. Such demands are particularly illustrated by the rapid urban growth occurring in many areas, with associated requirements for appropriate types of building, energy, transportation, water supply and waste management systems, along with other major community facilities. These conflicting trends have led to an appreciation by many members of the world community that the need for development is substantial, but at the same time such development must be sustainable.

Civil Engineering graduates should have strong technical and communication skills, and a good understanding and appreciation of the environmental, economic, social and political environment in which they must operate.

The increasing need for infrastructure provision allied with substantial forms of development should ensure there will be a significant demand for graduates with a truly integrated set of skills in these areas, both on the local scene and overseas. Employment opportunities exist with private consulting firms and contractors, government agencies and authorities in Australia and overseas.

The Scope of Mechanical Engineering

Engineering is the profession in which a knowledge of the mathematical and natural sciences is applied to develop ways to economically exploit the sources of nature for the benefit of mankind. Mechanical engineering, which began to develop as a distinctive area of engineering practice in the early part of the last century has now developed into an extremely diverse and complex profession.

Mechanical engineers find employment in government instrumentalities and private enterprise in such wide-spread areas as manufacturing, design of products and machines such as automotive industry, automatic control of machines and processes, heating and air conditioning systems, machine and condition monitoring, hydraulic and pneumatic systems, computer applications - including finite element analysis, computer-aided design and engineering, and research and development in a wide range of fields.

The degree courses are designed to provide the broad education required for the mechanical engineer's professional career. A broad engineering education leaves engineers better prepared to communicate with each other, to avoid technological obsolescence and to learn new skills as technology advances.

The Bachelor of Engineering in Mechanical Engineering program offered by the School is suitable for men and women and emphasises achievement across the mechanical engineering disciplines in concert with problem solving, design, engineering applications, innovation, management of resources and professional responsibility.

In addition to these basic studies, the School of the Built Environment is concerned with bridging the gap between science and basic knowledge on the one hand, and the design and development of useful devices and processes on the other. This is the art of engineering and to teach this art is the primary object of laboratory practice, industrial projects and engineering design. Laboratory practice, which takes many forms, is intended to show how the experimental method is used in the solution of engineering problems. Design experience includes devising means to perform specified tasks such as the design of a device or the synthesis of a system made up of parts having known characteristics.

The Scope of Robotic Engineering

Robotic Engineering provides an interface technology that is concerned with mechanisms, electronics, control systems and computer design and adaptation. It combines selected studies in mechanical and electrical engineering.

Robotic engineers are at the forefront of major advances and improvements in engineering systems in the 21st century and the opportunities for innovative robotic engineers in industry and research is rapidly expanding.

The Robotic Engineering course is designed to enable students to pursue studies orientated towards design and application of mechanisms, computer adaptation and simulation, electronic control, instrumentation and automation in industry and research. The course integrates relevant subjects in engineering and computing to appeal to incoming good quality students with mechanical, electronic and computer interests along with the essential background in mathematics and physics.

This course provides the broad based knowledge required of the modern engineer to be technically competent in design, problem solving and analysis while developing important communications and management skills.

Fundamental studies in engineering mechanics, electrical engineering, mathematics, design materials and computing are matched with specialist subject in robotics, mechatronics, control systems and computer simulation in higher years. Significant emphasis is placed on project and laboratory activities and industry exposure throughout the course.

The Scope of Environmental Engineering

There is no further intake into this course. There is widespread community concern about conservation issues and environmental degradation at local, national and global levels. At the same time, a rapidly increasing world population is imposing ever-increasing demands on the provision of infrastructure to satisfy basic and more advanced human needs. Such demands are particularly illustrated by the rapid urban growth occurring in many areas, with associated requirements for appropriate types of building, energy, transportation, water supply and waste management systems, along with other major community facilities. These conflicting trends have led to an appreciation by many members of the world community that the need for development is substantial, but at the same time such development must be both ecologically and economically sustainable.

Environmental engineering covers the planning, design, development, maintenance and management of systems to: safeguard air, water, land and habitat quality; provide infrastructure facilities for the protection and enhancement of human health and well-being; use energy and natural resources conservatively and with maximum efficiency; minimise, recycle, treat and safely dispose of solid, liquid and gaseous wastes; and, remedy existing environmental problems and allow sustainable development principles to be practically implemented.
Graduates working in the Environmental Engineering field should have strong technical and communication skills, and a good understanding and appreciation of the environmental, economic, social and political environment in which they must operate. The increasing need for infrastructure provision allied with substantial forms of development should ensure that there will be a significant demand for graduates with a truly integrated set of skills in these areas, both on the local scene and overseas. Exciting and flexible opportunities exist for course graduates to play an important role in improving our life and environmental quality through employment:

- In the public sector (Federal, State and Local Government; e.g. EPA, Natural Resources & Environment, Energy Efficiency Victoria, Municipal Councils);
- In the private sector (consulting, contracting and manufacturing firms specialising in the multi-billion dollar national and international environment industries); and
- In such diverse areas as urban planning and design, land/water/air management, waste minimisation/recycling/treatment and disposal, and energy development/efficiency/conservation and management.

Computing Facilities
The School gives high priority to the provision of quality facilities for computing-based instruction and research. The University's centrally located computing facilities are complemented by special dedicated facilities within the Faculty of Science, Engineering and Technology and the School of Architectural, Civil and Mechanical Engineering.

The School's facilities include four rooms with some 90 Pentium PCs all connected to a central file server and printing facilities. The computing room also houses two DEC (Alpha) (UNIX) workstations. In addition, most of the School's laboratories contain high-performance computing workstations which, when not in use for experiments, are accessible to students enrolled in the School of the Built Environment. These computing facilities provide an extensive range of modern software for engineering applications such as Computer Aided Design, Finite Element Analysis, Solid and Surface Modelling, Computational Fluid Dynamics, Digital Signalling Processing, Statistical Analysis, Control System Design and Simulation and Kinematics Analysis and Simulation. In addition, major programming languages, spreadsheets and word processing software are accessible from all workstations. Access to e-mail, AARNET and the Internet (limited) are also provided.

The School's multimedia production studio, containing two high-performance PCs connected to colour printers, scanners, audio and video interface devices and CD writers are available to undergraduate and postgraduate students enrolled at the School.

The School's computing facilities are managed by a full-time computer engineer.

Articulation Pathways
Special provision is made for admission into engineering degree courses on the basis of good results for an Associate Diploma in an appropriate field of study. Interested persons should refer to the section on Articulation and Credit Transfer at the back of this Handbook.

Transfer between degree courses with credit for subjects already passed is a possibility.

Academic Progression Guidelines and Unsatisfactory Progress
Each undergraduate course is specified as a unique set of course subjects. The sequence in which these course subjects are normally studied is specified, firstly, by grouping them in course years and secondly, by specifying prerequisites and/or co-requisites for some subjects.

Normally all of the course subjects in a particular course year must be completed and all prerequisite/co-requisite requirements satisfied before enrolment will be permitted in any subject in a subsequent course year. Enrolment in a group of subjects spanning more than two course years is not permitted.

In order to satisfy the academic requirements for a course award, all course subjects must be completed. Such completion may be obtained by:

- being granted exemption in either individual subjects or in course years; and/or
- achieving a grade of P (or higher) in the assessment of each subject; and/or
- being granted compensation in course years.

A stage grading of 'Year Completed by Compensation' may be granted if a student:

- has been given final grades in all subjects in the course year; and
- has passed subjects equivalent to more than 80% of total required semester hours for that course year with no assessment at less than N1 grade; and
- has achieved an hour-weighted average mark of at least 50% for all subjects in the year.

A grading of 'Year Completed by Compensation' recognises an acceptable overall result but does not constitute a pass in any individual failed subject.

Students who do not satisfy the requirements for a 'Year Completed by Compensation' must repeat all failed subjects of that year (or their equivalents) at the earliest opportunity.

Normally, gradings of 'Year Completed by Compensation' will not be granted in consecutive years of a course.

Normal progress through a course requires a student to complete any defined course year within one year of equivalent full-time enrolment.

Any of the following may be considered to constitute unsatisfactory progress by a student:

(i) Failure in any subject or unit for the third time.
(ii) Failure in any subject or unit at N2 level for the second time.
(iii) Failure in 50% or more of their assessed enrolment load in any semester or calendar year of study.
(iv) Failure to complete any two consecutive course years within three years of equivalent full-time enrolment.
(v) Failure to complete the course within any maximum period defined by University Statute.
(vi) Failure to meet a conditional enrolment agreement.

As otherwise defined in the University Statute and subject to being invited to show cause, a student making unsatisfactory progress will normally be recommended for exclusion from the course.

Exemptions
Claims by students for exemptions from subjects of any course on grounds of special experience or having passed equivalent subjects at Victoria University, other universities or colleges in Australia or overseas, should be submitted on the proper form to the Faculty Office accompanied by proof of the relevant qualifications or experience. Forms are available from the School or Faculty Office. Exemption approval is given by notification in writing.
Study Load

Part-time Study
Part-time study can be approved at any stage of a course since progress is by individual subjects rather than by years. Part-time study involves attending normal day classes. It is unrealistic to expect to complete a degree course entirely on a part-time basis.

Full-time Study
Full-time study of the degree courses is over a four-year period, and involves from 19 hours of Class Contact per week in first year and 18 lectures per week in subsequent years.

Single Subject Enrolment
Suitably qualified persons may be permitted to enrol for single subjects as a part of their further education but passes in such subjects may not be counted should the students study later for a degree or diploma.

Supplementary Assessment
Supplementary assessment is not normally available in any subject except at the discretion of the Head of School in exceptional circumstances.

Enrolment Amendment
Enrolment may be changed with agreement by the examiner and Course Co-ordinator. Application must be made on the appropriate form. A change for any semester is without penalty up until the census dates of March 31 and August 31 (refer to published dates). During the second month a late enrolment amendment fee becomes payable and HECS liability continues for subjects discontinued. Therefore enrolment changes are not normally approved.

Assignments and Laboratory Reports
During the semester a lecturer may require students to complete certain assignments and laboratory reports, excursions (and reports of these), projects, library readings, etc. These are an integral part of the course and must be satisfactorily completed by the due date. If, for any legitimate reason a student believes they will be unable to complete the assignment by the due date, they should obtain prior approval for an extension of time from the lecturer, who may:
(a) grant an extension of time, with or without mark penalty, or
(b) refuse the request.
In general, 80% of assignment/laboratory work must be completed satisfactorily before admission to a final examination (if such is required) or for a pass in the subject (if this is the method of assessment). Each student must maintain a satisfactory record of attendance at lectures, tutorials, laboratory sessions, fieldwork exercises, drawing classes and design sessions.

Required and Recommended Readings
For subjects where texts are required, purchase is essential but confirmation by the lecturer should first be sought. Recommended books need not be purchased by students but they may do so if they wish. A limited number of copies of recommended texts are available in the library. Students are reminded that there may be a number of alternative references in the library around the shelf containing the recommended reference book. Students should not dispose of textbooks until their whole course is completed as books used in first year are often again required for reference by students in later years.

Special Equipment Requirements

Instruments and Equipment
Students must buy the drawing instruments specified for engineering drawing. These will also be required in surveying and other subjects. A clipboard, heavy boots and waterproof clothing are required for excursions or surveying field work. Breakages of University equipment due to misuse must be paid for by students.

Computers
University and Department computer facilities are provided for use by students during normal working hours and in extended hours subject to demand. Extensive relevant software is available.

Electronic Calculators
Students must have a scientific calculator. Electronic calculators are used in tutorials, laboratory or fieldwork classes and in examinations at the discretion of the subject lecturer. Guidelines on the use of electronic calculators and other electronic storage devices in examinations are provided in individual subject outlines distributed to students within the first two weeks of semester and included on final examination papers. Electronic calculators and other electronic storage devices will not be permitted where the above provisions have not been made.

Borrowing of Equipment
Students are not permitted to borrow University equipment for use off-Campus except for survey fieldwork and similar authorised purposes, in which case students must sign a loan form and assume full responsibility for the care of the equipment.

Films and Excursions
Where films or slides are shown as part of a lecture series, these should be attended by all students of the subject since the material covered cannot be presented in notes or textbooks and is examinable. Similarly, excursions outside the University are essential in bringing students into contact with aspects of professional practice. These are part of the course and must be attended. Cost of transport or excursions is normally paid by students as part of the cost of the course.

Mentoring of Students by Staff
A staff member to whom each student should refer any problem likely to affect their progress has been assigned to each course year. Advisers may be changed only by request of the student or the adviser to the Head of School. Any problem concerning a service subject administered by another department should be referred to the Course Co-ordinator.

Official Notices
Official notices will be posted on the notice board near the School Office. Students should view this frequently.

Suggestions for Improvement
Student Liaison Committees are a normal forum for students to express their concerns through student representatives.

Professional Societies
Students are encouraged to join the Institution of Engineers, Australia and, where appropriate, The Australian Institute of Building for a nominal fee.
Bachelor of Engineering in Architectural Engineering

Course Code: EBAE

Course Objectives
The course is designed to develop vocational skills for the engineering planning, design, construction, maintenance and management of building environmental and safety systems. The basic objectives of the course are to produce graduates who:

- Have a solid foundation of scientific, engineering and project management knowledge, capability and practical experience of design of building environmental and safety systems;
- Have the ability to communicate effectively, both orally and in writing, and work well in a team situation;
- Have an understanding of community need for building infrastructure in the context of societal aspirations and expectations;
- Are motivated to continually improve their knowledge base; and
- Are immediately productive upon completion of the course and are thus attractive to prospective employers.

Course Philosophy
The two years of the degree program involves engineering fundamentals to provide a solid foundation for the applied engineering subjects in the following years of the course. Studies in architecture design practices and architectural history are developed in second and third year. These fundamentals provide students with the basis of understanding all developments in the profession of Architectural Engineering and Engineering in general as technology continually changes and the profession undergoes continual adjustment.

The applied engineering subjects building structures, building environmental and safety systems, and building project management. In the final two years of the program, students undertake a major in either environmental systems design or structural systems design.

An optional integrated 12 weeks industry placement period will be available in Architectural Engineering at the end of the third year of the course in a ‘summer semester’ subject. Architectural Engineering graduates will have enhanced skills for careers in:

- advanced environmental services system design;
- building renovation and refurbishment;
- computer aided design and drawing;
- construction planning, management and project supervision;
- cost estimating and project feasibility;
- building energy audits and conservation studies;
- engineering consultation and investigations;
- facilities management and programming;
- interior lighting design;
- risk assessment for building system performance;
- support for preservation Architecture; and
- simulation of building environmental system performance.

Professional Recognition
The Bachelor of Engineering in Architectural Engineering will be submitted for recognition by the Building Practitioners Board and Building Control Commission in Victoria. This submission is to meet the minimum academic qualification for registration as either a Mechanical or Electrical Engineer, as defined by the responsibilities of both categories of Engineer in the relevant Victoria Act.

The degree will satisfy the requirements for accreditation by The Institution of Engineers, Australia and be submitted in 2003 for accreditation by the Australian Institute of Building.

USA Exchange Program
A ‘study abroad’ student exchange program is in place with the Department of Architectural Engineering at the University of Kansas (KU) in the USA. Each year, students at third year level will be invited to participate in this program. Travel scholarships may be available to outstanding students.

Admission Requirements and Prerequisites
The prerequisite subjects for admission into the first year of the course are based on entry at post Year 12, Victorian Certificate of Education, or equivalent level, and are as follows:

Prerequisites Units 3 and 4
Mathematical Methods or Specialist Mathematics, with a study score of at least 22 in English

Middle Band Selection
Re-ranking based on study scores in the full range of year 12 student, with particular attention to pre-requisite studies and other science based studies.

Admission at Other Levels
Articulation from Associate Diploma or Diploma courses in Building Construction and Design or Engineering. Credit will be given to subjects passed to a sufficient level of competence.

Persons transferring from other courses or having overseas or other entrance qualifications of at least equivalent standard to those listed above, should apply for admission in the normal manner.

Full-fee paying international students must have qualifications which are equivalent to those listed above. In addition, they must provide evidence of proficiency in the English language:

- IELTS - an overall band score of 6+, subject to individual profile; or
- TOEFL - a score of 550+, and a Test of Written English score of 5+.

Course Duration
The course is offered over four years on a full-time basis of 22 contact hours per week. Part-time study may be approved. The course however cannot be completed solely on a part-time basis.

Course Structure

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<tr>
<th>Credit points</th>
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<tbody>
<tr>
<td>Semester</td>
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<tr>
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<tr>
<td>ACE1801 Engineering Communication</td>
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<td>ENC1812 Computing for Engineers</td>
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<tr>
<td>END1832 Engineering Graphics</td>
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<tr>
<td>ENM1851 Engineering in Society</td>
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<tr>
<td>ENS1822 Solid Mechanics 1</td>
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<tr>
<td>ENW1861 Principles of Materials Science 1</td>
</tr>
<tr>
<td>ENW1862 Principles of Materials Science 2</td>
</tr>
<tr>
<td>ENX1831 Engineering Experimentation</td>
</tr>
<tr>
<td>SMA1201 Mathematics IAP</td>
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</tbody>
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Assessment

Assessment in subjects is designed to monitor a student's progress and achievements as well as contribute to and enhance their learning. Normally a prescribed range of assessment methods is employed in any subject.

Assessment is by a combination of written assignments, tests, laboratory work and examinations.

Supplementary assessment is not normally available in any subject except at the discretion of the Head of School in exceptional circumstances.

Special Consideration in assessment may be granted on the grounds defined by the University Statutes.

Guidelines on the use of electronic calculators and other electronic storage devices in examinations are provided in individual subject outlines distributed to students within the first two weeks of semester and included on final examination papers.

Electronic calculators and other electronic storage devices will not be permitted where the above provisions have not been made.

Degree with Honours

A Degree with Honours Program is offered concurrently with the fourth year of the ordinary Bachelor of Engineering program. Normally, students entering the final year of a full-time Bachelor of Engineering program (or its equivalent in part-time mode), will be offered honours candidacy, if they have achieved a minimum hour weighted average of 60 per cent over year levels 1 to 3, have not repeated a subject throughout levels 1 to 3 and have not been granted more than one year completion by compensation permitted where the above provisions have not been made.

Industry Experience

Students will have an option to undertake a 12 week (minimum) industry placement program during the third year of their degree. It is intended that this program will meet the industrial experience requirements of the Institution of Engineers, Australia.
Bachelor of Engineering in Building Engineering
Course Code: EBCB

Course Objectives
The course is designed to develop vocational skills for the engineering planning, design, construction, maintenance and management of buildings and building services systems.

The basic objectives of the course are to produce graduates who:
- Have a solid foundation of scientific, engineering and project management knowledge capped by specific theoretical and practical exposure to either the design of building structures or building services systems;
- Have the ability to communicate effectively, both orally in writing, and work well in a team situation;
- Have an understanding of community need for building infrastructure in the context of societal aspirations and expectations;
- Are motivated to continually improve their knowledge base and;
- Are immediately productive upon completion of the course and are thus attractive to prospective employers.

The course recognises societal needs for professional Engineers who have sound technical knowledge and good communication skills and capable of providing appropriate building infrastructure that is affordable, safe and comfortable to live and work within.

The course is founded on a broad base of science and engineering fundamentals in the first and second year, with emphasis then given in the third and fourth years to applied discipline-specific topics, design and project work. The three main study areas commence in the second year of the course and run for the remainder of the course and are building structures, building services and building construction and management.

Strong emphasis is given to professionalism, ethics and community responsibility. Local examples of building projects provide experiential learning through site visits together with teaching input from practicing Engineers and other professionals in industry. These provide valuable ‘real-world’ case studies and are a motivational asset to the course.

The course utilises a common set of subjects to third year level, then splits into two major streams in final year, these being the ‘structures’ stream and the ‘services’ stream. Both streams retain a common ‘core’ of building construction technology and project management. These ‘majors’ permit students to further their knowledge in a stream and strengthens their value to prospective employers in the building industry.

Professional Recognition
The degree satisfies the requirements for accreditation by The Institution of Engineers, Australia will be resubmitted in 2003 for accreditation by the Australian Institute of Building.

USA Exchange Program
A ‘study abroad’ student exchange program is in place with the Department of Architectural Engineering at the University of Kansas (KU) in the USA. Each year, students at third year level will be invited to participate in this program. Travel scholarships may be available to outstanding students.

Admission Requirements and Prerequisites
The prerequisite subjects for admission into the first year of the course are based on entry at post Year 12, Victorian Certificate of Education, or equivalent level, and are as follows.

Prerequisites Units 3 and 4
Mathematical Methods or Specialist Mathematics, with a study score of at least 22 in English

Middle Band Selection
Re-ranking based on study scores in the full range of year 12 student, with particular attention to pre-requisite studies and other science based studies.

Admission at Other Levels
Persons transferring from other courses or having overseas or at least equivalent standard to those listed above, should apply for admission in the normal manner:

- IELTS - an overall band score of 6+, subject to individual profile;
- TOEFL - a score of 550+, and a Test of Written English score of 5+

Course Duration
The course is offered over four years on a full-time basis. Part-time study may be approved. However, the course cannot be completed solely on a part-time basis. Students must complete 480 credit points.

Course Structure
This structure will operate from 2003 for years 1 and 2

<table>
<thead>
<tr>
<th>Year</th>
<th>Semester</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>Two</td>
</tr>
</tbody>
</table>

Year 1
- ACE1801 Engineering Communication 10
- ENC1812 Computing for Engineers 10
- END1832 Engineering Graphics 10
- EAB3872 Electrical Power Distribution 2 10
- ENM1851 Engineering in Society 10
- ENS1822 Solid Mechanics 10
- ENW1861 Principles of Materials Science 1 10
- ENW1862 Principles of Materials Science 2 10
- ENX1831 Engineering Experimentation 10
- SMA1201 Mathematics 1AP 10
- SMA1202 Mathematics IAQ 10
- SPH1601 Physics 1SA 10
- SPH1602 Physics 1SB 10

Year 2
- EAH2831 Architectural History & Design 1 10
- ECF2842 Hydraulics 10
- EEP2882 Electrical Engineering 1 10
- ENC2812 Engineering Computations 1 10
- END2831 Introduction to Design 10
- END2832 Engineering Design 10
- ENF2841 Fluid Mechanics 10
- EMB2852 Engineering Management 1 10
- ENS2821 Solid Mechanics 1 10
- ENS2822 Solid Mechanics 3 10
- ENT2881 Thermodynamics 1 10
- SMA2801 Engineering Mathematics 10

Year 3
- BMO3851 Engineering Management 2 10
- EAB3841 Air Conditioning & Hydraulic Services 1 10
- EAB3842 Air Conditioning & Hydraulic Services 2 10
- EAB3871 Electrical Power Distribution 1 or 2 - 10*
- ECG3861 Geomechanics or 10*
- EAB3872 Electrical Power Distribution 2 or 10*
- ECG3862 Geotechnical Engineering 1 or 10*
Assessment

Assessment in subjects is designed to monitor a student’s progress and achievements as well as to contribute to and enhance their learning. Normally a prescribed range of assessment methods is employed in any subject. Assessment is by a combination of written assignments, tests, laboratory work and examinations.

Supplementary assessment is not normally available in any subject except at the discretion of the Head of School in exceptional circumstances.

Special Consideration in assessment may be granted on the grounds defined by the University Statutes.

Guidelines on the use of electronic calculators and other electronic storage devices in examinations are provided in individual subject outlines distributed to students within the first two weeks of semester and included on final examination papers.

Electronic calculators and other electronic storage devices will not be permitted where the above provisions have not been made.

Degree with Honours

A Degree with Honours Program is offered concurrently with the fourth year of the ordinary Bachelor of Engineering program. Normally, students entering the final year of a full-time Bachelor of Engineering program (or its equivalent in part-time mode), will be offered honours candidacy, if they have achieved a minimum hour weighted average of 60% over year levels 1 to 3, have not repeated a subject through levels 1 to 3 and have not been granted more than one year completion by compensation throughout the duration of the course. Fourth year honours degree gradings will be determined by the relevant Examiners Board on the basis of the hour weighted average for year level 4.

Industrial Experience

Candidates applying for the award of a degree in building engineering must ensure that they have submitted for approval evidence of having undertaken a minimum of 12 weeks industrial experience relevant to the course to satisfy the Institution of Engineers, Australia, requirements.

Bachelor of Engineering in Building Surveying

Course Code: EBB

This course is under review. It will not have an intake in 2004.

The Building Surveying degree involves Building Engineering coursework comprising specialised training in building legislation and basic training in structures, services and project management and fire engineering. The degree is an ideal one to combine with a law degree and to gain specialist skills in building law.

Course Objectives

The first part of the degree program involves subjects on engineering fundamentals which provide a solid foundation for the applied engineering subjects given in the later stages of the degree program. Furthermore, the fundamentals provide students with knowledge which will provide the basis of understanding all developments in the profession of Building Surveying Engineering and much engineering in general as technology continually changes and the profession undergoes continual structural adjustment. The applied engineering subjects include construction and legislation, structures, services, management and some studies in building foundations. In the final year of the program, the students undertake studies in performance-based regulations and fire engineering, which affects much of the building regulations.

Graduates will have enhanced skills for a career in Building Surveying. With a little further study the graduates can obtain professional qualifications in Fire Engineering. Graduates are qualified for consulting, construction and project management. Graduates are qualified also to obtain employment in structures, and services.

Admission Requirements and Prerequisites

Prerequisites Units 3 and 4

Mathematical Methods or Specialist Mathematics, English

Admission at Other Levels

Articulation from Associate Diploma or Diploma courses in Building Surveying and Engineering. Credit will be given to subjects passed to a sufficient level of competence.

Applications may also be made under the University’s alternative categories of entry including continuing difficulties during schooling, Aboriginal and Torres Straight Islanders or mature age (over 21 years of age).

Course Duration

The course is offered over four years on a full-time basis of 18 contact hours per week.

Course Structure

<table>
<thead>
<tr>
<th>Credit points</th>
<th>Semester</th>
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</thead>
<tbody>
<tr>
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<td>Year 3</td>
<td></td>
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<tr>
<td>BMO3851</td>
<td>Engineering Management 2</td>
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<tr>
<td>EAB3841</td>
<td>Air Conditioning &amp; Hydraulic Services 1</td>
</tr>
<tr>
<td>EAB3842</td>
<td>Air Conditioning &amp; Hydraulic Services 2</td>
</tr>
</tbody>
</table>

28
the basis of the hour weighted average for year level 4. Gradings will be determined by the relevant Examiners Board on the basis of the hour weighted average of 60% over year levels 1 to 3, have not been repeated a subject throughout levels 1 to 3 and have not been granted more than one year completion by compensation. Normally, students entering the final year of a full-time Bachelor of Engineering program (or its equivalent in part-time mode), will be permitted where the above provisions have not been made. Special Consideration in assessment may be granted on the basis of changes that have been made in response to the Institution of Engineers Australia (IEAust) 2003 review of the course.

Year 4

<table>
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<tr>
<td>EAB3892</td>
<td>Fire Services</td>
<td>-</td>
<td>10</td>
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<tr>
<td>EAD3832</td>
<td>Architectural Engineering Design 1</td>
<td>-</td>
<td></td>
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<tr>
<td>EAH3831</td>
<td>Architectural History and Design 2</td>
<td>10</td>
<td></td>
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<tr>
<td>EBK3881</td>
<td>Building Construction &amp; Legislation 1</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>ECD3892</td>
<td>Structural Engineering Design 1</td>
<td>-</td>
<td>10</td>
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<td>ECS3821</td>
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</tr>
<tr>
<td>ECS3822</td>
<td>Structural Analysis 2</td>
<td>-</td>
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</tr>
</tbody>
</table>

60 60

Assessment

Assessment in subjects is designed to monitor a student's progress and achievements as well as contribute to and enhance their learning. Normally a prescribed range of assessment methods is employed in any subject. Assessment is by a combination of written assignments, tests, laboratory work and examinations. Supplementary assessment is not normally available in any subject except at the discretion of the Head of School in exceptional circumstances.

Industrial Experience

All students will undertake a 12 week (minimum) industry placement program. It is intended that this program will meet the industrial experience requirements of the Institution of Engineers, Australia.

Professional Recognition

Accreditation of the degree program at Professional Engineer level will be sought on the basis of changes that have been made in response to the Institution of Engineers Australia (IEAust) 2003 review of the course.

Bachelor of Engineering in Civil Engineering

Course Code: EBCC

Civil Engineering is a broad-based discipline involving the planning, design, construction and management of a wide range of essential community infrastructure including, commercial and industrial buildings, water supply and wastewater systems, irrigation, drainage and flood protection systems, bridges, roads, highways and transportation systems, and port harbour and airport facilities.

The course philosophy is very much based on a recognition of society's need for well-rounded engineers who not only have sound technical and communication skills but also a good understanding of the environmental, economic, social and political environment in which they must operate.

The course is founded on a solid base of science and engineering fundamentals in the first two years, with emphasis then being given in years three and four to applied discipline-specific topics, design and project work. Substantial emphasis is given in a range of subjects to professionalism, ethics and community responsibility, team assignments, broad problem solving and communication skills, and the concepts of sustainability and sustainable engineering practices. A focus on local engineering examples, experiential learning and site visits, together with significant input from external industry-based lecturers, provides students with exposure to real world problems and is considered a motivational cornerstone of the course.

There are two major streams in structural and water engineering running through the course, complemented by minor streams in geomechanics and transportation engineering. Environmental and management issues are covered in specific subjects but also more broadly by integration into a range of other subjects throughout the course. Subject streams are generally sequential within a well-defined structure. It is envisaged that this structure may be modified somewhat in the future with a view to further motivating students by allowing them a greater degree of flexibility and specialisation, once a firm foundation has been established in the early years of the course. The incorporation of more flexibility should also allow students to remedy any perceived deficiencies in the more basic communication and technical skills.

A study abroad exchange program is in place with the Department of Civil and Environmental Engineering at the University of Kansas (KU) in the USA. Each year, two students at third year level of Civil and Environmental Engineering (VUT) and Civil Engineering (KU) are invited to participate in this program.

Course Objectives

The course is designed to develop skills for the application of engineering principles of planning, design, construction and management of buildings, roads, water supply and all other major community amenities.
### Admission Requirements and Prerequisites

The prerequisite subjects for admission into the first year of the course are based on entry at post Year 12, Victorian Certificate of Education, or equivalent level, and are as follows.

#### Prerequisites Units 3 and 4

Mathematical Methods or Specialist Mathematics, with a study score of at least 22 in English

#### Middle Band Selection

Re-ranking based on study scores in the full range of year 12 student, with particular attention to pre-requisite studies and other science based studies.

#### Admission at Other Levels

Persons transferring from other courses or having overseas or science based studies.

### Course Structure

The course is offered over four years on a full-time basis. Part-time study may be approved. However the course cannot be completed solely on a part-time basis. Students must complete 480 credit points.

#### Course Duration

The course is offered over four years on a full-time basis. Part-time study may be approved. However the course cannot be completed solely on a part-time basis. Students must complete 480 credit points.

#### Credit points

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Semester One</th>
<th>Semester Two</th>
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<tbody>
<tr>
<td>ACE1801 Engineering Communication</td>
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<td>ENC1812 Computing for Engineers</td>
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<tr>
<td>END1832 Engineering Graphics</td>
<td>-</td>
<td>10</td>
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<tr>
<td>ENM1831 Engineering in Society</td>
<td>10</td>
<td>-</td>
</tr>
<tr>
<td>ENW1861 Principles of Materials Science 1</td>
<td>10</td>
<td>-</td>
</tr>
<tr>
<td>ENX1831 Engineering Experimentation</td>
<td>10</td>
<td>-</td>
</tr>
<tr>
<td>ENS1822 Solid Mechanics 1</td>
<td>-</td>
<td>10</td>
</tr>
<tr>
<td>ENW1862 Principles of Materials Science 2</td>
<td>-</td>
<td>10</td>
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<tr>
<td>SMA1201 Mathematics 1AP</td>
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<tr>
<td>SMA1202 Mathematics 1AQ</td>
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<td>SPH1602 Physics 1SB</td>
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<td><strong>Total</strong></td>
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<td><strong>60</strong></td>
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#### Year 2

<table>
<thead>
<tr>
<th>Subject</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECF2842 Hydraulics</td>
<td>- 10</td>
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<tr>
<td>ECT2871 Surveying</td>
<td>- 10</td>
</tr>
<tr>
<td>EEP2882 Electrical Engineering 1</td>
<td>- 10</td>
</tr>
<tr>
<td>ENC2812 Engineering Computations 1</td>
<td>- 10</td>
</tr>
<tr>
<td>END2831 Introduction to Design</td>
<td>- 10</td>
</tr>
<tr>
<td>END2832 Engineering Design</td>
<td>- 10</td>
</tr>
<tr>
<td>ENF2841 Fluid Mechanics 1</td>
<td>- 10</td>
</tr>
<tr>
<td>ENM2852 Engineering Management 1</td>
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<tr>
<td>ENN2821 Solid Mechanics 2</td>
<td>- 10</td>
</tr>
<tr>
<td>ENN2822 Solid Mechanics 3</td>
<td>- 10</td>
</tr>
<tr>
<td>ENT2881 Thermodynamics 1</td>
<td>- 10</td>
</tr>
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<td>SMA2801 Engineering Mathematics</td>
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<tr>
<td><strong>Total</strong></td>
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</table>

#### Year 3

<table>
<thead>
<tr>
<th>Subject</th>
<th>Credit Points</th>
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<tbody>
<tr>
<td>BMO3851 Engineering Management 2</td>
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<tr>
<td>ECD3831 Civil Engineering Design</td>
<td>- 10</td>
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<tr>
<td>ECD3892 Structural Engineering Design 1</td>
<td>- 10</td>
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<tr>
<td>ECF3841 Engineering Hydrology</td>
<td>- 10</td>
</tr>
<tr>
<td>ECF3842 Water Resources Engineering</td>
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</tr>
<tr>
<td>EGG3861 Geomechanics 1</td>
<td>- 10</td>
</tr>
<tr>
<td>ECG3862 Geotechnical Engineering 1</td>
<td>- 10</td>
</tr>
<tr>
<td>ECT3871 Highway Engineering</td>
<td>- 10</td>
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<td>ECT3872 Transportation Engineering</td>
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<td><strong>Total</strong></td>
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</table>

#### Year 4

<table>
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<th>Subject</th>
<th>Credit Points</th>
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<tbody>
<tr>
<td>ECD4831 Civil Engineering Design 2</td>
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<td>ECD4832 Civil Engineering Design 3</td>
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<td>ECD4891 Structural Engineering Design 2</td>
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<td>ECF4841 Hydraulic Engineering</td>
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<td>ECG4861 Geotechnical Engineering 2</td>
<td>- 10</td>
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<td>EGN4881 Environmental Engineering 1</td>
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<td>EGN4882 Environmental Engineering 2</td>
<td>- 10</td>
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<tr>
<td>ECP4810 Engineering Project</td>
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<tr>
<td>EFN4852 Engineering Project Management</td>
<td>- 10</td>
</tr>
<tr>
<td>ECS4822 Advanced Structural Analysis</td>
<td>- 10</td>
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<td>ECT4872 Environmental Planning &amp; Design</td>
<td>- 10</td>
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<tr>
<td><strong>Total</strong></td>
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</tbody>
</table>

*Exemptions in a maximum of three semester 2 subjects in final year (ie, Half of ECP4810 and two electives) may be given for satisfactory completion of an approved industrial work placement.

### Assessment

Assessment in subjects is designed to monitor a student's progress and achievements as well as contribute to and enhance their learning. Normally a prescribed range of assessment methods is employed in any subject.

Assessment is by a combination of written assignments, tests, laboratory work and examinations.

Supplementary assessment is not normally available in any subject except at the discretion of the Head of School in exceptional circumstances.

Special Consideration in assessment may be granted on the grounds defined by the University Statutes.

Guidelines on the use of electronic calculators and other electronic storage devices in examinations are provided in individual subject outlines distributed to students within the first two weeks of semester and included on final examination papers.

Electronic calculators and other electronic storage devices will not be permitted where the above provisions have not been made.

### Degree with Honours

A Degree with Honours Program is offered concurrently with the fourth year of the ordinary Bachelor of Engineering program. Normally, students entering the final year of a full-time Bachelor of Engineering program (or its equivalent in part-time mode), will be offered honours candidacy, if they have achieved a minimum hour weighted average of 60% over year levels 1 to 3, have not repeated a subject throughout levels 1 to 3 and have not been granted more than one year completion by compensation throughout the duration of the course. Fourth year honours degree gradings will be determined by the relevant Examiners Board on the basis of the hour weighted average for year level 4.
Industrial Experience
Candidates applying for the award of a degree in civil engineering must ensure that they have submitted for approval evidence of having undertaken a minimum of 12 weeks industrial experience relevant to the course to satisfy the Institution of Engineers, Australia requirements.

Professional Recognition
The Institution of Engineers, Australia has granted full recognition for the Bachelor of Engineering in Civil Engineering. Recognition is a requirement for Graduate Membership of the Institution of Engineers, Australia and additionally for equivalent membership of many overseas professional engineering institutions.

Bachelor of Engineering in Mechanical Engineering
Course Code: EBME
The degree is designed to provide the broad education required for a mechanical engineering career. In addition to theoretical and practical engineering content, the course contains integrated studies in economics, administration and communication. The degree emphasises achievement across mechanical engineering disciplines in concert with problem solving, design, engineering applications, innovation, resource management and professional responsibility.

Government institutions and private enterprise employ mechanical engineers in manufacturing, design of products and machines, automatic control of machines and processes, heating and air conditioning systems, machine and condition monitoring, hydraulic and pneumatic systems, computer applications – including finite element analysis, computer-aided design and engineering and research and development in a wide range of fields.

Course Objectives
The course is designed to provide an educational standard and vocational skills which will enable graduates to undertake professional practice in the discipline of Mechanical Engineering. Graduates are provided with a basis to progress through postgraduate studies, continuing education courses and participate in learned society endeavours.

Admission Requirements and Prerequisites
The prerequisite subjects for admission into the first year of the course are based on entry at post Year 12, Victorian Certificate of Education, or equivalent level and are as follows.

Prerequisites Units 3 and 4
Mathematical Methods or Specialist Mathematics, with a study score of at least 22 in English

Middle Band Selection
Re-ranking based on study scores in the full range of year 12 student, with particular attention to pre-requisite studies and other science based studies.

Admission at Other Levels
Persons transferring from other courses or having overseas or other entrance qualifications of at least equivalent standard to those listed above, should apply for admission in the normal manner. Full-time paying international students must have qualifications which are equivalent to those listed above. In addition, they must provide evidence of proficiency in the English language.

- IELTS - an overall band score of 6+, subject to individual profile; or
- TOEFL - a score of 550+, and a Test of Written English (TWE) score of 5+.

Course Duration
The course is offered over four years on a full-time basis. The entire course cannot be completed on a part-time basis. Students must complete 480 credit points.

Course Structure

<table>
<thead>
<tr>
<th>Year</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>ACE1801</td>
<td>Engineering Communication</td>
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<td>Engineering in Society</td>
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<td>ENW1861</td>
<td>Principles of Materials Science 1</td>
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<td>Engineering Experimentation</td>
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<td>ENC1812</td>
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Electives Subjects*
- EMW4861 | Materials Manufacturing |
| - EMD4712 | Energy and Environment |
| - EMT4861 | Automotive Engine Technology |
| - EMT4762 | Heating and Air Conditioning |
Assessment

Assessment in subjects is designed to monitor a student's progress and achievements as well as contribute to and enhance their learning. Normally a prescribed range of assessment methods is employed in any subject.

Assessment is by a combination of written assignments, tests, laboratory work and examinations.

Supplementary assessment is not normally available in any subject except at the discretion of the Head of School in exceptional circumstances.

Special Consideration in assessment may be granted on the grounds defined by the University Statutes.

Guidelines on the use of electronic calculators and other electronic storage devices in examinations are provided in individual subject outlines distributed to students within the first two weeks of semester and included on final examination papers.

Electronic calculators and other electronic storage devices will not be permitted where the above provisions have not been made.

Degree with Honours

A Degree with Honours Program is offered concurrently with the fourth year of the ordinary Bachelor of Engineering program. Normally, students entering the full year of a final-time Bachelor of Engineering program (or its equivalent in part-time mode), will be offered honours candidacy, if they have achieved a minimum hour weighted average of 60% over year levels 1 to 3, have not repeated a subject through levels 1 to 3 and have not been granted more than one stage completion throughout the duration of the course. Fourth year honours degree gradings will be determined by the relevant Examiners Board on the basis of the hour weighted average for year level 4.

Industrial Experience

Candidates applying for the award of a degree in mechanical engineering must ensure that they have submitted for approval evidence of having undertaken a minimum of 12 weeks industrial experience relevant to the course to satisfy the Institution of Engineers, Australia, requirements.

Professional Recognition

The Institution of Engineers, Australia, recognises the degree as meeting all academic requirements for corporate membership as a chartered engineer. Completion of the degree plus 12 weeks approved experience will admit to Graduate Membership. Victoria University students are eligible for Student Membership.

Bachelor of Engineering in Robotic Engineering

Course Code: ERE

Course Objectives

This course is envisaged to integrate existing relevant subjects and resources within the Faculty of Science, Engineering and Technology to appeal to incoming high ENTER level students with mechanical, electronic and computer interests along with the essential background in mathematics and physics. The structure of the course is to provide a common core progression with the revised Mechanical Engineering degree course linked with specialist subjects in robotics. Student completing this course will find employment as specialist engineers in the mechanical and electronic engineering interface in industry and research.

Admission Requirements and Prerequisites

To qualify for admission to the course an applicant must have successfully completed a course of study at year 12 level or equivalent.

Prerequisites Units 3 and 4

Mathematical Methods or Specialist Mathematics, with study score of at least 22 in English.

Middle Band Selection

Re-ranking based on study scores in the full range of year 12 student, with particular attention to pre-requisite studies and other science based studies.

Admission at Other Levels

In addition to satisfying the entry requirements for Australian resident students or demonstrating equivalence, overseas students must provide evidence of proficiency in the English language -

IELTS - an overall band score of 6-7, subject to individual profile;

TOEFL - a score of 550+, and a Test of Written English (TWE) score of 5+.

Course Duration

The course is offered over four years on a full-time basis or part-time equivalent.

Course Structure

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The Bachelor of Science in Engineering and Business course aims to provide suitably trained graduates who can have a general impact in the workplace, but particularly in small to medium businesses involved in innovative and entrepreneurial engineering for the expanding Australian and international marketplace.

The course is structured on subjects offered in the Bachelor of Engineering in Mechanical Engineering degree, and the Bachelor of Business degree complemented by subjects in commercial engineering and management. Whilst being a stand-alone qualification, the course will also allow graduates to complete (optional) either the Bachelor of Engineering in Mechanical Engineering degree or the Bachelor of Business degree after approximately two further years of study.

**Course Objectives**

The objective of the course is to achieve an educational standard which will enable graduates to undertake work involving variety and intellectual challenge requiring accuracy and adherence to prescribed methods of analysis, design and computation in the fields of Planning/Design and Business/Management.

**Admission Requirements and Prerequisites**

The prerequisite subjects for admission into the first year of the course are based on entry at post Year 12, Victorian Certificate of Education, or equivalent level and are as follows:

**Prerequisites Units 3 and 4**

- English, Mathematics (any)

**Middle Band Selection**

Re-ranking based on study scores in the full range of year 12 student, with particular attention to pre-requisite studies and other science based studies.

**Admission at Other Levels**

Persons transferring from other courses or having overseas or other entrance qualifications of at least equivalent standard to those listed above, should apply for admission in the normal manner.

Full-fee paying international students must have qualifications which are equivalent to those listed above. In addition, they must provide evidence of proficiency in the English language:

- IELTS - an overall band score of 6+, subject to individual profile; or
- TOEFL - a score of 550+ and a Test of Written English (TWE) score of 5+.

**Course Duration**

The course is offered over three years on a full-time basis. Part-time study can be approved at any stage of the course. Students must complete 360 credit points.

The Bachelor of Science in Engineering and Business course aims to provide a solid grounding in the basic and applied areas of engineering, particularly with regard to industrial and project design and their integration with a range of essential business skills. The course aims to prepare graduates with expertise in specific areas such as Planning and Design, Resource Application and Engineering Management.

**Bachelor of Science in Engineering and Business**

**Course Code:** EMBB

**Year 4**

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**Course Structure**

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**Industrial Experience**

Candidates applying for the award of a degree in robotic engineering must ensure that they have submitted for approval evidence of having undertaken a minimum of 12 weeks industrial experience relevant to the course to satisfy the Institution of Engineers, Australia, requirements.

**Professional Recognition**

The Institution of Engineers, Australia, recognises the degree as meeting all academic requirements for corporate membership as a chartered engineer. Completion of the degree plus 12 weeks approved experience will admit to Graduate Membership. Victoria University students are eligible for Student Membership.

The course is offered over three years on a full-time basis. Part-time study can be approved at any stage of the course. Students must complete 360 credit points.

**Course Structure**

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</table>
This three-year degree program provides a basic qualification and employment opportunities in areas related to infrastructure provision and sustainable urban and rural development. Major subject areas covered include environmental and engineering sciences, mathematics and computing, environmental engineering and design, land and water management, energy studies, urban planning and development, and several aspects of management including human resources, legislation and economics.

The first two years of the course largely focus on mathematics, basic sciences and the development of communication skills. Third year subjects are concerned with the application of all of these skills to the planning, design, maintenance and management of infrastructure and other development with the object of helping to achieve both local and global sustainability.

Course Objectives
The course is designed to produce graduates with:

- Well developed technical, communication and teamwork skills.
- The ability to work independently or with people from a wide variety of disciplines.
- The ability to apply scientific and engineering principles in an integrated manner to the solution of a range of development and environmental problems in order to improve our total life quality and global sustainability.

Course Duration
The course is offered over three years on a full-time basis. Part-time study can be approved at any stage of the course. Students must complete 360 credit points.

Course Structure
Years 1 & 2 are no longer offered.

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Equivalent subjects may be offered to replace some of the above subjects.

Assessment
Assessment in subjects is designed to monitor a student’s progress and achievements as well as contribute to and enhance their learning. Normally a prescribed range of assessment methods is employed in any subject.

Assessment is by a combination of written assignments, tests, laboratory work and examinations.

Supplementary assessment is not normally available in any subject except at the discretion of the Head of School.

Guidelines on the use of electronic calculators and other electronic storage devices in examinations are provided in individual subject outlines distributed to students within the first two weeks of semester and included on final examination papers.

Electronic calculators and other electronic storage devices will not be permitted where the above provisions have not been made.

Professional Recognition
The course satisfies the requirements for accreditation as an Affiliate of the Institution of Engineers, Australia.

Articulation Pathways
Students who have completed the Bachelor of Science in Engineering and Business degree may apply for admission into either the Bachelor of Engineering in Mechanical Engineering degree or the Bachelor of Business degree at an advanced level. The level of entry into these degree programs will depend on the elective subjects passed during the Bachelor of Applied in Technology and Business degree. In most cases however, the second degree can be completed after approximately two further years of full-time study (or equivalent).

Special provision is made for admission into degree courses on the basis of a completed Associate Diploma in the appropriate field and a high performance in approved subjects. Interested persons should refer to the section on Articulation and Credit Transfer in this Handbook.

Bachelor of Science in Environmental Engineering
Course Code: EBEV
(This course will no longer have an intake and is being phased out.)

Course Description
This course will no longer have an intake and is being phased out.

FACULTY OF SCIENCE, ENGINEERING AND TECHNOLOGY

<table>
<thead>
<tr>
<th>Credit points</th>
<th>Semester</th>
</tr>
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<tr>
<td>SCM2901</td>
<td>Linear Programming Techniques</td>
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<tr>
<td>BBF4511</td>
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<td>O: Business Stream</td>
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<tr>
<td>Business Elective</td>
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</tbody>
</table>

Assessment
Assessment in subjects is designed to monitor a student’s progress and achievements as well as contribute to and enhance their learning. Normally a prescribed range of assessment methods is employed in any subject.

Assessment is by a combination of written assignments, tests, laboratory work and examinations.

Supplementary assessment is not normally available in any subject except at the discretion of the Head of Department in exceptional circumstances.

Special Consideration in assessment may be granted on the grounds defined by the University Statutes.

Guidelines on the use of electronic calculators and other electronic storage devices in examinations are provided in individual subject outlines distributed to students within the first two weeks of semester and included on final examination papers.

Electronic calculators and other electronic storage devices will not be permitted where the above provisions have not been made.
The School of Electrical Engineering offers undergraduate courses leading to the award of:

Bachelor of Engineering in:
- Computer Engineering;
- Electrical and Electronic Engineering;
- Microelectronic Systems;
- Telecommunications Engineering;
- Photonics.

Bachelor of Engineering Science in:
- Photonics.

Bachelor of Science in:
- Computer Technology;
- Applied Physics and Computing;
- Optoelectronics.

The School of Electrical Engineering offers a comprehensive portfolio of undergraduate, postgraduate and research study programs in the fields of applied physics, electrical and electronic engineering and photonics. All courses are designed to have a strong practical bias and include a significant amount of ‘hands-on’ project work component. They are taught in laboratories with modern equipment and computing facilities. As a result, our graduates are highly regarded and sought after by industry.

Details of the School’s research activities and postgraduate degree programs are described in the Postgraduate Studies section of the Handbook.

The School has a large enrolments of both local and international students.

The Engineering awards have a common first three semesters.

The Bachelor of Science courses are of 3 years duration and the Bachelor of Engineering courses 4 years.

Degree with Honours

A Degree with Honours Program is offered concurrently with the fourth year of the ordinary Bachelor of Engineering program. Normally, students entering the final year of a full-time Bachelor of Engineering program (or its equivalent in part-time mode), will be offered honours candidacy, if they have achieved a minimum hour weighted average of 60% over year levels 1 to 3, have not repeated a subject through levels 1 to 3 and have not been granted more than one stage completion throughout the duration of the course. Fourth year honours degree gradings will be determined by the relevant Examiners Board on the basis of the hour weighted average for year level 4.

Computer Facilities

The School has a number of computing laboratories for teaching and research. These laboratories are equipped with the latest equipment such as Pentium PCs, Unix workstations, and high speed line printers and laser printers. Graphical user interfaces and menu-driven interfaces are provided for easy access to services.

Research

The School’s research activities are quite varied, and attract significant government and private funding. Current research areas include:
- Telecommunications;
- Microelectronics;
- Optical Technology;
- Automation and Energy Systems.

Additional research in the School reflects staff expertise that spans electrical and electronic engineering and applied physics.

Admission Requirements

Admission to the course will be governed by the University Regulations for undergraduate courses as set out in the Faculty of Science, Engineering and Technology Handbook in either of the categories of Normal Entry or Alternative Category Entry.

The prerequisite subjects for admission into the first year of the course are based on entry at post Year 12, Victorian Certificate of Education, or equivalent level, and are as follows.

**Prerequisites Units 1 and 2**

- Physics

**Prerequisites Units 3 and 4**

- Mathematical Methods or Specialist Mathematics, English

**Middle Band Selection**

Completing Physics and/or Specialist Mathematics gives an ENTER 3 points higher per study.

**Admission at Other Levels**

Full-fee paying international students must have qualifications which are equivalent to those listed above. In addition, they must provide evidence of proficiency in the English language:
- IELTS - an overall band score of 6+, subject to individual profile;
- TOEFL - a score of 550+, and a test of written English (TWE) score of 5+.

**Articulation Pathways**

Holders of a TAFE Associate Diploma in Electronics (with appropriate mathematics and results at Distinction level) may be admitted into Year One of the School’s undergraduate courses. If the TAFE Associate Diploma has been completed at High Distinction level, advanced admission to Year Two may be considered.

Special advanced admission provisions apply to certain overseas Diploma and Higher Diploma qualifications.

**Assessment**

Assessment in subjects is designed to monitor a student’s progress and achievement as well as contribute to and enhance their learning. Normally a prescribed range of assessment methods is employed in any subject.

Assessment is by a combination of written assignments, tests, laboratory work and examinations.

Supplementary assessment is not normally available in any subject except at the discretion of the Head of School in exceptional circumstances.

Special Consideration in assessment may be granted on the grounds defined by the University Statutes.

Guidelines on the use of electronic calculators and other electronic storage devices in examinations are provided in individual subject outlines distributed to students within the first two weeks of semester and included on final examination papers.
Electronic calculators and other electronic storage devices will not be permitted where the above provisions have not been made.

The assessment of each subject is detailed in the subject listings.

Course Regulations

Progression and Exclusion

Each Engineering undergraduate course is specified as a unique set of course subjects. The sequence in which these course subjects is normally studied is specified, firstly, by grouping them in course years and secondly, by specifying prerequisites and/or co-requisites for some subjects.

Normally, all of the course subjects in a particular course year should be completed and all prerequisite/co-requisite requirements satisfied before enrolment will be permitted in any subject in a subsequent course year. Enrolment in subjects spanning more than two course years is not permitted.

In order to satisfy the academic requirements for a course award, all course subjects must be completed. Such completion may be obtained by:

(a) being granted exemption in either individual subjects or in course years; and/or
(b) achieving a grade of P (or higher) in the assessment of each subject; and/or
(c) being granted compensation in course years.

A stage grading of 'Year Completed by Compensation' may be granted if a student:

(i) has been given final grades in all subjects in the course year; and
(ii) has passed subjects equivalent to more than 80% of total required semester hours for that course year with no assessment at less than N1 grade; and
(iii) has achieved an hour-weighted average mark of at least 50% for all subjects in the year.

A grading of 'Year Completed by Compensation' recognises an acceptable overall result but does not constitute a pass in any individual failed subject.

Students who do not satisfy the requirements for a 'Year Completed by Compensation' must repeat all failed subjects of that year (or their equivalents) at the earliest opportunity.

Normally, gradings of 'Year Completed by Compensation' will not be granted in consecutive years of a course.

Normal progress through a course requires a student to complete any defined course year within one year of equivalent full-time enrolment.

Any of the following may be considered to constitute unsatisfactory progress by a student:

(i) failure in any subject or unit for the third time;
(ii) failure in any subject or unit at N2 level for the second time;
(iii) failure in 50% or more of their assessed enrolment load in any semester or calendar year of study;
(iv) failure to complete any two consecutive course years within three years of equivalent full-time enrolment;
(v) failure to complete the course within the maximum period defined by University Statute;
(vi) failure to meet a conditional enrolment agreement.

As otherwise defined by University Statute and subject to being invited to show cause, a student making unsatisfactory progress will normally be recommended for exclusion from the course.

Professional Recognition

The Institution of Engineers, Australia, recognises the Electrical and Electronic Engineering, Telecommunication Engineering, Computer Engineering, Microelectronic Systems and Photonic degrees as meeting all academic requirements for corporate membership as a Chartered Engineer, Australia. Completion of any of these degrees, including 12 weeks approved experience, will admit to graduate membership.

The Institution of Radio and Electronics Engineers, Australia, recognises the Electrical and Electronic Engineering degree as meeting all academic requirements for corporate membership as a Chartered Electronic Engineer. The Australian Computer Society recognises the Electrical and Electronic Engineering degree for professional membership.

Oversees professional institutions such as the British Computer Society, the Institution of Electrical Engineers (UK), the Institution of Electrical and Electronic Engineers (USA), and the Institution of Engineers, Malaysia, in general provide similar recognition.

Graduates who major in computer science are eligible to become associate members of the Australian Computer Society after one year.

Graduates of the Applied Physics and Computing degree are recognised by both the Australian Computer Society and the Australian Institute of Physics. Optoelectronics graduates are recognised by the Australian Institute of Physics.

Industrial Experience

Candidates applying for the award of a degree in electrical and electronic engineering and computer engineering must ensure that they have submitted for approval evidence of having undertaken a minimum of 12 weeks industrial experience relevant to the course to satisfy the Institution of Engineers, Australia, requirements.

Bachelor of Engineering in Computer Engineering

Course Code: EBEH

The major role of professional engineers in the Australian workforce is to act as agents for change through the development of technically sound, economically viable, and socially acceptable solutions to complex and new technical problems.

The rapid advances in computer applications and technology, particularly in the communication, control and multimedia areas, mean that many commercial and industrial problems are of a multidisciplinary nature, requiring expertise in both computer systems and electrical and electronic engineering. The aim of this course is to combine the desirable features of electrical and electronic engineering with computer science. The computer engineer will be technically competent in computer programming, computer communication, networking, embedded system development, advanced computer systems engineering including both software and hardware design.

Course Objectives

This course is to provide a specialised program to adequately prepare graduates for computer engineering positions. The general aims of the course are to provide graduates with basic knowledge and technical skills in the areas of mathematics, electronics, digital systems, and computer programming; a selection of commonly used computer languages and packages in the development of software for real time, embedded, and scientific applications; specific knowledge and technical skills pertinent to the development of computer engineering systems; management skills in relation to human and industrial relations, strategic management, role of engineer as a manager and financial and resource
management; develop attitudes of personal initiative and enquiry in students so that they may continue to further education and meet the technological changes in their profession; develop oral and written communication skills, an understanding of society and the computer system engineer's role in society; professional awareness, written communication skills, an understanding of society and the role of a professional society.

**Course Structure**

Course is subject to review. In 2004, years 1, 3 and 4 are as listed. The second year structure is subject to approval.

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Credit Points</th>
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<tr>
<td>Semester</td>
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<tr>
<td><strong>EEH1001 Digital Electronics 1</strong></td>
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<td><strong>ACE1542 Engineering Communication</strong> or</td>
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<tr>
<td><strong>EEH1001 Digital Electronics 1</strong></td>
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<tr>
<td><strong>EEL1001 Circuit Theory &amp; Application 1</strong></td>
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<td><strong>EEL1002 Circuit Theory &amp; Application 2</strong></td>
<td>-</td>
</tr>
<tr>
<td><strong>EES1001 Programming 1</strong></td>
<td>12</td>
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<td><strong>EPP1001 Physics 1.1</strong></td>
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<tr>
<td><strong>EEL2001 Linear Systems &amp; Applications 1</strong></td>
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<td><strong>EEL2002 Linear Systems &amp; Applications 2</strong></td>
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<td><strong>EES2001 Programming with Objects 2.1</strong></td>
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<td><strong>EET2011 Communication Systems 2.1</strong></td>
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<td><strong>SMA2201 Mathematics B</strong></td>
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<td><strong>SMA2201 Mathematics B</strong></td>
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<td><strong>ECC2502 Software Engineering 2.2</strong></td>
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<tr>
<td><strong>ECC3511 Software Engineering 3.1</strong></td>
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<tr>
<td><strong>ECC3601 Windows Programming 3.1</strong></td>
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<td><strong>EED3600 Design 3.0</strong></td>
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<tr>
<td><strong>EEH3202 Computer and Digital Design 3.2</strong></td>
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<td><strong>EEH3204 Integrated Circuit Design 3.2</strong></td>
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<td><strong>EEH3204 Embedded Systems 3.1</strong></td>
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<td><strong>EET2502 Computer Communication 2.2</strong></td>
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<td><strong>Electives</strong> (three for semester 1 and two for semester 2): <strong>EED2002</strong></td>
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<td><strong>ECC3804 Computer Graphics 3.2</strong></td>
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<td><strong>EET2001 Multimedia Program Production 2.1</strong></td>
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<tr>
<td><strong>EET2101 Multimedia Techniques 2.1</strong></td>
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<td><strong>BMO 3422 Strategic Management</strong></td>
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<td><strong>EED4000 Design 4.0</strong></td>
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<td><strong>EEH4101 Computer and Digital Design 4.1</strong></td>
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<tr>
<td><strong>EEH4102 Computer and Digital Design 4.2</strong></td>
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<td><strong>EET4101 Computer Systems 4.2</strong></td>
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<td><strong>EET4102 Computers 4.3</strong></td>
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<tr>
<td><strong>Electives</strong> (two for semester 1 and two for semester 2): <strong>ECC3504 Computers in Society 3.2</strong></td>
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<tr>
<td><strong>EEH3201 Computer and Digital Design 3.1</strong></td>
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<tr>
<td><strong>EEL4401 Neural Network</strong></td>
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<td><strong>Fuzzy Logic 4.1</strong></td>
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<td><strong>EET3502 Computer Communication 3.2</strong></td>
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<tr>
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*Appropriate semester electives from other degree courses to be approved by the Year Co-ordinator*

### Year 1
- **ACE1541 Engineering Communication OR**: 12
- **ACE1542 Engineering Communication**: 12
- **EEH1001 Digital Electronics 1**: 12
- **EEH1001 Circuit Theory and Application 1**: 12
- **EEH1002 Circuit Theory and Application 2**: 12
- **EES1001 Programming 1**: 12
- **EES1002 Programming 2**: 12
- **EPP1001 Physics 1.1**: 12
- **EPP1002 Physics 1.2**: 12
- **SMA1201 Mathematics 1AP**: 12
- **SMA1202 Mathematics 1AQ**: 12

### Year 2
- **EED2012 Design 2.2**: 10
- **EED2012 Design 2.2**: 10
- **EED2012 Design 2.2**: 10
- **EEL2001 Linear Systems & Applications 1**: 10
- **EEL2002 Linear Systems & Applications 2**: 10
- **EES2001 Programming with Objects 2.1**: 10
- **EET2011 Communication Systems 2.1**: 10
- **SMA2201 Mathematics B**: 10
- **SMA2201 Mathematics B**: 10
- **ECC2502 Software Engineering 2.2**: 10

### Year 3
- **BMO3522 Engineers as Managers**: 8
- **ECC3511 Software Engineering 3.1**: 8
- **ECC3601 Windows Programming 3.1**: 8
- **EED3600 Design 3.0**: 12
- **EEH3202 Computer and Digital Design 3.2**: 8
- **EEH3204 Integrated Circuit Design 3.2**: 8
- **EEH3204 Embedded Systems 3.1**: 8
- **EET2502 Computer Communication 2.2**: 8
- **Electives** (three for semester 1 and two for semester 2): **EED2002**
  - **Circuits and Control 2.2**: 8
- **EEA4004 Robotics and Automation 4.1**: 8
- **ECC3801 Data Based Systems**: 8
- **ECC3802 Artificial Intelligence 3.2**: 8
- **ECC3804 Computer Graphics 3.2**: 8
- **EET2001 Multimedia Program Production 2.1**: 8
- **EET2101 Multimedia Techniques 2.1**: 8

### Year 4
- **BMO 4551 Human and Industrial Relations**: 8
- **BMO 3422 Strategic Management**: 8
- **EED4000 Design 4.0**: 20
- **EEH4101 Computer and Digital Design 4.1**: 8
- **EEH4102 Computer and Digital Design 4.2**: 8
- **EET4101 Computer Systems 4.2**: 8
- **EET4102 Computers 4.3**: 8
- **Electives** (two for semester 1 and two for semester 2): **ECC3504 Computers in Society 3.2**: 8
- **EEH3201 Computer and Digital Design 3.1**: 8
- **EEL4401 Neural Network and Fuzzy Logic 4.1**: 8
- **EET3501 Computer Communication 3.1**: 8
- **EET3502 Computer Communication 3.2**: 8
- **SCM3314 Object Oriented Analysis and Design**: 8

### Assessment
The assessment for each subject is detailed in the subject listings.
Course Regulations
Are given following the Bachelor of Engineering in Telecommunication engineering.

Professional Recognition
The Institution of Engineers, Australia recognises the Electrical and Electronic Engineering degree as meeting all academic requirements for corporate membership as a Chartered Engineer, Australia. Completion of this degree, including 12 weeks approved experience, will admit to graduate membership. The Bachelor of Engineering - Computer Engineering is expected to meet the requirements for membership of the Institution of Engineers, Australia. Accreditation has been sought in 1998.

The Institution of Radio and Electronics Engineers, Australia, recognises the Electrical and Electronic Engineering degree as meeting all academic requirements for corporate membership as a Chartered Electronic Engineer. The Australian Computer Society recognises the Electrical and Electronic Engineering degree for professional membership.

Overseas professional institutions such as the British Computer Society, the Institution of Electrical Engineers (UK), the Institution of Electrical and Electronic Engineers (USA), and the Institution of Engineers, Malaysia, in general provide similar recognition.

Bachelor of Engineering in Electrical and Electronic Engineering
Course Code: EBEE

The Bachelor of Engineering in Electrical and Electronic Engineering degree course provides an extensive core of studies in the major electrical engineering fields of electronics, communications, computer systems, software engineering, power engineering and control engineering. Outstanding graduates may be awarded the degree of Bachelor of Engineering with honours.

The degree course is designed to provide both the breadth and specialisation appropriate to the electrical and electronic engineer’s professional career in Australia and overseas.

The first two years of the course develop the basic concepts in electrical and electronic engineering, digital electronics and computer systems and programming, together with related engineering, applied science studies and practical application in design projects and laboratory.

In third and fourth years the core areas are developed in depth. Students also choose electives in fourth year in those electrical, electronic, or computer systems engineering areas in which they have special interest. Again the advanced students are involved in ‘real world’ electrical engineering through circuit and system projects that are often part of actual staff or industry projects.

The four-year course leading to the award of your degree, will require your full effort but the reward of success will be in your career and salary prospects, your status in the community, and the opportunity for achievement in an interesting and challenging profession.

Course Objectives
The main objectives of the course are to: provide an integrated foundation for electrical disciplinary studies and course specialisation into the particular areas of communication, computer, control, electronic and power engineering; develop attitudes of personal initiative and enquiry in students that may continue to further education and meet the technological changes in their profession; develop oral and written communications and an understanding of society and the engineer’s role in society; provide for professional recognition by the Institution of Engineers, Australia and other professional bodies.

Course Structure
Course is subject to review. In 2004, years 1, 3 and 4 are as listed. The second year structure is subject to approval.

<table>
<thead>
<tr>
<th>Credit points</th>
<th>Semester</th>
</tr>
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Year 1
ACE1541 Engineering Communication or 12 - 12
EEL1001 Circuit Theory & Application 1 12 - 12
EEA1002 Digital Electronics 1 12 - 12
EEH1001 Digital Electronics 1 12 - 12
EEL1002 Circuit Theory & Application 2 12 - 12
EEA1401 Programming 1 12 - 12
EEA1402 Programming 2 12 - 12
EEA4001 Electric Circuits 1 12 - 12
EEA4002 Electric Circuits 2 12 - 12
SM2001 Mathematics IA 1 12 - 12
SM2002 Mathematics IA 2 12 - 12

Year 2
EEE2001 Programming with Objects 1 10 - 10
EEE2001 Programming with Objects 2 10 - 10
SM2201 Mathematics B 10 - 10
SM2202 Mathematics B 10 - 10

Year 3
BMO3522 Engineers as Managers 8 - 8
EEA4001 Control Systems 3.1 8 - 8
EEA4001 Control Systems 3.2 8 - 8
EEA4001 Control Systems 3.2 8 - 8
EB2401 Design 3.0 12 - 12
EED3501 Electronic Circuits 3.1 8 - 8
EED3502 Electronic Circuits 3.2 8 - 8
EEE3520 Computer & Digital Design 3.1 8 - 8
EEE3520 Computer & Digital Design 3.2 8 - 8
EEE3520 Computer & Digital Design 3.2 8 - 8
EEE3520 Computer & Digital Design 3.2 8 - 8
EEE3520 Power Systems 3.1 8 - 8
EEE3520 Power Systems 3.2 8 - 8
EEE3520 Power Systems 3.2 8 - 8
EEE3520 Power Systems 3.2 8 - 8
EEE3520 Power Systems 3.2 8 - 8
EEE3520 Power Systems 3.2 8 - 8

Year 4
Core
BMO4400 Strategic Management 20 - 20
BMO4400 Design & Project Management 20 - 20

Group A (any two streams)
EEE4001 Computer Control 4.1 8 - 8
EEE4002 Computer Control 4.2 8 - 8
EEE4002 Computer Control 4.2 8 - 8
EEE4002 Computer Control 4.2 8 - 8
EEE4002 Computer Control 4.2 8 - 8
EEE4002 Computer Control 4.2 8 - 8
EEE4002 Computer Control 4.2 8 - 8
EEE4002 Computer Control 4.2 8 - 8
EEE4002 Computer Control 4.2 8 - 8

Group B Electives* (any two electives in each semester)
EEE4001 Robotics and Automation 4.1 8 - 8
EEE4004 RF Engineering 8 - 8

*Plus Group B Electives* (any two electives in each semester)

FACULTY OF SCIENCE, ENGINEERING AND TECHNOLOGY
Bachelor of Engineering in Microelectronic Systems

Course Code: EBMI

Course Objectives
The Bachelor of Engineering in Microelectronic Systems course is designed to provide basic knowledge and technical skills in the areas of mathematics, electronics, digital systems and computer programming. Develop integrated circuit design expertise in embedded systems, digital, mixed signal and system-on-chip systems design and verification. Develop a basic understanding of the device physics, the fabrication process and the testing to the level needed by IC designers. Develop the advanced technical and algorithmic skills necessary to master state of the art microelectronic technology. Develop research skills necessary to obtain specialist knowledge of issues pertinent to integrated circuit design. Develop management skills in relation to human and industrial relations, strategic management, role of engineer as a manager and financial and resource management. Develop attitudes of personal initiative and enquiry in students so that they may continue to further education and meet the technological changes in their profession. Develop oral and written communication skills, an understanding of society and the computer system engineer’s role in society; Develop professional awareness, including social and legal responsibilities, ethics and membership of a professional society.

Course Structure
Course is subject to review. In 2004, years 1, 3 and 4 are as listed. The second year structure is subject to approval.

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<td>ECH4104</td>
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<td>ECH4004</td>
<td>Distribution Systems 4.2</td>
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*Appropriate semester electives from other degree courses to be approved by the Year Co-ordinator

Bachelor of Engineering in Telecommunications Engineering

Course Code: EBTE

The Bachelor of Engineering in Telecommunication is an engineering degree course that provides an extensive core of studies in the major Multimedia Telecommunications fields of electronics, communications, satellite communications, fibre optic technology, audio/video production and multimedia techniques. Outstanding graduates may be awarded the degree of Bachelor of Engineering with Honours.

The degree course is designed to provide both the breadth and specialisation appropriate to multimedia communication careers in Australia and overseas.

The first one and a half years of the course develop the basic concepts in electronic engineering, digital electronics and computer systems and programming, together with related engineering science studies.

In the third and fourth years the core areas are developed in depth. Students also choose electives in those multimedia communication subjects in which they have special interests.

The four year course leading to the award of a degree, will require full effort but the reward of success will be in the chosen career and salary prospects and the opportunity for achievements in an interesting and challenging profession.
Course Objectives
The main objectives of the course are to provide an integrated foundation for electrical disciplinary studies and course specialisation into the particular areas of multimedia telecommunications and computer technologies; develop attitudes of personal initiative and enquiry in students that may continue to further education and meet the technological changes in their profession; develop oral and written communications and an understanding of society and the engineer's role in society; provide for professional recognition by the Institution of Engineers, Australia and other professional bodies.

Course Structure
Course is subject to review. In 2004, years 1, 3 and 4 are listed. The second year structure is subject to approval.

Credit points
<table>
<thead>
<tr>
<th>Semester</th>
<th>One</th>
<th>Two</th>
</tr>
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<tbody>
<tr>
<td><strong>Year 1</strong></td>
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<tr>
<td>ACE1541 Engineering Communication or</td>
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<td>EIH1001 Digital Electronics 1</td>
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<tr>
<td>EEI1001 Circuit Theory &amp; Application 1</td>
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<tr>
<td>EEL1002 Circuit Theory &amp; Application 2</td>
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<tr>
<td>EES1001 Programming 1</td>
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<td>EES1002 Programming 2</td>
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<tr>
<td>SMA1202 Mathematics 1AQ</td>
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| **Year 2** |     |     |
| EED2012 Design 2.2 | 10 |    |
| EEE2011 Electronics 2.1 | 10 |    |
| EEE2012 Electronics 2.2 | 10 |    |
| EEE2011 Digital Systems 2.1 | 10 |    |
| EEE2012 Digital Systems 2.2 | 10 |    |
| EEL2001 Linear Systems and Applications 1 | 10 |    |
| EEL2002 Linear Systems and Applications 2 | 10 |    |
| EES2001 Programming with Objects 2.1 | 10 |    |
| EET2011 Communication Systems 2.1 | 10 |    |
| SMA2201 Mathematics B | 10 |    |
| SMA2321 Mathematics 2Q | 10 |    |
| EET2302 Multimedia Engineering Techniques 2.2 | 10 |    |

| **Year 3** |     |     |
| BMO3522 Engineering as Managers | - | 8 |
| EEC3001 Software Systems 3.1 | 8 |    |
| EED3000 Design 3.0 | 12 | 12 |
| EEE3001 Electronic Circuits 3.1 | 8 |    |
| EEE3002 Electronic Circuits 3.2 | 8 |    |
| EEE3201 Computer & Digital Design 3.1 | 8 |    |
| EEE3202 Computer & Digital Design 3.2 | 8 |    |
| EET3101 Communication Engineering 3.1 | 8 |    |
| EET3102 Communication Engineering 3.2 | 8 |    |
| Electives (any four of the following) |     |     |
| EIH3002 Multimedia Circuits and Systems 3.2 | 8 |    |
| EET3002 Multimedia Comm Network 3.2 | 8 |    |
| EET3501 Computer Communication 3.1 | 8 |    |
| EET3502 Computer Communication 3.2 | 8 |    |
| SPH4531 Fibre Optic Technology Fundamentals | 8 |    |

| **Year 4** |     |     |
| BMO4551 Human & Industrial Relations | 8 |    |
| BMO3422 Strategic Management | - | 8 |
| EED4000 Design & Project Management 4.0 | 20 | 20 |
| EET4001 Signal Processing 4.1 | 8 |    |
| EET4002 Signal Processing 4.2 | 8 |    |
| EET4701 Communication Systems 4.1 | 8 |    |
| EET4702 Communication Systems 4.2 | 8 |    |
| EYE4101 Computer Systems 4.1 | 8 |    |
| EYE4102 Computer Systems 4.2 | 8 |    |
| Electives (any two electives) |     |     |
| EET4104 Satellite Communication 4.1 | 8 |    |
| EEE4404 Microwave Electronics 4.2 | 8 |    |
| EET4302 Multimedia Systems Design 4.2 | 8 |    |
| EET4401 Mobile Communication Systems 4.1 | 8 |    |
| EET4402 Teletraffic Engineering 4.2 | 8 |    |
| EET4501 Broadband ISDN 4.1 | 8 |    |
| EYE4002 Multimedia Network Management 4.2 | - | 8 |

*Appropriate Semester Elective from other degree courses

Bachelor of Engineering in Software Engineering
Course Code:
(Subject to approval).

Course Structure

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<td>SPH4531 Fibre Optic Technology Fundamentals</td>
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<table>
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<td>EET4302 Multimedia Systems Design 4.2</td>
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<td>EYE4002 Multimedia Network Management 4.2</td>
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*Appropriate Semester Elective from other degree courses
Bachelor of Engineering in Photonics

Course Code: EBPH

Course Objectives

The Bachelor of Engineering in Photonics seeks to prepare students for employment in those parts of the telecommunications and information systems industries that are increasingly relying on the use of light to transfer and store information. The course has a high degree of commonality; both with the Bachelor of Engineering Science in Photonics and with the Bachelor of Engineering in Telecommunications and other degrees in Electrical and Electronic Engineering.

The Bachelor of Engineering provides students with a wider range of modern optics subjects and a greater depth of knowledge in electronics and communications than does the Bachelor of Engineering Science in Photonics.

Course Structure

<table>
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<tr>
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Year 2

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<td>Data Acquisition 1</td>
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<td>Mathematics C1</td>
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<tr>
<td>SMA2242</td>
<td>Statistics for Engineers</td>
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</table>

Bachelor of Engineering Science in Photonics

Course Code: SBPH

Course Objectives

The Bachelor of Engineering in Photonics seeks to prepare students for employment in those parts of the telecommunications and information systems industries that are increasingly relying on the use of light to transfer and store information. The course has a high degree of commonality; both with the Bachelor of Engineering in Telecommunications and other degrees in Electrical and Electronic Engineering.

The Bachelor of Engineering Science provides students with a focused range of modern optics subjects and significant support subjects. Students who successfully complete the course and wish to proceed with further studies in Photonics may proceed to either the Bachelor of Science (Honours) or the Bachelor of Engineering in Photonics.

Course Structure

Course is subject to review. In 2004, years 1, 3 and 4 are as listed. The second year structure is subject to approval.
Bachelor of Science in Applied Physics and Computing

Course Code: SBPC

(There is no intake into this course in 2004)

Course Objectives

The broad aim of this three-year full-time course is to produce professionally qualified graduates with a strong background in both physics and computing. This can be complemented by a knowledge of selected areas. By selecting Business subjects graduates are prepared for careers involving applied physics and/or computing; with the opportunity to be equipped with introductory business and management skills in recognition of the importance of these in many technical positions.

The physics component of the course emphasises, particularly in the third year, the technologically important areas of Modern Optics (including Fibre Optics, Laser Physics and Photonics). The lecture material in these and other areas is supported by extensive laboratory programs. The physics component of the course is supported by the inclusion of relevant mathematics subjects.

Students choose four elective subjects enabling them to broaden their degree or specialise further in either Physics or Computing.

Course Duration

The course is offered on a full-time basis over three years.

Course Structure

(Revised course introduced in 1997)

Subjects are taken over six semesters (three years).

<table>
<thead>
<tr>
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<th>Credit Points</th>
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<tr>
<td>2000</td>
<td>BHO1106</td>
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</tbody>
</table>

Elective Subjects

The 40 elective points allow students to choose subjects from any area, either to broaden their degree or for greater specialisation in Physics or Computing. Students have the choice of taking all their subjects from one area or from a range of areas. By undertaking four subjects from one area, other than physics or computing, students could obtain a minor in that area, e.g. Business. Some possibilities are listed below.

Physics Options

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credit Points</th>
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<tbody>
<tr>
<td>SPH3430</td>
<td>Physics Project</td>
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<tr>
<td>SPH3441</td>
<td>Optical Properties of Materials</td>
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<td>SPH3451</td>
<td>Advanced Optics and Optical Design</td>
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</tbody>
</table>

Computing Options

A broad range of subjects from the courses run by the School may be undertaken, as listed in this Handbook. These subjects are mostly 10 credit points each.

Business Options

It is possible for students to complete a minor in any of the areas of marketing, economics, business law, administrative studies or accounting by choosing a four-subject sequence in these areas. Students will be given guidance about subject selections. Suggested subject sequences in the various business areas are listed below. In some cases other options exist. Students intending to complete a minor should consult with the appropriate business department at an early stage to discuss their choice of subjects.

A description of these subjects (10 credit points each) is found in the Faculty of Business and Law Handbook.

Marketing

Two-subject sequence:

- BHO2231 Marketing 1
- BHA3432 Marketing 2

Additional two subjects to complete minor:

- BEO1106 Business Statistics
- BHA3434 Consumer Behaviour
Economics
Two-subject sequence:
BEO1103 Microeconomic Principles
BEO1104 Macroeconomic Principles
Additional two subjects to complete minor to be selected in consultation with the Department of Applied Economics

Business Law
Two-subject sequence:
BLO1105 Business Law
BLO2300 Commercial Law
Additional two subjects to complete minor:
BLO2205 Corporate Law
BLO2206 Taxation Law and Practice

Administrative Studies
Two-subject sequence:
BMO1102 Management and Organisational Behaviour
BMO2271 Organisations
Additional two subjects to complete minor:
BMO3421 Managing the Service Organisation
BMO3422 Strategic Management

Accounting
Two-subject sequence:
BAO1101 Accounting for Decision Making
BAO1107 Accounting Information Systems
Additional two subjects to complete minor:
BAO2202 Financial Accounting
BAO2204 Management Accounting

Assessment
The assessment for each subject is detailed in the subject listings.
The use of electronic calculators and electronic storage devices is
not permitted in any examination unless specified in the subject
guide for that subject and/or examination paper for that subject.

Bachelor of Science in Computer Technology
Course Code: EBCT

Course Objectives
The rapid advances in computer applications and technology, particularly in the communications and automation fields, mean that many commercial and industrial problems are of a multidisciplinary nature, requiring expertise in both Computer Systems and Electrical and Electronic Engineering.

With this as a general background the course was specifically designed to combine the desirable relevant features of electrical and electronic and computer systems engineering. Graduates from this course would, therefore, possess the necessary skills to work in the electronic/computer systems engineering fields. To this end the course is strongly application oriented with a significant hardware and software project workload.

Admission Requirements
The prerequisite subjects for admission into the first year of the course are based on entry at post Year 12, Victorian Certificate of Education, or equivalent level, and are as follows:

Prerequisites Units 3 and 4
Mathematical Methods, English

Bachelor of Science in Optoelectronics
Course Code: SBPO
(There is no intake into this course in 2004)

Course Objectives
The broad aim of this photonics course is to produce professionally qualified, and recognised, graduates with a strong background in both physics and optical technology. This can be complimented with business, legal and management electives to prepare graduates for employment in professional technical positions.

Admission at Other Levels
Persons transferring from other courses or having overseas or other entrance qualifications of at least equivalent standard to those listed above, should apply for admission in the normal manner.

Course Structure
In 2004, years 1, 3 and 4 are as listed. The second year structure is subject to approval.

<table>
<thead>
<tr>
<th>Semester</th>
<th>Credit points</th>
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Year 1
ACE1541 Engineering Communication or 15 -
EIH1001 Digital Electronics 1 15 -
ACE1542 Engineering Communication or - 15
EIH1001 Digital Electronics 1 - 15
EIH1002 Electronics 1.2 15 -
EEL1001 Circuit Theory and Application 1 - 15
ETC1001 Computer Technology 1 15 -
ETC1111 Programming for Technology 1 15 -
ETC1112 Programming for Technology 2 15 -
SMA1201 Mathematics 1AP 15 -
SMA1202 Mathematics 1AQ - 15

Year 2
EEN2301 Computer Communications 2.1 12
EEC2301 Operating Systems 2.1 12
EIH1001 Digital Systems 2.1 12
EEC2601 Data Structures and Algorithm Analysis 2.1 OR
SCM2311 Object Oriented Programming 1 12
SCM2711 Discrete Mathematics 12
EED2502 Design Project 2.2 12
EEC2302 Software Engineering 2.2 12
EIH2012 Digital Systems 2.2 12
EEN2302 Computer Communications 2.2 12
EEC2602 Data Structures and Algorithm Analysis 2.2 OR
SCM3311 Object Oriented Programming 2 12

Year 3
ACE3143 English Language and Communication 3 10 -
ACE3144 English Language and Communication 4 - 10
EED3510 Design Project 10 -
EEG3511 Software Engineering 3.1 -
Electives (3 from approved list) 30 -
Electives (4 from approved list) - 40

Bachelor of Science in Optoelectronics
Course Code: SBPO
(There is no intake into this course in 2004)

Course Objectives
The broad aim of this photonics course is to produce professionally qualified, and recognised, graduates with a strong background in both physics and optical technology. This can be complimented with business, legal and management electives to prepare graduates for employment in professional technical positions.
The optical technology components of the course emphasise, particularly in the third year, the technologically important areas of fibre optics, optoelectronics, laser physics and applied optics. Computer design and simulation of optical systems is included.

The students are prepared for their professional working life by undertaking a major technical project. The physics, engineering and optical technology components of the course are complemented by the inclusion of relevant mathematics and computing subjects.

The business electives in the course provide insight into broad aspects of management systems, covering such areas as project management and control, communication skills, personnel management, cost benefit analysis and legal aspects of business.

Progression and exclusion regulations relating to this course and the former are given after the course structure.

**Course Structure**

*Revised course introduced in 1997*

Subjects are taken over six semesters (three years).

<table>
<thead>
<tr>
<th>Year 2</th>
<th>Semester</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>Two</td>
<td></td>
</tr>
<tr>
<td>ACE2190 Professional Communication</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>EED2002 Design A 2.2</td>
<td>-</td>
<td>10</td>
</tr>
<tr>
<td>EMW2001 Materials</td>
<td>10</td>
<td>-</td>
</tr>
<tr>
<td>SMA2321 Mathematics 2Q</td>
<td>-</td>
<td>10</td>
</tr>
<tr>
<td>SPH2000 Physics 2</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>SPH2432 Data Acquisition and Interfacing</td>
<td>10</td>
<td>-</td>
</tr>
<tr>
<td>Elective</td>
<td>-</td>
<td>10</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>60</strong></td>
<td><strong>60</strong></td>
</tr>
</tbody>
</table>

**Year 3**

<table>
<thead>
<tr>
<th>Year 3</th>
<th>Semester</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>Two</td>
<td></td>
</tr>
<tr>
<td>SCM2111 Data Communications &amp; Networks 1</td>
<td>10</td>
<td>-</td>
</tr>
<tr>
<td>SMA3311 Mathematics 3P</td>
<td>10</td>
<td>-</td>
</tr>
<tr>
<td>SPH3100 Physics 3O</td>
<td>25</td>
<td>20</td>
</tr>
<tr>
<td>SPH3200 Optoelectronics 3</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>SPH3472 Technical Project</td>
<td>-</td>
<td>20</td>
</tr>
<tr>
<td>Elective</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>65</strong></td>
<td><strong>55</strong></td>
</tr>
</tbody>
</table>

Electives (10 credit points each):

- BMO4551 Human and Industrial Relations
- BMO 3522 Engineers as Managers
- SPH1111 Astronomy
- SPH3941 Computational Physics A
- SPH3942 Computational Physics B
- Other approved subjects

**Bachelor of Science (Honours) in Computer Technology**

*Course Code: EHEC*

**Course Objectives**

The course is designed to enhance the skills acquired in the Computer Technology Degree course, by developing the research potential of the students and allowing in-depth study topics in a range of computer technology subjects.

The Honours Degree provides for a research project and a selection of advanced elective subjects. This year may lead to further postgraduate opportunities. The choice of subjects is dependent upon the student's background and intended area of further study.

**Admission Requirements and Prerequisites**

To qualify for admission the student must have completed an appropriate undergraduate course of at least three years in duration, and obtained results of 60% and higher in the majority of subjects undertaken.

**Course Duration**

The course is offered on a full-time basis over one year, or part-time equivalent.

**Course Structure**

**Year 1**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEC4700 Research Project</td>
<td>20 hours per week</td>
</tr>
<tr>
<td>Elective subjects (3 x 3 hours per semester)</td>
<td>120 credit points</td>
</tr>
</tbody>
</table>

The elective subjects are to be chosen from the range of final year undergraduate subjects (no more than two at third year level) and postgraduate subjects, as approved by the Course Co-ordinator.

**Bachelor of Science (Honours) - Physics**

*Course Code: SHPC*

**Course Objectives**

The course aims to broaden and deepen the student's knowledge and understanding of physics by the completion of advanced courses and to provide a basic training in the skills necessary to undertake research in physics. Research training will include the ability to devise, design and carry out research intended to yield data relevant to the solution of specific problems, the ability to develop and refine working hypotheses, to critically analyse data and to report results in an appropriate manner.

The research project is normally undertaken in one of the following areas of expertise of the section: optical fibre sensors, laser physics, optoelectronic imaging, applied optics and vacuum technology.

**Admission Requirements**

To qualify for entry to the honours program the applicant should have completed the requirements for a pass degree with major studies in an appropriate discipline. Entry is at the discretion of the Applied Physics section and applicants should normally have obtained a 'credit' average in the final year of the pass degree. For mature age applicants, an appropriate combination of qualifications and experience will be considered.

**Course Duration**

The course will be offered on a full-time basis over one year or part-time equivalent.

**Course Structure**

The structure of the course is as follows:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPH4410 Physics 4 (Honours)</td>
<td>20 hours per week</td>
</tr>
<tr>
<td>Elective subjects (10 credit points each)</td>
<td>120 credit points</td>
</tr>
</tbody>
</table>

**Academic Progression**

A student will not be allowed to repeat the Honours year or any component of it without the permission of the Course Co-ordinator.
School of Computer Science and Mathematics

The School of Computer Science and Mathematics offers undergraduate courses leading to the award of Bachelor of Science in:

- Computer Science
- Computer Science and Aviation
- Computer and Mathematical Sciences

The School of Computer Science and Mathematics offers a comprehensive portfolio of undergraduate, postgraduate and research study programs in the fields of applied physics, computer science, electrical and electronic engineering and mathematical science. All courses are designed to have a strong practical bias and include a significant amount of ‘hands-on’ project work component. They are taught in laboratories with modern equipment and computing facilities. As a result, our graduates are highly regarded and sought after by industry.

Details of the School’s research activities and postgraduate degree programs are described in the Postgraduate Studies section of the Handbook.

The School has a large enrolment of both local and international students. Some programs are offered offshore in Hong Kong and other parts of Asia.

The Bachelor of Science awards have a large degree of commonality of subjects in first year which facilitates possible transfer between courses.

Computer Facilities

The School has a number of computing laboratories for teaching and research. These laboratories are equipped with the latest equipment such as Pentium PCs, Unix workstations, and high speed line printers and laser printers. Graphical user interfaces and menu-driven interfaces are provided for easy access to services. Recent acquisitions include multimedia facilities.

Articulation Pathways

Holders of a TAFE Associate Diploma in Information Technology may be admitted into Year One of the School’s undergraduate courses.

Special advanced admission provisions apply to certain overseas Diploma and Higher Diploma qualifications.

Assessment

Assessment in subjects is designed to monitor a student’s progress and achievement as well as contribute to and enhance their learning. Normally a prescribed range of assessment methods is employed in anysubject.

Assessment is by a combination of written assignments, tests, laboratory work and examinations.

Supplementary assessment is not normally available in any subject except at the discretion of the Head of School in exceptional circumstances.

Special Consideration in assessment may be granted on the grounds defined by the University Statutes.

Guidelines on the use of electronic calculators and other electronic storage devices in examinations are provided in individual subject outlines distributed to students within the first two weeks of semester and included on final examination papers.

Electronic calculators and other electronic storage devices will not be permitted where the above provisions have not been made.

Professional Recognition

Graduates are eligible for membership of the Australian Computer Society at the professional level.

Bachelor of Science in Computer Science

Course Code: SBCO

Bachelor of Science in Computer and Mathematical Sciences

Course Code: SBCM

Course Objectives

The two programs all aim to provide graduates with the analytical ability, factual knowledge and communication skills that will suit them for employment in business and industry in one or more of the following areas:

- Computing: programming, software development, systems design and analysis, applications development, technical support.
- Statistics: data analysis, quality improvement, market research, forecasting, econometrics.
- Operations Research: production planning and scheduling, simulation studies, transportation planning, resource allocation.
- Financial Modelling: investment analysis, project evaluation.
- Secondary Teaching: mathematics, computer science.

One of the most significant features of the courses is the attempt to involve students in the solution of real world problems. Naturally, problem-solving is a large component of all the subjects taught in the course but, starting in the first year, special emphasis is placed on problem formulation and report writing.

All students undertake at least one industry project in the third year of the course. These projects tend to be related to problems encountered in specific areas of the manufacturing industry, banking or finance, government statutory authorities, or services such as hospitals and local councils.

As evidenced by the high rate of job placement in the areas listed above, graduates have been well-received in industry, commerce and government.

Admission Requirements

To qualify for admission to the course an applicant should have successfully completed Year 12 of the Victorian Certificate of Education (VCE), with a study score of at least 20 in English and 22 in Mathematical Methods, or have the equivalent of these qualifications. Completing Specialist Mathematics leads to an ENTER score 3 points higher.

Alternatively, entry is via TAFE articulation or under mature age provisions.

Course Duration

The courses are offered on a full-time basis over three years. Summer evening subjects are also offered to assist these students to complete their studies.
Course Structure

<table>
<thead>
<tr>
<th>Credit points</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>Two</td>
</tr>
</tbody>
</table>

**Year 1**

*ACE1141 English Language and Communication 1 7 -
*ACE1142 English Language and Communication 2 - 8
SCM1311 Programming 1 15 -
SCM1312 Programming 2 - 15
SCM1114 Introduction to Computing and the Internet 15 -
SCM1115 Computer Systems and Architecture - 15
SCM1613 Applied Statistics 1 15 -
SCM1614 Applied Statistics 2, or BAO9913 Account’s & Information Systems 15 -
SCM1711 Mathematical Foundations 1 15 -
SCM1712 Mathematical Foundations 2 - 15

**Year 2**

Five Electives from lists A and B (5 x 3 hours) 60 -
Five Electives from lists A and B (5 x 3 hours) - 60

**Year 3**

ACE3143 English Language and Communication 3 12 -
ACE3144 English Language and Communication 4 - 12
SCM3001 Project 1 12 -
SCM3002 Project 2 - 12
Three Electives from lists A and B (3x3 hours) 36 -
Three Electives from lists A and B (3x3 hours) - 36

*An enabling subject for those students identified as requiring assistance in English.

**Second Year Subjects**

SCM2111 Data Communications and Networks 1
SCM2211 Operating Systems
SCM2212 Database Systems 1
SCM2218 Database Systems 2
SCM2311 Object Oriented Programming 1
SCM2312 Software Engineering 1
SCM2313 Software Development
SCM2315 Advanced Programming
SCM2351 Image Processing 1

**Second/ Third Year Subjects**

SCM2213 Computer Graphics
SCM3311 Data Communications and Networks 2
SCM3312 Object Oriented Programming 2
SCM3313 Software Engineering 2

**Third Year Subjects**

SCM3112 User Interface Design
SCM3113 Multimedia Systems Design
SCM3115 Architecture for Enterprise Wide Computing
SCM3211 Database Systems 3
SCM3312 Intelligent Systems
SCM3314 Object Oriented Analysis and Design
SCM3315 Network Operating Systems Administration
SCM3511 Image Processing 2
SCM3808 Advanced Object Oriented Programming

**List B**

SCM2411 Mathematical Economics 1
SCM2412 Mathematical Economics 2
SCM2611 Linear Statistical Models
SCM2612 Statistical Forecasting

SCM2614 Statistical Data-mining
SCM2711 Discrete Mathematics
SCM2713 Modelling for Decision Making
SCM2911 Linear Optimisation Modelling
SCM2912 Production Scheduling
SCM2915 Stochastic and Combinatorial Optimisation

**Third Year Subjects**

SCM3200 Selected Topics in Operations Research and Statistics
SCM3411 Mathematical Economics 3
SCM3613 Time Series Analysis
SCM3617 Quality Improvement and Experimental Design
SCM3618 Software and Hardware Reliability
SCM3712 Coding, Cryptography and Computer Security
SCM3714 Computational Modelling
SCM3911 Simulation

To qualify for the Bachelor of Science in Computer Science (SBCO), students must attain at least a pass grade in all first year subjects, making up a total of 120 credit points, at least pass grades in ACE3143, ACE3144, SCM30001, SCM3002 and in a total of 16 other electives. At least 10 of these electives must be taken from the available list of computer science electives (List A).

To qualify for the Bachelor of Science in Computer and Mathematical Sciences (SBCM), students must attain at least a pass grade in all first year subjects, making up a total of 120 credit points, at least pass grades in ACE3143, ACE3144, SCM3001, SCM3002 and in a total of 16 other electives where less than 10 (but at least 2) of these are taken from the available list of computer science electives (List A).

**Assessment**

Assessment for each subject is detailed in the subject listings.

**Course Regulations**

**Progress Regulations**

The Academic Progress Committee (Board of Examiners’ Meeting will, at the end of each semester consider the results and progress of all students enrolled in the courses. Progression through each course is based on the following guidelines:

(i) Where any compulsory subject must be repeated, enrolment in that subject must be at the first opportunity following the initial failure;
(ii) Students will not normally be allowed to enrol in any subject for which at least a P grade has not been attained in any of the prerequisite subjects;
(iii) Student enrolment will not normally be approved where the total proposed subject hours exceeds the normal semester load.

**Completion by Compensation**

No stage completions by compensation will be granted.

**Unsatisfactory Progress**

These regulations should be read in conjunction with the Victoria University Statute 6.4.1 - Unsatisfactory Progress.

(a) The following shall constitute unsatisfactory progress:
   – failure in at least 50% of the assessed subjects for which a student has enrolled in a semester of study;
   – failure in any subject twice;
   – transgression of a conditional enrolment stipulation and agreement.

(b) Where a student’s progress is unsatisfactory, the section Academic Progress Committee may recommend the following:
   – a restricted and conditional enrolment only be approved;
   – exclusion from the course.
(c) A student who wishes to appeal against the section’s written recommendation is required to do so in accordance with the University Statutes. The procedures to be followed in lodging a submission, hearing of submissions and communicating the results of hearings are set out in the University Statutes.

(d) Excluded students have no right of re-admission to the course from which they were excluded. Students who have been excluded may apply for re-admission not less than one calendar year from the date of the exclusion. Students must provide, with their application, evidence of changed circumstances which significantly improve the applicant’s likelihood of academic success.

**Bachelor of Science in Computer Science and Aviation**

*Course Code: SBCA*

**Course Objectives**
The Bachelor of Science in Computer Science and Aviation aims to provide participants with:

- a practical and applied approach to the concepts of computer science and aviation;
- a range of skills in computer science, the mathematical sciences and aeronautical theory subjects at a level sufficient to satisfy the requirements for the issue of a Commercial Pilot’s Licence (CPL), and Instrument Rating.

The specific aims of the course are to provide students with the opportunity to:

- obtain level two accreditation from the Australian Computer Society (ACS) by passing all compulsory computer science subjects, and thus gaining professional recognition;
- develop skills and competence in aviation theory. The course is structured so that students can integrate practical flying training along with their academic studies and if choosing to do so and following the guidelines given, will complete the degree at the same time as qualifying for the issue of a Commercial Pilot’s Licence (CPL) and Command Instrument Rating.

**Course Duration**
The course is offered over three years full-time and part-time equivalent.

**Admission Requirements**

**Ordinary Admission Requirements**
To qualify for admission to the course an applicant should have successfully completed Year 12 of the Victorian Certificate of Education (VCE), with a study score of at least 20 in English and 22 in Mathematical Methods, or have the equivalent of these qualifications. Completing Specialist Mathematics leads to an ENTER score 3 points higher. Alternatively, entry is via TAFE articulation or under mature age provisions. In addition, students must pass the prescribed medical examination conducted by a Civil Aviation Safety Authority-Approved Aviation Medical Examiner in order to be permitted to commence flying training.

Applicants may be interviewed. Consideration by a Faculty panel may be given to relevant work experience, and any other activities undertaken demonstrating ability to achieve in this course.

**Advanced Standing**
Applicants entering with a Private Pilot’s Licence and more than 200 hours flying experience, or a Commercial Pilot’s Licence will be given full credit for the aviation subjects and can join the course with advanced standing provided they meet the admission requirements. The course provides existing pilots the opportunity to upgrade their non-flying skills as well as providing them with a degree qualification which is likely to be necessary if they are to further their career in the aviation industry.

**Course Structure**

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semester</td>
<td>One</td>
</tr>
<tr>
<td>*ACE1411 English Language and Communication 1</td>
<td>7</td>
</tr>
<tr>
<td>*ACE1412 English Language and Communication 2</td>
<td>-</td>
</tr>
<tr>
<td>SCA1101 Introductory Aeronautics</td>
<td>5</td>
</tr>
<tr>
<td>SCA1102 Basic Aeronautics</td>
<td>-</td>
</tr>
<tr>
<td>SCM1114 Introduction to Computing and the Internet</td>
<td>15</td>
</tr>
<tr>
<td>SCM1115 Computer Systems and Architecture</td>
<td>-</td>
</tr>
<tr>
<td>SCA1311 Programming 1</td>
<td>15</td>
</tr>
<tr>
<td>SCA1312 Programming 2</td>
<td>-</td>
</tr>
<tr>
<td>SCA1711 Mathematical Foundations 1</td>
<td>15</td>
</tr>
<tr>
<td>SCA1712 Mathematical Foundations 2</td>
<td>-</td>
</tr>
<tr>
<td>For those not doing ACE1141 and ACE1142</td>
<td>-</td>
</tr>
<tr>
<td>SCM1613 Applied Statistics 1</td>
<td>15</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 2</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semester</td>
<td>One</td>
</tr>
<tr>
<td>SCA2013 Aeronautics &amp; Navigation (PPL)</td>
<td>12</td>
</tr>
<tr>
<td>SCA2051 Performance &amp; Loading For CPL</td>
<td>-</td>
</tr>
<tr>
<td>SCA2053 Aerodynamics and Systems for the CPL</td>
<td>6</td>
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<tr>
<td>SCA2055 Flight Planning for CPL</td>
<td>-</td>
</tr>
<tr>
<td>SCA2057 Meteorology for the CPL</td>
<td>-</td>
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<tr>
<td>SCA2059 Air Law for the CPL</td>
<td>-</td>
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<tr>
<td>SCA2061 Navigation for the CPL</td>
<td>-</td>
</tr>
<tr>
<td>SCA2063 Human Factors for the CPL</td>
<td>-</td>
</tr>
<tr>
<td>SCM2211 Database Systems 1</td>
<td>12</td>
</tr>
<tr>
<td>SCM2218 Database Systems 2</td>
<td>-</td>
</tr>
<tr>
<td>SCM2311 Object Oriented Programming 1</td>
<td>12</td>
</tr>
<tr>
<td>SCM2312 Software Engineering 1</td>
<td>12</td>
</tr>
<tr>
<td>SCM2313 Software Development</td>
<td>-</td>
</tr>
<tr>
<td>SCM3112 User Interface Design or</td>
<td>-</td>
</tr>
<tr>
<td>SCM3113 Multimedia Systems Design</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 3</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semester</td>
<td>One</td>
</tr>
<tr>
<td>ACE3143 English Language and Communication 3</td>
<td>12</td>
</tr>
<tr>
<td>ACE3144 English Language and Communication 4</td>
<td>-</td>
</tr>
<tr>
<td>SCA3011 IREX - The Civil Aviation Instrument Rating Theory Exam</td>
<td>24</td>
</tr>
<tr>
<td>SCA3104 Human Factors for the ATPL</td>
<td>4</td>
</tr>
<tr>
<td>SCA3110 Flight Planning for the ATPL</td>
<td>12</td>
</tr>
<tr>
<td>SCA3112 Navigation for the ATPL</td>
<td>8</td>
</tr>
<tr>
<td>SCA3114 Aerodynamics and Systems for the ATPL</td>
<td>12</td>
</tr>
<tr>
<td>SCA3116 Performance and Loading for the ATPL</td>
<td>-</td>
</tr>
<tr>
<td>SCA3118 Meteorology for the ATPL</td>
<td>-</td>
</tr>
<tr>
<td>SCA3120 Air Law for the ATPL</td>
<td>-</td>
</tr>
</tbody>
</table>

The course is designed with the intention that students do the practical flying alongside their academic studies. Should they decide not to, they can still satisfy the requirements for the award.
Assessment
The assessment for each subject is detailed in the subject listing.

Course Regulations

Progression Regulations
The section’s Academic Progress Committee (Board of Examiners’ Meetings) will, at the end of each semester consider the results and progress of all students enrolled in the course. Progression through the course is based on the following guidelines:

Where any compulsory subject must be repeated, enrolment in that subject must be at the first opportunity following the initial failure.

For SCM coded subjects, students must not enrol in any subject for which at least an N1 grade hasn’t be attained in any of the prerequisite subjects.

For SCA coded subjects a pass must be obtained in SCA subject prerequisite subjects.

Student enrolment will not normally be approved where the total proposed subject hours exceeds the normal semester load.

Completion by Compensation
Completion by compensation will be granted under the following conditions:

Completion of subjects by compensation applies only to SCM1611, SCM1711, SCM1614, SCM1712, SPH1601, SPH1602.

If for a maximum of one of these subjects a student has an N1 grade and the average mark for all first year subjects is equal to or greater than 50, and all other subjects in the course have been passed, that student may be granted the award where that subject carrying the N1 grade is deemed completed by compensation.

The N1 grade in (ii) must be obtained in at most two sittings.

Unsatisfactory Progress
These regulations should be read in conjunction with the Victoria University Statute 6.4.1 – Unsatisfactory Progress.

The following regulations apply to both full-time and part-time students.

(a) The following shall constitute unsatisfactory progress:
   – failure in at least 50% of the assessed subjects for which a student has enrolled in a semester of study;
   – failure in any subject twice;
   – transgression of a conditional enrolment stipulation and agreement.

(b) Where a student’s progress is unsatisfactory, the section Academic Progress Committee may recommend the following:
   – a restricted and conditional enrolment only be approved;
   – exclusion from the course.

(c) A student who wishes to appeal against the section’s written recommendation is required to do so in accordance with the University Statutes. The procedures to be followed in lodging a submission, hearing of submissions and communicating the results of hearings are set out in the University Statutes.

(d) Excluded students have no right of re-admission to the course from which they were excluded. Students who have been excluded may apply for re-admission not less than one calendar year from the date of the exclusion. Students must provide, with their application, evidence of changed circumstances which significantly improve the applicant’s likelihood of academic success.

Bachelor of Science (Honours) in Computer Science
Course Code: SHCS

Bachelor of Science (Honours) in Computer and Mathematical Sciences
Course Code: SHCM

Students who do exceptionally well in their degree studies may be given the opportunity to gain an Honours degree by completing a fourth year of study in a specific field. This year is designed to assist students who may wish to proceed to higher degrees by research, but it also enables students to concentrate their studies more intensely on areas of particular interest.

The Honours year requires students to select coursework units from one of the fields of Computer Science, Statistics, and Operations Research. As well, a minor thesis must be completed.

International Programs: Offshore Program Conducted in Hong Kong

Bachelor of Science in Computer Science
Course Code: SBCO

Course Objectives
This course specifically caters for part-time students in Hong Kong who wish to obtain a professional qualification in Computer Science.

The course aims to produce graduates who have a sound conceptual foundation including practical understanding of recent developments in computer science and how computer science based techniques may be applied to solve a wide range of problems in business and industry.

Admission Requirements
Students are admitted at either level 1 or level 2

Level 1 Applicants should have a certificate (or equivalent) qualification with a quantitative background.

Level 2 Applicants should have qualifications in Engineering, Science or Computing at the Higher Certificate (or equivalent) level.
Course Structure

Level 1 Entrants

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACE1142</td>
<td>English Language and Communication 2</td>
<td>10</td>
</tr>
<tr>
<td>SCM1115</td>
<td>Computer Systems and Architecture</td>
<td>10</td>
</tr>
<tr>
<td>SCM1312</td>
<td>Programming 2</td>
<td>15</td>
</tr>
<tr>
<td>SCM1614</td>
<td>Applied Statistics 2</td>
<td>10</td>
</tr>
</tbody>
</table>

Level 2 Entrants

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCM3001</td>
<td>Computing Project</td>
</tr>
<tr>
<td>SCM3002</td>
<td>Computing Project</td>
</tr>
<tr>
<td>SCM2111</td>
<td>Data Communications and Networks 1</td>
</tr>
<tr>
<td>SCM2112</td>
<td>Operating Systems</td>
</tr>
<tr>
<td>SCM2211</td>
<td>Database Systems 1</td>
</tr>
<tr>
<td>SCM2218</td>
<td>Database Systems 2</td>
</tr>
<tr>
<td>SCM2311</td>
<td>Object Oriented Programming 1</td>
</tr>
<tr>
<td>SCM2312</td>
<td>Software Engineering 1</td>
</tr>
<tr>
<td>SCM2313</td>
<td>Software Development</td>
</tr>
<tr>
<td>SCM2612</td>
<td>Statistical Forecasting</td>
</tr>
<tr>
<td>SCM2711</td>
<td>Discrete Mathematics</td>
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<tr>
<td>SCM3311</td>
<td>Object Oriented Programming 2</td>
</tr>
<tr>
<td>SCM3312</td>
<td>Intelligent Systems</td>
</tr>
<tr>
<td>SCM3112</td>
<td>User Interface Design</td>
</tr>
<tr>
<td>SCM3113</td>
<td>Multimedia Systems Design</td>
</tr>
<tr>
<td>SCM3314</td>
<td>Object Oriented Analysis and Design</td>
</tr>
<tr>
<td>SCM3911</td>
<td>Simulation</td>
</tr>
</tbody>
</table>

Course Regulations

Students entering the program at level 1 are required to obtain a pass in at least fifteen subjects. Students entering the program at level 2 are required to obtain a pass in at least eleven subjects. Assessment throughout the course consists of tests, assignments, project work and end of semester examinations.

Regulations also include:

(a) A student cannot enrol in any subject without having passed the prerequisite;
(b) A student cannot undertake a project without having completed what the Academic Committee considers to be a suitable academic preparation;
(c) The following shall constitute unsatisfactory progress.
   - failure in 100% of enrolled subjects.
   - failure in any subject twice. (Failures in any examination and subsequent supplementary examination will be considered as having failed the subject once.)

Offshore Program Conducted in China

Bachelor of Science in Computer Science

Course Code: SBCO

The program offered to domestic students in Australia is also offered in China in conjunction with the Tianjin University of Commerce Boustead College. Currently students are accepted into the program with advanced standing and are able to complete the final semester of the course in China.

External Program Conducted in Sydney

Bachelor of Science in Computer Science

Course Code: SBCO

The program is offered at Alpha Beta Colleges in Sydney. The normal entry level is an approved TAFE Diploma of IT (or equivalent) which is normally of two years duration. Graduates of such approved programs will be granted subject exemption equivalent to twelve months (two semesters) of study.

Course Structure

Level 2

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SCM1312</td>
<td>Programming 2</td>
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<tr>
<td></td>
<td>SCM2312</td>
<td>Software Engineering 1</td>
</tr>
<tr>
<td></td>
<td>SCM1613</td>
<td>Applied Statistics 1</td>
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<td></td>
<td>SCM1711</td>
<td>Mathematical Foundations 1</td>
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<tr>
<td></td>
<td>SCM6822</td>
<td>Internet Programming</td>
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<td>SCM2311</td>
<td>Object Oriented Programming 1</td>
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<tr>
<td></td>
<td>SCM2313</td>
<td>Software Development</td>
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<tr>
<td></td>
<td>SCM2218</td>
<td>Database Systems 2</td>
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<td></td>
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<td>Mathematical Foundations 2</td>
</tr>
<tr>
<td></td>
<td>SCM2511</td>
<td>Image Processing 1</td>
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Level 3

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<tr>
<td></td>
<td>ACE3143</td>
<td>English Language &amp; Communication 3</td>
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<tr>
<td></td>
<td>SCM3001</td>
<td>Project 1</td>
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<td></td>
<td>SCM3313</td>
<td>Software Engineering 2</td>
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<td></td>
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<td>Object Oriented Programming 2</td>
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<td></td>
<td>ACE3144</td>
<td>English Language &amp; Communication 4</td>
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<td></td>
<td>SCM3314</td>
<td>Object Oriented Analysis &amp; Design</td>
</tr>
<tr>
<td></td>
<td>SCM3712</td>
<td>Coding, Cryptography &amp; Computer Security</td>
</tr>
</tbody>
</table>
School of Biomedical Sciences

The School of Biomedical Sciences at St Albans Campus of the University. In line with Faculty objectives, the School is committed to the development and promotion of science and technology. The School seeks to provide students with vocationally and educationally oriented experiences and expertise which will best equip them for entry into a work environment in which there is likely to be significant career changes during their working life. Consequently, the School provides courses and programs with a close relationship between theory and practice, and seeks to include relevant industrial experience within each award course.

The School also seeks to foster within its students a personal pride in, and a professional attitude to their work and a full understanding of their responsibilities to society as trained scientists and technologists.

It is the belief of the School that active involvement in research and consultancy is vital in providing quality teaching as well as in developing a viable and practical course for the students. To this end, most of the academic staff have a doctoral degree and substantial research and consultancy experience. The School endeavours to develop close relationships with industry and with the community to keep abreast of their respective needs. To this end student projects are performed in collaboration with industry, the community, government bodies, and research institutes wherever possible.

The School is equipped with world class laboratories and equipment for teaching and research as well as for industrial training programs. These include a state-of-the-art Aquatic Research Laboratory, high performance liquid chromatographs, gas chromatograph-mass spectrometers, atomic absorption spectrophotometers, FTIR spectrometers, NMR, UV-Vis spectrophotometers, an Instron texture analyser, Infratech and NIR Systems food and feed analysers as well as excellent facilities for microbiological and genetic engineering work. Specialist facilities also include a fully-equipped, pilot-scale food processing hall.

The School also offers Master of Science and Doctor of Philosophy degrees by research and Masters and Graduate Diploma coursework programs. Further details are given in the Postgraduate Studies section of the Handbook.

Courses Offered
The School Biomedical Sciences offers undergraduate courses leading to the award of:

- Bachelor of Science (Honours)
- Bachelor of Science
  - Biomedical Sciences
  - Occupational Health and Safety

School Regulations
The following regulations apply to all courses and subjects administered or taught by the School of Biomedical Sciences and are in addition to University regulations governing these areas as laid down in the Statutes and Regulations.

Awards
A student shall qualify to receive an award when that student has successfully completed all the requirements and prescribed subjects of the course.

Assessment
Student assessment will embrace both formal assessment through final examination and continuous assessment incorporating unit tests, assignments, report writing, problem solving exercises, class presentations and laboratory, project and fieldwork.

Students would normally be expected to satisfactorily complete each component of the assessment to gain a pass in the subject.

Practical work
A minimum of 80% attendance is required at all practical sessions. Failure to attend at least 80% of practical sessions will automatically constitute unsatisfactory completion of the subject. Practical reports will only be accepted from those students who have attended practical sessions for their full duration.

Late submission
Students failing to submit assessable work by the prescribed deadline will incur a penalty of five (5) percentage marks per day for the first ten days after the prescribed deadline. Work submitted after this time will not be assessed and students will be granted a zero (0) grade.

This requirement may be varied at the discretion of the subject coordinator.

Supplementary Assessment
Students may be granted supplementary assessment with a maximum of two supplementary assessments being permitted in any one full-time academic year. Supplementary assessment will not be available for subjects that are being repeated.

Use of electronic calculators and storage devices
The use of electronic calculators and electronic storage devices is not permitted in any examination unless specified in the subject guide for that subject and/or on the examination paper for that subject.

Unsatisfactory Progress
These regulations should be read in conjunction with the Victoria University's Statute 6.4.1 – Unsatisfactory Progress. The following regulations apply to both full-time and part-time students.

Students in any one of the following categories may be asked to show cause as to why they should not be excluded from the course:

- those who fail 50% or more of their assessable enrolment load (expressed in subjects) in any semester;
- those who fail the same subject twice;
- those who transgress a conditional enrolment agreement.

Duration of Exclusion
Excluded students have no automatic right of re-admission to the course from which they were excluded. Students who have been excluded may apply for re-admission not less than one calendar year from the date of exclusion. These students must provide, with their application, evidence of changed circumstances which significantly improve the applicant's chances of academic success.

Progression
At Examiners' Meetings at the end of each semester the results and progress of all students enrolled in the course will be considered.

Progression through the course is based on the following guidelines:

- Where any compulsory subject must be repeated, enrolment in that subject must be at the first opportunity following the initial failure.
- Students may not enrol in any subject for which the prerequisite has not been passed.
- Student enrolment will not normally be approved where the total proposed subject hours exceeds the normal total subject hours for a course year.
Where enrolment in a co-requisite subject is required, enrolment in the co-requisite subject must take preference over enrolment in an elective.

Where a subject is being repeated, requests for exemptions for part of the subject work are at the discretion of the Department or School offering the subject. Any exemption granted will normally apply for one year only.

**Disciplinary Failure**
A student who has failed a subject on disciplinary grounds may not enrol in any further subjects without the permission of the Faculty Dean.

**Repeating Subjects**
A student who has withdrawn twice in any subject without receiving a penalty grade must seek the permission of the lecturer in charge before being permitted to re-enrol in that subject.

**Stage Completion**
A student may apply for a Stage Completion if:
- all subjects in the course except one have been passed;
- a result of N1 (40%-49%) is achieved in the failed subject;
- the failed subject is not a prerequisite for any other subject in the course.

The granting of a Stage Completion is at the discretion of the Head of School and is not regarded as a pass in the failed subject.

**Deferment from Award Course**
The following rules apply to the courses of the School and are in addition to University regulations governing these areas.

- Approval of deferment is not automatic.
- Each application to defer will be dealt with on an individual basis by the School Administrator in consultation with appropriate academic staff members.
- A deferment will not be granted to VTAC applicants requesting a deferment at their first enrolment session. Students who fall into this category will be advised to re-apply for a place at the end of the year.

In normal circumstances students must have successfully completed at least one semester of study, by passing at least 50% of subjects undertaken, to be eligible for deferment.

Except under exceptional circumstances students may apply to defer their studies for a total period not exceeding twelve months.

Deferment will not normally be granted until consultation has taken place with the Course Co-ordinator (or nominee) and/or a student counsellor.

Students failing to re-enrol at the end of their deferment period will automatically be withdrawn from their course of study.

**Further Information**
For further information please contact the School of Biomedical Sciences on (03) 9365-2691 or fax (03 9365 2465.

**Bachelor of Science in Biomedical Sciences**
Course Code: SBBS

**Course Objectives**
The Bachelor of Science in Biomedical Sciences is designed to provide professional training in the application of science to human biology in the market place. The course aims to produce highly flexible but well-trained graduates who will be adequately equipped to adapt to a changing environment. Four different streams are available for this degree in Biomedical Sciences including wellness management, science media and communications, marketing of biomedical products, and medical research/clinal sciences. Although, students are encouraged to follow one of these streams, they are able to choose from the entire range of subjects offered in the Biomedical Sciences degree. The overall objectives of the degree in Biomedical Sciences are to provide graduates with an excellent knowledge of human physiological functions together with skills in critical analysis and with highly developed communication skills. Complementary knowledge will be developed in a wide range of selected disciplines including psychology, human development, management, marketing, visual and audiovisual communications and a language.
The Wellness Management stream is designed to produce graduates with an understanding of human function. Graduates will be eligible for employment as Wellness consultants either in private practice or within government agencies, large companies or corporations. The Science, Media and Communications specialisation is more specifically designed to produce graduates who would be knowledgeable in human biology and biomedical sciences. Graduates would have a broad education, being highly literate and articulate in specialised areas such as an Asian Language, Professional Writing, and Communications. Graduates in the Management and Marketing of Biomedical Products stream will have an in-depth knowledge of basic human biological function combined with specialised skills in either human resource management or in marketing. This combination of skills appears to be unique in Australia as there seems to be no other course in Australia with this combination of subjects. The Medical Research/ Clinical Sciences stream will provide students with a range of skills appropriate to leading edge medical research. This degree offers a range of subjects appropriate for further postgraduate study in medical and paramedical fields.

Duration of the course
The course will be equivalent to three years of full-time study for students entering the course at year 1 or part-time equivalent.

Admission Requirements
Units 3 and 4 English
Middle Band Selection
Completing Biology and/ or Chemistry can lead to an ENTER 3.5 points higher per study.

Location
The course is currently offered at the St Albans Campuses, but individual subjects may be offered at the Footscray or Werribee Campuses.

Structure of the course
The course will comprise two 12 week semesters or 24 weeks per year for three years. The course outline together with the contact hours per week is contained in the following pages. First year subjects listed are currently running at the St Albans Campus.

Electives may be taken from the wide range of science and general subjects listed below. Other suitable electives (not listed below) may also be chosen subject to the approval of the course co-ordinator: If general electives are selected, students are encouraged to take a 4 to 6 semester sequence in one of the following areas including Human Resource Management, Marketing, Communications, Psychology, Professional Writing or a language other than English. Electives will be offered subject to adequate demand.

Students enrolled in the Biomedical Science degree must take a minimum of 60% of their total credit points from subjects offered by the School of Biomedical Sciences. In addition, no more than 40 credit points from general elective subjects shall be at first year level, and at least one elective shall be commensurate with the year of the student's course.

Credit points
<table>
<thead>
<tr>
<th>Semester</th>
<th>One</th>
<th>Two</th>
</tr>
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First Year Science Electives

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBM1514</td>
<td>Functional Anatomy</td>
<td>20</td>
</tr>
<tr>
<td>SCS1110</td>
<td>Chemistry for Biological Sciences A</td>
<td>15</td>
</tr>
<tr>
<td>SCS1120</td>
<td>Chemistry for Biological Sciences B</td>
<td>15</td>
</tr>
<tr>
<td>SMA1110</td>
<td>Mathematics</td>
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</tr>
<tr>
<td>SMA1120</td>
<td>Mathematics</td>
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</tr>
<tr>
<td>SPH1210</td>
<td>Physics 1 (or equivalent)</td>
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</tr>
<tr>
<td>SPH1220</td>
<td>Physics 1 (or equivalent)</td>
<td>10</td>
</tr>
</tbody>
</table>

First Year General Electives

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>BHO1171</td>
<td>Introduction to Marketing</td>
<td>10</td>
</tr>
<tr>
<td>BMO1122</td>
<td>Human Resource Management</td>
<td>10</td>
</tr>
<tr>
<td>BHO2434</td>
<td>Consumer Behaviour</td>
<td>10</td>
</tr>
<tr>
<td>BCF9110</td>
<td>Introduction to Computing</td>
<td>10</td>
</tr>
<tr>
<td>BEO1106</td>
<td>Business Statistics</td>
<td>10</td>
</tr>
</tbody>
</table>

1 Students in the Wellness Management stream are encouraged to take these electives
2 Students in the Science, Media and Communication stream are encouraged to take these electives (If students take ACC1042 Communications Studies they are exempt from ACE1910 Communications for Science)
3 Students in the Management and Marketing of Biomedical Products stream are encouraged to take these electives
4 Students in the Medical Research and Clinical Sciences stream are encouraged to take these electives

Credit points
<table>
<thead>
<tr>
<th>Semester</th>
<th>One</th>
<th>Two</th>
</tr>
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</table>

Year 2

Core subjects

<table>
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<th>Credit Points</th>
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<tbody>
<tr>
<td>SBM2800</td>
<td>Cardiorespiratory &amp; Renal Physiology</td>
<td>20</td>
</tr>
<tr>
<td>SBM2530</td>
<td>Pathophysiology 1 (Human Bioscience 3A)</td>
<td>15</td>
</tr>
<tr>
<td>SBM2260</td>
<td>Diet and Nutrition</td>
<td>20</td>
</tr>
<tr>
<td>SBM2540</td>
<td>Pathophysiology 2 (Human Bioscience 4A)</td>
<td>15</td>
</tr>
<tr>
<td>SBM2360</td>
<td>Introduction to Microbiology</td>
<td>10</td>
</tr>
<tr>
<td>SBM2610</td>
<td>Biomedical Sciences &amp; Society 1,2,10</td>
<td>10</td>
</tr>
<tr>
<td>SBM2361</td>
<td>Epidemiology</td>
<td>5</td>
</tr>
<tr>
<td>SBF2330</td>
<td>Cell Biology 2,3,4</td>
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<tr>
<td>SBM2580</td>
<td>Advanced Functional Anatomy</td>
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<tr>
<td>SBM3610</td>
<td>Bioscience, Ethics and Values</td>
<td>10</td>
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<tr>
<td>SCS2372</td>
<td>Toxicology 1A</td>
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<tr>
<td>SCS2373</td>
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<tr>
<td>ACC1042</td>
<td>Communications Studies A</td>
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<tr>
<td>ACC1043</td>
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<tr>
<td>SCS1120</td>
<td>Foundations in Psychiatry</td>
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<tr>
<td>APP1011</td>
<td>Psychology 1A</td>
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<td>APP1012</td>
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<tr>
<td>BHO1171</td>
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<tr>
<td>BMO1122</td>
<td>Human Resource Management</td>
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<td>Introduction to Computing</td>
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Second Year Science Electives

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<tr>
<td>SBM1524</td>
<td>Functional Anatomy 1,2,4</td>
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<td>SBM2560</td>
<td>Medical Biochemistry 3A</td>
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<tr>
<td>SBM2590</td>
<td>Functional Histology 2,4</td>
<td>10</td>
</tr>
<tr>
<td>SBM2360</td>
<td>Introduction to Microbiology</td>
<td>10</td>
</tr>
<tr>
<td>SBM2610</td>
<td>Biomedical Sciences &amp; Society 1,2,10</td>
<td>10</td>
</tr>
<tr>
<td>SBM2361</td>
<td>Epidemiology</td>
<td>5</td>
</tr>
<tr>
<td>SBF2330</td>
<td>Cell Biology 2,3,4</td>
<td>10</td>
</tr>
<tr>
<td>SBM2580</td>
<td>Advanced Functional Anatomy</td>
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<tr>
<td>SBM3610</td>
<td>Bioscience, Ethics and Values</td>
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<tr>
<td>SCS2372</td>
<td>Toxicology 1A</td>
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<tr>
<td>SCS2373</td>
<td>Toxicology 1B</td>
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<tr>
<td>ACC1042</td>
<td>Communications Studies A</td>
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</tr>
<tr>
<td>ACC1043</td>
<td>Communications Studies B</td>
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<tr>
<td>APP1011</td>
<td>Psychology 1A</td>
<td>15</td>
</tr>
<tr>
<td>APP1012</td>
<td>Psychology 1B</td>
<td>15</td>
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<tr>
<td>BAG2207</td>
<td>Employment Law</td>
<td>10</td>
</tr>
<tr>
<td>BHO2207</td>
<td>Advertising and Public Relations</td>
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Second Year General Electives

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<tbody>
<tr>
<td>APP2013</td>
<td>Psychology 2A</td>
<td>15</td>
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<tr>
<td>APP2014</td>
<td>Psychology 2B</td>
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<tr>
<td>BHO2207</td>
<td>Employment Law</td>
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</tr>
<tr>
<td>BHO2207</td>
<td>Advertising and Public Relations</td>
<td>10</td>
</tr>
</tbody>
</table>
### Course Objectives

At the end of the course graduates should be able to: utilise methods of scientific investigation in solving, occupational health and safety problems; thoroughly understand the scientific and technological bases of occupational health and safety; engender the professional confidence and respect of others; identify health hazards and safety problems and be able to make appropriate recommendations to management; understand and be able to effectively participate in decision-making processes in organisations in order to manage the promotion and implementation of occupational health and safety matters; act as an agent of change to improve OHS at a workplace.

### Admission Requirements

Normal entry requirements for articulation to the Bachelor of Science in Occupational Health and Safety will complete 13 units to upgrade their qualification to a Bachelor of Science in Occupational Health and Safety. Students who enrol with a Diploma of Science in Occupational Health and Safety that is not equivalent with subjects undertaken at Swan TAFE may need to undertake a mix of additional units if they wish to upgrade to a degree.

The course aims at maximising student access by providing flexibility and modality in the delivery of subjects. Block mode teaching delivered at Swan TAFE, Western Australia, is available. Students complete all units by distance education mode.

### Bachelor of Science in Occupational Health and Safety

**Course Code:** SBOH

#### Course Objectives

The aims of the courses are to produce graduates with a combination of knowledge and skills of science and disciplines related to occupational health and safety while having a focus on the management of occupational health and safety.

Normal entry requirements for articulation to the Bachelor of Science in Occupational Health and Safety will complete 13 units to upgrade their qualification to a Bachelor of Science in Occupational Health and Safety. Admission requirements may be varied by the Head of School for applicants who possess other appropriate TAFE or university qualifications related to occupational health and safety.

Students with a Diploma in Health Occupational Health and Safety, related to occupational health and safety while having a focus on the management of occupational health and safely. Admission requirements may be varied by the Head of School for applicants who possess other appropriate TAFE or university qualifications related to occupational health and safety.

#### Admission Requirements

Normal entry requirements for articulation to the Bachelor of Science in Occupational Health and Safety.

Students who enrol with a Diploma of Science in Occupational Health and Safety that is not equivalent with subjects undertaken at Swan TAFE may need to undertake a mix of additional units if they wish to upgrade to a degree.

The course aims at maximising student access by providing flexibility and modality in the delivery of subjects. Block mode teaching delivered at Swan TAFE, Western Australia, is available. Students complete all units by distance education mode.

### Undergraduate Studies

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Points</th>
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</thead>
<tbody>
<tr>
<td>BHO 2251</td>
<td>Product and Pricing Strategy</td>
<td>10</td>
</tr>
<tr>
<td>BMO 2300</td>
<td>Career Planning &amp; Development</td>
<td>10</td>
</tr>
<tr>
<td>BMO 2285</td>
<td>Marketing Research</td>
<td>10</td>
</tr>
<tr>
<td>BMO 3420</td>
<td>Human Resource Information Systems</td>
<td>10</td>
</tr>
<tr>
<td>BMO 3476</td>
<td>Training and Development</td>
<td>10</td>
</tr>
<tr>
<td>HPE 2165</td>
<td>Introduction to Biomechanics</td>
<td>5</td>
</tr>
<tr>
<td>HPE 2180</td>
<td>Resistance Training</td>
<td>5</td>
</tr>
<tr>
<td>HPE 2122</td>
<td>Introduction to Exercise</td>
<td>10</td>
</tr>
<tr>
<td>HPE 4175</td>
<td>Physiology of Exercise</td>
<td>10</td>
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</table>

Any foreign language at second year level 10

1. Students in the Wellness Management stream are encouraged to take these electives (Students in the Wellness stream who decide to focus on individual and social issues in mental health should choose Psychology 2A and 2B)
2. Students in the Science, Media and Communication stream are encouraged to take these electives
3. Students in the Management and Marketing of Biomedical Products stream are encouraged to take these electives
4. Students in the Medical Research and Clinical Sciences stream are encouraged to take these electives

### Third Year Subjects

#### Core Subjects

Students must choose at least two of the six core units offered in each semester.

<table>
<thead>
<tr>
<th>Credit points</th>
<th>Semester One</th>
<th>Semester Two</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBF 3920</td>
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<tr>
<td>SBM 3800</td>
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<td>SBM 3264</td>
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<td>Electives</td>
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#### Third Year Science Electives

<table>
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<th>Semester Two</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBF 3210</td>
<td>Advanced Nutrition</td>
<td>10</td>
</tr>
<tr>
<td>SBM 3230</td>
<td>Nutrition and Health</td>
<td>10</td>
</tr>
<tr>
<td>SBM 3610</td>
<td>Bioscience, Ethics and Values</td>
<td>10</td>
</tr>
<tr>
<td>SBM 3640</td>
<td>Advanced Neurosciences</td>
<td>10</td>
</tr>
<tr>
<td>SBM 3650</td>
<td>Advanced Reproduction and Development</td>
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</tr>
<tr>
<td>SBM 3670</td>
<td>Molecular Psychology</td>
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<tr>
<td>SCS 3301</td>
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<td>5</td>
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<tr>
<td>SCS 3361</td>
<td>Environmental Health</td>
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</table>

#### Third Year General Electives

Any foreign language at third year level 10

<table>
<thead>
<tr>
<th>Credit points</th>
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<th>Semester Two</th>
</tr>
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<tbody>
<tr>
<td>ACC 3045</td>
<td>Video Production</td>
<td>10</td>
</tr>
<tr>
<td>ACC 3046</td>
<td>Communicating with Radio</td>
<td>10</td>
</tr>
<tr>
<td>ACC 3047</td>
<td>Communicating in Organisations</td>
<td>10</td>
</tr>
<tr>
<td>ACP 3051</td>
<td>Writing for Publications and Advertising</td>
<td>10</td>
</tr>
<tr>
<td>ACP 3053</td>
<td>Advanced Fiction Writing</td>
<td>10</td>
</tr>
<tr>
<td>BEO 1185</td>
<td>Retail Management Principles</td>
<td>10</td>
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<tr>
<td>BHO 2252</td>
<td>Selling and Sales Management</td>
<td>10</td>
</tr>
<tr>
<td>BHO 3525</td>
<td>Advanced Marketing Research</td>
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<tr>
<td>BHO 3435</td>
<td>Marketing Planning Strategy</td>
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</tr>
<tr>
<td>BHO 3373</td>
<td>International Marketing</td>
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</tbody>
</table>
Course Duration
Students who enrol into the degree course with a Diploma in Occupational Health and Safety (equivalent with Swan TAFE Diploma OHS) may complete the upgrade after two years of part-time study. Students with other qualifications may need to complete additional subjects.

Course Structure
Level 3 Subjects required to upgrade from Diploma in Health-Occupational Health and Safety to Bachelor of Science in Occupational Health and Safety

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBM2361</td>
<td>Epidemiology</td>
<td>6</td>
</tr>
<tr>
<td>SBM3570</td>
<td>Toxicology 2</td>
<td>8</td>
</tr>
<tr>
<td>SCS2001</td>
<td>Minor Project</td>
<td>10</td>
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<tr>
<td>SCS2071</td>
<td>Biological Chemistry</td>
<td>9</td>
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<tr>
<td>SCS2101</td>
<td>Task Analysis and Job Design</td>
<td>9</td>
</tr>
<tr>
<td>SCS2301</td>
<td>Study Design</td>
<td>9</td>
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<tr>
<td>SCS2461</td>
<td>Risk Management</td>
<td>10</td>
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<tr>
<td>SCS3061</td>
<td>Safety 3</td>
<td>10</td>
</tr>
<tr>
<td>SCS3101</td>
<td>Rehabilitation</td>
<td>10</td>
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<tr>
<td>SCS3161</td>
<td>Safety and Society</td>
<td>10</td>
</tr>
<tr>
<td>SCS3301</td>
<td>Public Health</td>
<td>6</td>
</tr>
<tr>
<td>SCS3361</td>
<td>Environmental Health</td>
<td>10</td>
</tr>
<tr>
<td>SCS3401</td>
<td>OH&amp;S Best Practice</td>
<td>10</td>
</tr>
</tbody>
</table>

Additional Subjects for Level 2 - Associate Diploma Occupational Health and Safety Graduates upgrading to Bachelor of Science in Occupational Health and Safety:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMO2271</td>
<td>Organisations</td>
<td>9</td>
</tr>
<tr>
<td>BMO3220</td>
<td>Human Resource Management</td>
<td>9</td>
</tr>
<tr>
<td>BHO3473</td>
<td>Human Relations</td>
<td>9</td>
</tr>
<tr>
<td>BMO3476</td>
<td>Training and Development</td>
<td>9</td>
</tr>
</tbody>
</table>

Bachelor of Science (Honours) in Biomedical Sciences

Course Code: SHBM

SBM4000 Science Honours will comprise the following:
Honours research project including two oral presentations, a literature review and the project thesis.

Honours Course Work
There will be two course work units comprising of Advanced Experimental Design and Statistics, and Research Conduct, Ethics and Training. In special cases undergraduate units of studies may be substituted for course work units when it is felt that a student would require further studies of a specialised nature. The lecture or reading programs that make up the course work units will be determined by student's preferences and will vary from time to time. Course work units will be assessed by oral presentations, written assignments or a written examination.
School of Molecular Sciences

The School of Molecular Sciences operates at the Werribee Campus of the University. In line with Faculty objectives, the School is committed to the development and promotion of science and technology. The School seeks to provide students with vocationally and educationally oriented experiences and expertise which will best equip them for entry into a work environment in which there is likely to be significant career changes during their working life. Consequently, the School provides courses and programs with a close relationship between theory and practice, and seeks to include relevant industrial experience within each award course. The School also seeks to foster within its students a personal pride in, and a professional attitude to their work and a full understanding of their responsibilities to society as trained scientists and technologists.

It is the belief of the School that active involvement in research and consultancy is vital in providing quality teaching as well as in developing a viable and practical course for the students. To this end, all of the academic staff have a doctoral degree and substantial research and consultancy experience. The School endeavours to develop close relationships with industry and with the community to keep abreast of their respective needs. To this end student projects are performed in collaboration with industry, the community, government bodies, and research institutes wherever possible.

The School is equipped with world class laboratories and equipment for teaching and research as well as for industrial training programs. These include high performance liquid chromatographs, gas chromatograph-mass spectrometers, atomic absorption spectrophotometers, FTIR spectrometers, NMR, UV-V is spectrophotometers, an Instron texture analyser, Infratech and NIR Systems food and feed analysers as well as excellent facilities for microbiological and genetic engineering work. Specialist facilities also include a fully-equipped, pilot-scale food processing hall.

The School also offers Master of Science and Doctor of Philosophy degrees by research and Masters and Graduate Diploma coursework programs. Further details are given in the Postgraduate Studies section of the Handbook.

Courses Offered

The School of Molecular Sciences offers undergraduate courses leading to the award of:

- Bachelor of Science (Honours)
- Bachelor of Applied Science - Chemistry
- Bachelor of Science - Biotechnology - Medical, Forensic and Analytical Chemistry - Nutrition, Food and Health Science

School Regulations

The following regulations apply to all courses and subjects administered or taught by the School of Molecular Sciences and are in addition to University regulations governing these areas as laid down in the Statutes and Regulations.

Awards

A student shall qualify to receive an award when that student has successfully completed all the requirements and prescribed subjects of the course.

Assessment

Student assessment will embrace both formal assessment through final examination and continuous assessment incorporating unit tests, assignments, report writing, problem solving exercises, class presentations and laboratory project and fieldwork.

Students would normally be expected to satisfactorily complete each component of the assessment to gain a pass in the subject.

Practical work

A minimum of 80% attendance is required at all practical sessions. Failure to attend at least 80% of practical sessions will automatically constitute unsatisfactory completion of the subject. Practical reports will only be accepted from those students who have attended practical sessions for their full duration.

Late submission

Students failing to submit assessable work by the prescribed deadline will incur a penalty of five (5) percentage marks per day for the first ten days after the prescribed deadline. Work submitted after this time will not be assessed and students will be granted a zero (0) grade. This requirement may be varied at the discretion of the subject coordinator.

Supplementary Assessment

Students may be granted supplementary assessment with a maximum of two supplementary assessments being permitted in any one full-time academic year. Supplementary assessment will not be available for subjects that are being repeated.

Use of electronic calculators and storage devices

The use of electronic calculators and electronic storage devices is not permitted in any examination unless specified in the subject guide for that subject and/or on the examination paper for that subject.

Unsatisfactory Progress

Students in any one of the following categories may be asked to show cause as to why they should not be excluded from the course:

- those who fail 50% or more of their assessable enrolment load (expressed in subjects) in any semester;
- those who fail the same subject twice;
- those who transgress a conditional enrolment agreement.

Duration of Exclusion

Excluded students have no automatic right of re-admission to the course from which they were excluded. Students who have been excluded may apply for re-admission not less than one calendar year from the date of exclusion. These students must provide, with their application, evidence of changed circumstances which significantly improve the applicant's chances of academic success.

Progression

Progression through the course is based on the following guidelines:

- Where any compulsory subject must be repeated, enrolment in that subject must be at the first opportunity following the initial failure.
Students may not enrol in any subject for which the prerequisite has not been passed.

Student enrolment will not normally be approved where the total proposed subject hours exceeds the normal total subject hours for a course year.

Where enrolment in a co-requisite subject is required, enrolment in the co-requisite subject must take preference over enrolment in an elective.

Where a subject is being repeated, requests for exemptions for part of the subject work are at the discretion of the Department or School offering the subject. Any exemption granted will normally apply for one year only.

**Disciplinary Failure**
A student who has failed a subject on disciplinary grounds may not enrol in any further subjects without the permission of the Faculty Dean.

**Repeating Subjects**
A student who has withdrawn twice in any subject without receiving a penalty grade must seek the permission of the lecturer in charge before being permitted to re-enrol in that subject.

**Stage Completion**
A student may apply for a Stage Completion if:

- all subjects in the course except one have been passed;
- a result of N1 (40%–49%) is achieved in the failed subject;
- the failed subject is not a prerequisite for any other subject in the course.

The granting of a Stage Completion is at the discretion of the Head of School and is not regarded as a pass in the failed subject.

**Deferment from Award Course**
The following rules apply to the courses of the School and are in addition to University regulations governing these areas.

- Approval of deferment is not automatic.
- Each application to defer will be dealt with on an individual basis by the School Administrator in consultation with appropriate academic staff members.
- A deferment will not be granted to VTAC applicants requesting a deferment at their first enrolment session. Students who fall into this category will be advised to re-apply for a place at the end of the year.
- In normal circumstances students must have successfully completed at least one semester of study by passing at least 50% of subjects undertaken, to be eligible for deferment.
- Except under exceptional circumstances students may apply to defer their studies for a total period not exceeding twelve months.
- Deferment will not normally be granted until consultation has taken place with the Course Co-ordinator (or nominee) and/or a student counsellor.
- Students failing to re-enrol at the end of their deferment period will automatically be withdrawn from their course of study.

**Further Information**
For further information please contact the School of Molecular Sciences on (03) 9216-8271 or fax (03) 9216 8284.

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**Bachelor of Applied Science in Chemistry**

*Course Code: SBCP*

**Course Objectives**
This course provides a sound background in the fundamentals of chemistry and leads to a professional qualification which meets the membership requirements of the Royal Australian Chemical Institute. The course has major emphasis on analytical and organic chemistry and includes significant studies in other areas.

**Course Duration**
This course is specifically designed for part-time study by students employed in chemical and related industries. The course recognises that students in employment develop a wide range of on-the-job skills and consequently it only includes a limited number of subjects in areas other than chemistry. The course is organised to enable completion in six years but may be completed in a shorter time if work commitments permit. Employment in a chemical or related industry for a minimum of three (3) years is a co-requisite and is required for graduation.

**Admission Requirements**
Applicants should have successfully completed VCE or another Year 12 qualification with studies in English and Mathematics. Applicants with other qualifications should seek advice from the Faculty of Science, Engineering and Technology. An aptitude for science should be evident.

Potential students for the Bachelor of Applied Science in Chemistry should apply directly to the University.

**Course Structure**

<table>
<thead>
<tr>
<th>Year</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>SCS1006</td>
<td>Chemistry 1</td>
<td>20</td>
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<tr>
<td>Year 1</td>
<td>SCS1008</td>
<td>Industrial Experience</td>
<td>10</td>
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<tr>
<td>Year 1</td>
<td>SCS1501</td>
<td>Medical, Forensic and Analytical Chemistry</td>
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<tr>
<td>Year 1</td>
<td>SMA1071</td>
<td>Mathematics Part 1</td>
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<td>Physics ISA</td>
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<td>Physics ISB</td>
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<td>Year 2</td>
<td>SCS2510</td>
<td>Analytical Chemistry 2</td>
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<td>Year 2</td>
<td>SCS2000</td>
<td>Industrial Experience</td>
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<td>Year 2</td>
<td>SMA2031</td>
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<td>Year 2</td>
<td>SMA3071</td>
<td>Intro to Computer Utilization</td>
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<td>Year 3</td>
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<td>Written and Oral Communications 3</td>
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<td>Year 3</td>
<td>SCS3511</td>
<td>Applied Chemistry 3 (Analytical)</td>
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<td>SCS3000</td>
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</table>

**Progression and Exclusion Regulations**
1. Failure in more than 50% of enrolled subjects (semester or whole of year) will be grounds for exclusion.
2. Failure in any subject three times shall constitute grounds for exclusion from the course.
Bachelor of Science in Biotechnology

Course Code: SBBY

Course Objectives
The biotechnology degree prepares students for exciting careers in cutting edge science. This program provides in depth education in many areas of modern biology including: genetic engineering, medical research, cloning, forensics, environmental biotechnology, microbiology and biochemistry. There is a strong emphasis on the development of laboratory-based skills for which the school is equipped with state-of-the-art facilities.

Admission Requirements
The minimum entry requirement for persons under 21 years of age on 1 January 2004 is the satisfactory completion of a Year 12 course of study approved by the Victorian Curriculum and Assessment Board (VCAB), or an equivalent program approved by Victoria University for entry.

Prerequisites are Units 3 and 4 in the following subjects: English, and Mathematics (any).

There is also provision for mature age entry and entry as a disadvantaged person. Mature age provisions apply to those persons aged 21 and over as at 1 January for the year in which they are applying. Entry into the degree can also be attained through TAFE articulation.

Course Duration
The Bachelor of Science program requires the equivalent of three years full-time study.

Course Structure

Biotechnology
Course Code: SBBY

Credit points

<table>
<thead>
<tr>
<th>Year</th>
<th>One</th>
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<tbody>
<tr>
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<td>ACE1910 Communications for Science</td>
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<td>SBF1310 Biology 1</td>
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<td>SCS1602 Chemistry B</td>
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<td>SMA1110 Mathematics 1</td>
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<td>SMA1120 Mathematics 2</td>
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<td>SBF2330 Cell Biology</td>
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<td>SBF2390 Molecular Genetics</td>
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<td>Year 3</td>
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<tr>
<td>Core Units</td>
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<tr>
<td>SBF3251 Bioprocessing Technology 1</td>
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<td>SBF3522 Bioprocessing Technology 2</td>
<td>-</td>
<td>20</td>
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<tr>
<td>SBF3510 Preparative and Analytical Biochemistry</td>
<td>-</td>
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<td></td>
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<td><strong>20</strong></td>
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<td>Elective Units</td>
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<tr>
<td>SBM3720 Immunology</td>
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<tr>
<td>SBF3730 Food Microbiology</td>
<td>20</td>
<td>-</td>
</tr>
<tr>
<td>SBF3750 Industrial and Environmental Microbiology</td>
<td>-</td>
<td>20</td>
</tr>
<tr>
<td>SBF3910 Project - Biotechnology</td>
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<tr>
<td></td>
<td><strong>60</strong></td>
<td><strong>60</strong></td>
</tr>
</tbody>
</table>

Students must take all four of the final year core units plus two of the electives above (or other electives approved by the Course Coordinator).

Electives

A minimum of 70 credit points worth of electives are required to be taken over the course of the degree. Electives in areas other than science may be selected at the discretion of the Head of School. The total subject hours must be within the prescribed range and due consideration must be given to prerequisite requirements. Science electives may be chosen from any of the degree subjects offered by the Faculty of Science, Engineering and Technology at the St Albans, Werribee and Footscray Campuses.

A appropriate subjects from other programs offered by other Schools and Faculties or at other Institutes, may also be selected as elective subjects, subject to the approval of the Faculty. Students should refer to the subject outlines listed within other Schools and Faculties for further information.

Students are advised to seek the assistance and advice of academic staff when making their elective selection, as the judicious choice of electives can provide an opportunity to undertake a second major study alongside the primary degree specialisation.
Bachelor of Science in Medical, Forensic and Analytical Chemistry

Course Code: SBFM

Course Objectives
The course provides theoretical and practical training in medical, forensic and analytical chemistry. The design of the course has taken account of recent market research which indicates that employers seek graduates with specific skills in analytical chemistry as applied to industrial, medical and forensic issues. Concomitant studies in Molecular Sciences, Biosciences, Communication, Mathematics and Computer literacy give the graduate the employment skills that support the technical expertise.

The course is designed to meet the professional membership requirements of The Royal Australian Chemical Institute (RACI).

Course structure commences with a typical first year which exposes the student to a wide range of science disciplines. Second year has a core of subjects and a range of electives. In the final year chemical knowledge and applications are consolidated through a choice of appropriate electives.

Admission Requirements
Admission will be based upon completion of VCE or equivalent Year 12 qualification. Prerequisites are Units 3 and 4 in English and Mathematics (any). Thus, in keeping with the intention of the University to operate an open access policy, the absence of prior studies in chemistry in particular, and science in general will not preclude admission to the proposed course. However, applicants who have successfully completed Chemistry and/or Specialist Mathematics and/or Physics will be deemed to have a TER of 3 percentage points higher for each study. Certain subjects passed in other courses at Victoria University or at other Institutions may be considered for advanced standing. Provision will be made for articulation from TAFE science programs with appropriate credit.

Course Duration
The course is offered on a full-time basis over three years or part-time equivalent.

Course Structure

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Semester One</th>
<th>Semester Two</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACE1010</td>
<td>Written &amp; Oral Communication</td>
<td>15</td>
</tr>
<tr>
<td>SBF1310</td>
<td>Biology</td>
<td>1</td>
</tr>
<tr>
<td>SBF1320</td>
<td>Biology</td>
<td>2</td>
</tr>
<tr>
<td>SCRM1111</td>
<td>Introduction to Computer Systems</td>
<td>-</td>
</tr>
<tr>
<td>SCS1000</td>
<td>Course Overview and Guidance</td>
<td>5</td>
</tr>
<tr>
<td>SCS1601</td>
<td>Chemistry 1A</td>
<td>20</td>
</tr>
<tr>
<td>SCS1602</td>
<td>Chemistry 1B</td>
<td>-</td>
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<tr>
<td>SCS1603</td>
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<tr>
<td>SMA1110</td>
<td>Mathematics</td>
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<table>
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<tr>
<th>Year 2</th>
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<th>Semester Two</th>
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<tr>
<td>ACE2010</td>
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<tr>
<td>SBF2350</td>
<td>Biochemistry</td>
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<td>SCS2902</td>
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<td>SCS2903</td>
<td>Forensic Chemistry 2</td>
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<td>SCS2601</td>
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<td>SCS2602</td>
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</tbody>
</table>
| SMA1120 | Mathematics | 2 | 45+ 45+

Electives to the total of 30 credit points to be selected over two semesters.

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course title</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBF2330</td>
<td>Cell Biology</td>
<td>10</td>
</tr>
<tr>
<td>SBF2410</td>
<td>Food Components</td>
<td>10</td>
</tr>
<tr>
<td>SBS1518</td>
<td>Human Physiology 1</td>
<td>15</td>
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<tr>
<td>SBS2360</td>
<td>Intro to Microbiology</td>
<td>10</td>
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<tr>
<td>SBS2361</td>
<td>Epidemiology</td>
<td>5</td>
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<td>SCS2372</td>
<td>Toxicology 1A</td>
<td>5</td>
</tr>
<tr>
<td>SCS2521</td>
<td>Applied Chemistry 2 (Organic)</td>
<td>15</td>
</tr>
<tr>
<td>SBF2390</td>
<td>Microbiology 1</td>
<td>15</td>
</tr>
<tr>
<td>SBF2391</td>
<td>Microbiology 2</td>
<td>15</td>
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<tr>
<td>SFB2900</td>
<td>Molecular Genetics</td>
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<tr>
<td>SFB2210</td>
<td>Food Interactions</td>
<td>-</td>
</tr>
<tr>
<td>SBSM1528</td>
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<td>SBSM2260</td>
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<td>SBSM2750</td>
<td>Nutrition</td>
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<td>SCS2521</td>
<td>Applied Chemistry 2 (Organic)</td>
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<td>SCS2373</td>
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Year 3

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<th>Semester One</th>
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<tr>
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<td>SCS3601</td>
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<tr>
<td>SCS3602</td>
<td>Analytical Chemistry 3B</td>
</tr>
<tr>
<td>SCS3603</td>
<td>Medical Chemistry 3A</td>
</tr>
<tr>
<td>And/or</td>
<td></td>
</tr>
<tr>
<td>SCS3604</td>
<td>Medical Chemistry 3B</td>
</tr>
<tr>
<td>SMA3071</td>
<td>Introduction to Computer Utilization</td>
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Electives to the total of 40 credit points to be selected over two semesters.

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course title</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBF2330</td>
<td>Cell Biology</td>
<td>10</td>
</tr>
<tr>
<td>SBS2530</td>
<td>Pathophysiology 1</td>
<td>15</td>
</tr>
<tr>
<td>SBS3720</td>
<td>Immunology</td>
<td>15</td>
</tr>
<tr>
<td>SBSM3800</td>
<td>Pharmacology</td>
<td>20</td>
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<tr>
<td>SBSM2360</td>
<td>Diet and Nutrition</td>
<td>15</td>
</tr>
<tr>
<td>SBSM3804</td>
<td>Recomb DNA Technology</td>
<td>15</td>
</tr>
<tr>
<td>SBSM2360</td>
<td>Diet and Nutrition</td>
<td>15</td>
</tr>
<tr>
<td>SBSM2364</td>
<td>Advanced Nerve and Muscle Physiology</td>
<td>15</td>
</tr>
<tr>
<td>SBSF3210</td>
<td>Advanced Nutrition</td>
<td>10</td>
</tr>
<tr>
<td>SSBF3220</td>
<td>Indigenous Foods</td>
<td>10</td>
</tr>
<tr>
<td>SBSF3240</td>
<td>Functional Foods</td>
<td>10</td>
</tr>
</tbody>
</table>

Bachelor of Science in Nutrition, Food and Health Science

Course Code: SBNF

Course Objectives
The Nutrition, Food and Health Science degree is designed to develop the knowledge and skills in the science and processing of food, its safety and quality as required by today's nutritionist's and food scientists, while providing the opportunity to specialise in one of the following areas: Food Science, Nutrition, and Health Science. The professional education and training provided in each of these specialisations or streams will ensure that graduates will be equipped with highly marketable skills to enable them to gain employment in, and contribute to the future development of the nutrition, food and health.

Increasing consumer awareness and demands in regard to food related health issues and the increasingly important role of...
nutrition in the development and evaluation of food products has generated a rapidly growing need for graduates with a good understanding of both food manufacturing nutrition and health. The course has been specifically designed to meet the demand for such graduates.

**Admission Requirements**

The minimum entry requirement for persons under 21 years of age on 1 January 2001 is the satisfactory completion of a Year 12 course of study approved by the Victorian Curriculum and Assessment Board (VCAB), or an equivalent program approved by Victoria University for entry.

Prerequisites for the Nutrition, Food and Health Science course are Units 3 and 4 in English, Mathematics (any).

There is also provision for mature age and entry as a disadvantaged person. Mature age provisions apply to those persons aged 21 and over as at 1 January for the year in which they are applying.

**Course Duration**

The Bachelor of Science program requires the equivalent of three years full-time study.

**Course Structure**

The course requires the completion of a number of compulsory or core subjects together with prescribed and free electives, totalling a minimum of 120 credit points per year of full-time study. The prescribed elective subjects will determine the particular stream or specialisation within the degree program and students may choose from one of four streams according to their particular interest. The four streams are: Food Technology; Food Science and Nutrition; Food Biotechnology; and Food Science and Business Studies.

**Prescribed Electives**

<table>
<thead>
<tr>
<th>Year</th>
<th>Courses</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>SMA1110 Mathematics 1</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>BHO1171 Introduction to Marketing</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>SBF2230 Cell Biology</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>BHO2251 Product and Pricing Strategy</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>BHO2253 Business to Business Marketing</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>BHO2434 Consumer Behaviour</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>ACC3043 Interpersonal, Group and Organisational Communication</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>BHO 3432 Services Marketing</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>SBF6745 Product Development</td>
<td>3</td>
</tr>
<tr>
<td>2</td>
<td>SBF3760 Recombinant DNA Technology</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>BAG1101 Accounting for Decision Making</td>
<td>1 or 2</td>
</tr>
<tr>
<td></td>
<td>BHO1171 Introduction to Marketing</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>BHO2251 Product and Pricing Strategy</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>BHO2253 Business to Business Marketing</td>
<td>2</td>
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<td></td>
<td>BHO2434 Consumer Behaviour</td>
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<tr>
<td></td>
<td>ACC3043 Interpersonal, Group and Organisational Communication</td>
<td>3</td>
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<td>BHO 3432 Services Marketing</td>
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<td>3</td>
<td>SBA1110 Mathematics 1</td>
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<tr>
<td></td>
<td>BAO1101 Accounting for Decision Making</td>
<td>1 or 2</td>
</tr>
<tr>
<td></td>
<td>SBF2230 Cell Biology</td>
<td>2</td>
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<td></td>
<td>BHO2251 Product and Pricing Strategy</td>
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<tr>
<td></td>
<td>BHO2253 Business to Business Marketing</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>BHO2434 Consumer Behaviour</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>SBF2220 Principles of Instrumental Analysis</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>BHO1171 Introduction to Marketing</td>
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<td></td>
<td>BHO2251 Product and Pricing Strategy</td>
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<tr>
<td></td>
<td>BHO2253 Business to Business Marketing</td>
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<td></td>
<td>BHO2434 Consumer Behaviour</td>
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<tr>
<td></td>
<td>SBF2230 Cell Biology</td>
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<td></td>
<td>BHO2251 Product and Pricing Strategy</td>
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<td></td>
<td>BHO2253 Business to Business Marketing</td>
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<tr>
<td></td>
<td>BHO2434 Consumer Behaviour</td>
<td>2</td>
</tr>
</tbody>
</table>

**Suitable Free Electives**

- SBA1110 Mathematics 1
- BAO1101 Accounting for Decision Making
- BHO1171 Introduction to Marketing
- SBF2230 Cell Biology
- SBF2250 Biotechnology
- SBA1110 Mathematics 1
- BAO1101 Accounting for Decision Making
- SBF2230 Cell Biology
- SBF2250 Biotechnology

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**Credit points**

- Semester 1: 30
- Semester 2: 30
- Total: 60

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**NOTE:** Some may already be prescribed for certain streams.
Professional Recognition
The Food Science and Technology specialisation has been accredited by the Australian Institute of Food Science and Technology and graduates in this specialisation will be eligible for membership.

Bachelor of Science (Honours) in Biology (Biotechnology)
Course Code: SHBT

Bachelor of Science (Honours) in Nutrition and Food Science
Course Code: SHFT

Course Objectives
An Honours program is available in each of the degree specialisations. The aim of the honours program is to provide a course of advanced study at a fourth year level which builds on the knowledge and skills developed at degree level, and to prepare students for postgraduate research by developing skills in: working independently, critical analysis of information, problem-solving, devising and conducting experimental work and written and oral communication.

Admission Requirements
To qualify for entry to the honours program, applicants must hold a degree or equivalent with major studies in a relevant discipline and should normally have obtained a "credit" average, or equivalent, in the final year of the degree.

Course Duration
The courses are offered on a full-time basis over one year or equivalent if on a part-time basis. Entry to the Honours program for the Conservation Biology and Environmental Management specialisation can be either at the beginning of the academic year (February) or at a mid-year intake (July) to allow for field-based research with seasonal limitations.

Course Structures
The structure of these three honours courses is as follows:

- **SBF4000 Science Honours 120 credit points (60 per semester)**

The course consists of advanced coursework and a research thesis. Assessment will be based on written assignments, seminar presentations, a written examination and the research thesis. Coursework assessment will be based on seminar presentations, written assignments and examination.

Bachelor of Science (Honours) in Chemical and Environmental Sciences

Course Code: SHCB

This course will develop the student's skills in areas associated with research methodology, including the ability to devise and design experiments intended to yield data relevant to the solution of a specific problem, the ability to analyse data critically in order to focus the direction of further experimentation, the ability to develop and refine working hypotheses, and the ability to report the results in an appropriate manner. Additionally, the course will expand knowledge into more advanced areas of chemistry and biology.

At the conclusion of the Honours program a student will have:

1. been exposed in a formal manner to the factors which impinge on the design, conduct and evaluation of a research project and will have demonstrated through oral and written presentations an understanding of these factors;
2. been exposed to three areas of advanced knowledge and will have demonstrated an understanding of these areas through oral or written presentations or other assessment tasks;
3. demonstrated through oral presentation an ability to draw together various pieces of information and experimental data into a comprehensive research proposal;
4. conducted an experimental program designed to elucidate information related to the research proposal and demonstrated by the presentation of a written thesis and an oral presentation the ability to design experiments, to collect and analyse experimental data and to draw and present conclusions appropriate to the data.

Research Project
The major piece of work is a research project conducted on a full-time basis for two semesters. The enrolment code associated with the research project is SCS4600 Honours Research Project. The results of the research project will be reported in a thesis of approximately 8000–10,000 words; the thesis will be submitted towards the end of November.

Oral Presentations
Two oral presentations will be involved in the Honours program. At the conclusion of Semester 1 each student will give the Initial Oral Presentation; this presentation will place the research project in context and give a detailed description and justification of the research plan. The project examiners will give each student feedback after the Initial Oral Presentation. At the end of Semester 2 each student will give the Final Oral Presentation; this presentation will report results of the research project and outline any conclusions drawn. The Final Oral Presentation will be held approximately one week after the deadline for submission of the thesis.
Coursework
Four pieces of coursework are involved in the Honours program:

- **HPG6010 Research Design**
  This is a one-semester subject involving 5 hours/week of contact. It is a generic research design subject taught by the Department of Physical Education and Recreation in both Semester 1 and Semester 2.

- **SCS4201 Honours Coursework**
  There are three separate items of coursework associated with this enrolment code. The three items will be chosen from a list similar to the following:
  - Application of NMR Spectroscopy in the Study of Muscle Metabolism
  - Physiological and Metabolic Aspects of Rowing
  - Micro-Column Separations
  - Inductively Coupled Plasma (ICP)
  - Spectrophotometry
  - Structure-Property Relationships of Polymeric Materials
  - Turning up the Heat: Thermal Methods of Analysis Characterisation of Materials – A Survey of Methods
  - Atomic Spectroscopic Analysis
  - Solvent Extraction of Metal Chelates
  - Kinetics of Solvent Extraction
  - Reaction Mechanisms in Organic Chemistry
  - A single muscle fibre approach to the study of muscle biochemistry.
  - Gas-Liquid Chromatography

The form of each item (nature of activity, type of assessment, etc.) will vary and it will be necessary to discuss the content of items of interest with staff members concerned. The deadline for completion of this coursework is the beginning of semester two. The assessment of each piece of coursework will be carried out by the staff member concerned. As a rough guide, the load associated with each element of SCS4201 will be similar to that of a one-semester subject involving 1-2 hours/week of contact.

Project Supervisors
The research project supervisor(s) will be appointed at the time of enrolment. The project supervisor(s) will advise the student on the conduct of the research program and contribute towards the assessment of the Project Thesis.

Project Examiners
Two examiners, neither of whom will be a project supervisor, will be appointed prior to the Initial Oral Presentations. The examiners will assess both the Initial and Final Oral Presentation and contribute towards the assessment of the Project Thesis. The examiners will provide each student with written comments following the Initial Oral Presentation.

Assessment
The proportion of assessment associated with each part of the Honours program is as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPG 6010</td>
<td>9% 10</td>
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<tr>
<td>SCS 4201</td>
<td>27% 30</td>
</tr>
<tr>
<td>(9% per item)</td>
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</tr>
<tr>
<td>SCS 4600</td>
<td>80</td>
</tr>
<tr>
<td>Initial Oral Presentation</td>
<td>10%</td>
</tr>
<tr>
<td>Final Oral Presentation</td>
<td>10%</td>
</tr>
<tr>
<td>Project Thesis</td>
<td>54%*</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

Joint assessment by the two examiners and the project supervisor(s).
Sustainability Group

The Sustainability Group operates on the St Albans Campus of the University. In line with Faculty objectives, the School is committed to the development and promotion of science.

The Group seeks to provide students with vocationally and educationally oriented experiences and expertise which will best equip them for entry into a work environment in which there is likely to be significant career changes during their working life. Consequently, the Group provides courses and programs with a close relationship between theory and practice, and seeks to include relevant industrial experience within each award course.

The Group also seeks to foster within its students a personal pride in, and a professional attitude to their work and a full understanding of their responsibilities to society as trained scientists.

It is the belief of the that active involvement in research and consultancy is vital in providing quality teaching as well as in developing a viable and practical course for the students. To this end, all of the academic staff have a doctoral degree and substantial research and consultancy experience. The Group endeavours to develop close relationships with industry and with the community to keep abreast of their respective needs. To this end student projects are performed in collaboration with industry, the community, government bodies, and research institutes wherever possible.

The Group is equipped with world class laboratories and equipment for teaching and research. These include a well equipped Aquatic Research Laboratory and access to the Queenscliffe Marine Station, SCUBA equipment, a 4WD vehicle, GPS units, various environmental measurement devices, and excellent facilities for microbiological work.

The Group also offers Master of Science and Doctor of Philosophy degrees by research and Masters and Graduate Diploma coursework programs. Further details are given in the Postgraduate Studies section of the Handbook.

Courses Offered

The Sustainability Group offers undergraduate courses leading to the award of:

Bachelor of Science (Honours)

Bachelor of Science

• Ecology and Sustainability

Group Regulations

The following regulations apply to all courses and subjects administered or taught by the Sustainability Group and are in addition to University regulations governing these areas as laid down in the Statutes and Regulations.

Awards

A student shall qualify to receive an award when that student has successfully completed all the requirements and prescribed subjects of the course.

Assessment

Student assessment will embrace both formal assessment through final examination and continuous assessment incorporating unit tests, assignments, report writing, problem solving exercises, class presentations and laboratory, project and fieldwork.

Students would normally be expected to satisfactorily complete each component of the assessment to gain a pass in the subject.

Practical work

A minimum of 80% attendance is required at all practical sessions. Failure to attend at least 80% of practical sessions will automatically constitute unsatisfactory completion of the subject. Practical reports will only be accepted from those students who have attended practical sessions for their full duration.

Late submission

Students failing to submit assessable work by the prescribed deadline will incur a penalty of five (5) percentage marks per day for the first ten days after the prescribed deadline. Work submitted after this time will not be assessed and students will be granted a zero (0) grade.

This requirement may be varied at the discretion of the subject coordinator.

Supplementary Assessment

Students may be granted supplementary assessment with a maximum of two supplementary assessments being permitted in any one full-time academic year. Supplementary assessment will not be available for subjects that are being repeated.

Use of electronic calculators and storage devices

The use of electronic calculators and electronic storage devices is not permitted in any examination unless specified in the subject guide for that subject and/or on the examination paper for that subject.

Unsatisfactory Progress

Students in any one of the following categories may be asked to show cause as to why they should not be excluded from the course:

• those who fail 50% or more of their assessable enrolment load (expressed in subjects) in any semester;
• those who fail the same subject twice;
• those who transgress a conditional enrolment agreement.

Duration of Exclusion

Excluded students have no automatic right of re-admission to the course from which they were excluded. Students who have been excluded may apply for re-admission not less than one calendar year from the date of exclusion. These students must provide, with their application, evidence of changed circumstances which significantly improve the applicant's chances of academic success.

Progression

Progression through the course is based on the following guidelines:

• Where any compulsory subject must be repeated, enrolment in that subject must be at the first opportunity following the initial failure.
• Students may not enrol in any subject for which the prerequisite has not been passed.
• Student enrolment will not normally be approved where the total proposed subject hours exceeds the normal total subject hours for a course year.
• Where enrolment in a co-requisite subject is required, enrolment in the co-requisite subject must take preference over enrolment in an elective.
• Where a subject is being repeated, requests for exemptions for part of the subject work are at the discretion of the Department or School offering the subject. Any exemption granted will normally apply for one year only.
Disciplinary Failure
A student who has failed a subject on disciplinary grounds may not enrol in any further subjects without the permission of the Faculty Dean.

Repeating Subjects
A student who has withdrawn twice in any subject without receiving a penalty grade must seek the permission of the lecturer in charge before being permitted to re-enrol in that subject.

Stage Completion
A student may apply for a Stage Completion if:

- all subjects in the course except one have been passed;
- a result of N1 (40%-49%) is achieved in the failed subject;
- the failed subject is not a prerequisite for any other subject in the course.

The granting of a Stage Completion is at the discretion of the Head of Group and is not regarded as a pass in the failed subject.

Deferment from Award Course
The following rules apply to the courses of the Group and are in addition to University regulations governing these areas.

- Approval of deferment is not automatic.
- Each application to defer will be dealt with on an individual basis by the Group Administrator in consultation with appropriate academic staff members.
- A deferment will not be granted to VTAC applicants requesting a deferment at their first enrolment session. Students who fall into this category will be advised to re-apply for a place at the end of the year.
- In normal circumstances students must have successfully completed at least one semester of study, by passing at least 50% of subjects undertaken, to be eligible for deferment.
- Except under exceptional circumstances students may apply to defer their studies for a total period not exceeding twelve months.
- Deferment will not normally be granted until consultation has taken place with the Course Co-ordinator (or nominee) and/or a student counsellor.
- Students failing to re-enrol at the end of their deferment period will automatically be withdrawn from their course of study.

Further Information
For further information please contact the Sustainability Group on (03) 9365-2667 or fax (03 9365 2465).

Biology and General Science Teaching for Physical Education Graduates
The School of Biomedical Sciences and Sustainability Group have arranged elective subjects to assist Physical Education and Recreation students planning a secondary teaching career. The School offers two elective programs designed to facilitate the entry of Bachelor of Applied Science – Physical Education graduates into a second teaching method in a Diploma of Education course and to subsequently gain registration with the Ministry of Education to teach either Biology or General Science, in addition to Physical Education.

To obtain registration in General Science, the Ministry of Education requires that students take subjects equivalent to one quarter of the first year of their Bachelor of Applied Science course in each of two science areas, both of which have the potential to be extended to sub-majors. A sub-major in a science area is defined by the Ministry as a commitment of one quarter of the first year load and one quarter of the second year load to subjects in this science area.

The physical education degree at Victoria University, Footscray Park Campus, is based upon a unit system such that one semester hour of contact is equivalent to one unit. Since the degree requires a minimum of 144 units (48 units per year), then one quarter of a year corresponds to 12 units. To obtain General Science registration based upon chemistry and biology therefore, requires at least 12 units devoted to chemistry and 12 units to biology in the first year of the degree.

To obtain registration in biology, it is necessary to take sufficient biology subjects to constitute a sub-major, i.e. at least 12 units of biology in first year and 23 units of biology in second year.

Details of the two streams of study are set out below; the code number is given for each subject.

General Science Stream
SCS1006 Chemistry 1
SBM1518 Human Physiology 1 or SBF1310 Biology 1
SBM1528 Human Physiology 2 or SBF1320 Biology 2
SBM2260 Diet and Nutrition

Biology Stream
SBF2192 Applied Microbiology
SBM1518 Human Physiology 1 or SBF1310 Biology 1
SBM1528 Human Physiology 2 or SBF1320 Biology 2
SBM2260 Diet and Nutrition
SMB3264 Advanced Nerve and Muscle Physiology
SBF2610 Fundamentals of Ecology
SBF2640 Australian Animals
SBF2620 Australian Plants
SBF3600 Aquatic Ecology

Bachelor of Science in Ecology and Sustainability
Course Code: SBES

Course Objectives
This course provides the flexible combinations of professional education and technical training that are required to develop the practical solutions necessary to achieve sustainable management of the Australian environment. There is a strong emphasis on hands-on skills, including building links across scientific, social and business sectors, and including environmental analysis, effective communication, and project management.

The course structure is based on a limited number of core subjects which provide a solid foundation to the biology and ecology and sustainable management of the Australian landscape, supplemented by a wide range of electives drawn from the environmental engineering, business, tourism, community development, and human bioscience disciplines.

Students can chose from electives according to the four major streams in the course: a) ecology and natural resource management (with specializations in aquatic engineering and environmental engineering); b) ecology and community development; c) ecology and tourism/ business; d) ecology and human bioscience/ wellness. These are suggested streams only, and students may select electives according to their desired academic and career pathway, subject to approval from the Head of Group.

The course teaches students the necessary skills to perform a wide range of activities in ecology and environmental science in addition to environmental issues and community studies, and the skills for communicating their ecological knowledge to science professionals and non-professionals. The course structure is practically based and flexible, allowing a mix of in-depth studies and specializations with novel combinations of subjects and skills across diverse disciplines not usually covered in science courses.
Admission Requirements
The minimum entry requirement for persons under 21 years of age on 1 January 2004 is the satisfactory completion of a Year 12 course of study approved by the Victorian Curriculum and Assessment Board (VCAB) or an equivalent program approved by Victoria University for entry.

The minimum ENTER score for 2003 was 65. It is anticipated that the ENTER score for 2004 will be 70. Prerequisites are Units 3 and 4 - a study score of at least 20 in English (any).

There is also provision for mature age entry and entry as a disadvantaged person. Mature age provisions apply to those persons aged 21 years and over as at 1 January 2004.

Course Duration
The Bachelor of Science in Ecology and Sustainability program requires the equivalent of three years full-time study. A fourth year may be taken in the Honours program.

Course Structure

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Credit points</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>One</td>
<td>Two</td>
</tr>
<tr>
<td>SBF1150 Global Environmental Issues</td>
<td>15</td>
<td>-</td>
</tr>
<tr>
<td>SBF1160 Australian Landscapes &amp; Biota</td>
<td>-</td>
<td>15</td>
</tr>
<tr>
<td>SBF1310 Biology 1</td>
<td>15</td>
<td>-</td>
</tr>
<tr>
<td>SBF1320 Biology 2</td>
<td>-</td>
<td>15</td>
</tr>
<tr>
<td>SCS1110 Chemistry for Biol. Sci. A or elective</td>
<td>15</td>
<td>-</td>
</tr>
<tr>
<td>SMA1110 Maths 1 or elective</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>SCS1120 Chemistry for Biol. Sci. B or elective</td>
<td>-</td>
<td>15</td>
</tr>
<tr>
<td>SMA120 Maths 2 or elective</td>
<td>-</td>
<td>10</td>
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<tr>
<td>ACE1910 Communications for Science</td>
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</tr>
<tr>
<td><strong>Total</strong></td>
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<table>
<thead>
<tr>
<th>Year 2</th>
<th>Credit points</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>One</td>
<td>Two</td>
</tr>
<tr>
<td>SBF2610 Fundamentals of Ecology</td>
<td>15</td>
<td>-</td>
</tr>
<tr>
<td>SBF2620 Australian Animals</td>
<td>-</td>
<td>15</td>
</tr>
<tr>
<td>SBF2630 Community &amp; Environment</td>
<td>-</td>
<td>15</td>
</tr>
<tr>
<td>SBF2640 Australian Plants</td>
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<td>15</td>
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<tr>
<td>Prescribed and free electives</td>
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<td>30</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>60</strong></td>
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</table>

<table>
<thead>
<tr>
<th>Year 3</th>
<th>Credit points</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>One</td>
<td>Two</td>
</tr>
<tr>
<td>SBF3600 Aquatic Ecology</td>
<td>15</td>
<td>-</td>
</tr>
<tr>
<td>SBF3610 Biostatistics</td>
<td>-</td>
<td>15</td>
</tr>
<tr>
<td>SBF3620 Conservation &amp; Sustainability</td>
<td>-</td>
<td>15</td>
</tr>
<tr>
<td>SBF3630 Environmental Impacts &amp; Monitoring</td>
<td>-</td>
<td>15</td>
</tr>
<tr>
<td>SBF3640 Terrestrial Environments &amp; Rehabilitation</td>
<td>-</td>
<td>15</td>
</tr>
<tr>
<td>SBF3650 Pollution Biology</td>
<td>-</td>
<td>15</td>
</tr>
<tr>
<td>SBF3660 Indigenous Society &amp; Environmental Management</td>
<td>15</td>
<td>-</td>
</tr>
<tr>
<td>SCS3411 Environmental Legislation</td>
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<tr>
<td>Electives for balance of credit points</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>60</strong></td>
<td><strong>60</strong></td>
</tr>
</tbody>
</table>

1 Students taking the Ecology and Human Bioscience/Wellness stream can take SBF3130 Biology 1 or SBF1510 Human Bioscience 1A.
2 Students enrolled in the 'natural resource management' stream would be advised to take Chemistry for Biol. Sci. A & B, whereas other streams would not be so advised. Some level 2/3 subjects (e.g. Pollution Biology), will have Chemistry for Biol. Sci. A & B and other subjects as pre-requisites.
3 Students in the 'natural resource management' stream would be required to take Maths 1 & 2 if they lack VCE mathematics, but could take an elective if they have VCE mathematics, at the discretion of the course co-ordinator.
4 Students with demonstrably sound communications skills on application can elect to take an elective subject in replacement of ACE1910 Communications for Science, at the discretion of the course co-ordinator.

Electives
At least 6 electives are required to be taken over the course of the degree. Electives other than those listed below may be taken at the discretion of the Head of School. The total subject hours must be within the prescribed range and due consideration must be given for prerequisites.

Science electives may be chosen from any of the degree subjects offered by the Faculty of Science, Engineering and Technology. Subjects from programs offered by other Faculties may also be selected as elective subjects, subject to the approval of the appropriate Faculty. Students should refer to the subject outlines listed within other Schools and Faculties for further information.

Students are advised to seek the assistance of academic staff when making their elective choice, as the judicious selection of electives can provide an opportunity to undertake a second major study alongside the primary degree specialization.

Prescribed Electives

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Credit points</th>
<th>Semester</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>One</td>
<td>Two</td>
</tr>
<tr>
<td>SCS1110 Chemistry for Biological Sciences A</td>
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<td>15</td>
</tr>
<tr>
<td>SMA1110 Maths 1 or Elective - from list below</td>
<td>-</td>
<td>15</td>
</tr>
<tr>
<td>SCS1120 Chemistry for Biological Sciences B</td>
<td>2</td>
<td>15</td>
</tr>
<tr>
<td>SMA1120 Maths 2 or Elective - from list below</td>
<td>2</td>
<td>15</td>
</tr>
</tbody>
</table>

Aquatic engineering specialization
- ENF2841 Fluid Mechanics 1 | 1 | 15 |
- ECF2842 Hydraulics | 2 | 15 |
- ECF3841 Engineering Hydrology | 1 | 15 |
- ECF3842 Water Resources Engineering | 2 | 15 |
- ECG3861 Geomechanics | 1 | 15 |
- ECF4842 Geohydrological Engineering | 2 | 15 |

Environmental engineering specialization
- ECN3882 Introduction to Environmental Engineering | 2 | 15 |
- ECN4881 Environmental Engineering 1 | 1 | 15 |
- ECN4882 Environmental Engineering 2 | 2 | 15 |
- ECT4872 Environmental Planning & Design | 2 | 15 |

Ecology and Community Development Stream
- ASA1021 Community Development Theory and Practice 1 | 1 | 15 |
- ASA1022 Community Development Theory and Practice 2 | 2 | 15 |

Students taking this stream should choose two (2) electives from the following:
- ASA2021 Community Development Theory and Practice 3 | 1 | 15 |
- ASA2022 Community Development Theory and Practice 4 | 2 | 15 |

Ecology & Tourism Business Stream
- BHO1190 Introduction to Tourism | 1 | 15 |
- BHO2286 Nature-based Tourism | 1 | 15 |
Students taking this stream should choose two (2) electives from the following:

- BHO2255 Tourism Enterprise Management 15
- BHO1192 Travel Industry Management 15
- BHO3437 Destination Planning and Development 15
- BHO3500 Hospitality and Tourism Industry Project 15

Students taking this stream could include electives from the following:

- SBM2530 Human Bioscience 3A (pathophysiology 1) 15
- SBM2540 Human Bioscience 4A, OR 15
- SBM3810 Wellness 1 20
- SBM3820 Wellness 2 20

Suitable Free Electives

**NOTE:** Some electives may be prescribed for certain streams.

- SCS1110 Chemistry for Biological Sciences A 15
- SMA1110 Maths 1 15
- SCS1120 Chemistry for Biological Sciences B 15
- SMA1120 Maths 2 15
- ENF2841 Fluid Mechanics 1 15
- ECF2842 Hydraulics 15
- ECF3841 Engineering Hydrology 15
- ECF3842 Water Resources Engineering 15
- EGC3861 Geomechanics 15
- ECF4842 Geo-hydrological Engineering 15
- ECN3802 Introduction to Environmental Engineering 15
- ECN4881 Environmental Engineering 1 15
- ECN4882 Environmental Engineering 2 15
- ECT4872 Environmental Planning & Design 15
- ECT2871 Surveying 15
- ACE1801 Engineering Communication 15
- ENM1851 Engineering in Society 15
- ASA1021 Community Development Theory and Practice 1 15
- ASA1022 Community Development Theory and Practice 2 15
- ASA2021 Community Development Theory and Practice 3 15
- ASA2022 Community Development Theory and Practice 4 15
- ASA3011 Sociology 3A 15
- ASA3012 Sociology 3B 15
- ASS3035 Sociology 2.3E (Environmental Policy) 15
- ASC3095 Conflict Resolution in Groups and Communities 15
- BHO2255 Tourism Enterprise Management Ecology 15
- BHO3206 Nature-based Tourism 15
- BHO1192 Introduction to Tourism 15
- BHO1192 Travel Industry Management 15
- BHO3437 Destination Planning and Development 15
- BHO3500 Hospitality and Tourism Industry Project 15

Students are advised to seek assistance and advice of academic staff when making their elective selection. Engineering and Tourism/Business subjects are offered only on the Footscray Park Campus in the first instance. Timetable constraints make combinations of subjects offered on more than one Campus difficult and so must be selected with care.

**Field trips**

Students will be required to participate in field trips throughout the course. These will vary from 1-day excursions to 3-day field camps. Some field trips may be held over weekends. Participation in these activities forms part of the assessment of the subjects, and provides essential experience in field techniques. Exemption from these activities is available only by prior application where circumstances preclude participation.

**Professional Recognition**

Graduates of the course are eligible to join professional and learned societies such as the Ecological Society of Australia and the Australian Institute of Biologists.

**Bachelor of Science (Honours) in Ecology and Sustainability**

**Course Code:** SHAB

**Course Objectives**

An Honours program is available in each of the degree specializations. The aim of the honours program is to provide a course of advanced study at a fourth year level which builds on the knowledge and skills developed at degree level, and to prepare students for postgraduate research by developing skills in: working independently, critical analysis of information, problem-solving, designing and conducting experimental work and written and oral communication.

**Admission Requirements**

To qualify for entry to the honours program, applicants must hold a degree or equivalent with major studies in a relevant discipline and should normally have obtained a ‘credit’ average, or equivalent, in the final year of the degree.
Course Duration
The courses are offered on a full-time basis over one year or equivalent if on a part-time basis. Entry to the Honours program for the Conservation Biology and Environmental Management specialisation can be at either at the beginning or the academic year (February) or at mid-year intake (July) to allow for field-based research with seasonal limitations.

Course Structure
The structure of these three honours courses is as follows:
SBF4000 Science Honours 120 credit points
(60 per semester)
ACE1141 ENGLISH LANGUAGE AND COMMUNICATION 1

Campus Werribee
Prerequisite(s) Nil

Content This subject is designed to provide students with written and oral communication skills necessary for their academic studies in science and for their employment. Skills include listening and note-taking, reading and summarizing, researching and referencing information, writing reports and making oral presentation. These skills are applied in writing memos, memo reports and a major report. Students are required to complete class exercises and oral presentations. Use of clear, concise language in written and spoken contexts is emphasised.

Required Reading Handbook of Communication Skills for First Year Students in the Faculty of Science, Engineering and Technology.

Assessment Progressive assessment of written work comprising exercises and tests. Examinations and tests, 40%; Reports, 30%; Oral Presentations, 30%. Students must demonstrate the ability to use correctly the conventions of the English language in class exercises, tests and the major written report. Students are expected to attend at least 80% of classes.

ACE1142 ENGLISH LANGUAGE AND COMMUNICATION 2

Campus Footscray Park
Prerequisite(s) ACE1141 English Language and Communication 1

Content This preliminary subject, which is designed to enable students who are not sufficiently competent in English to successfully undertake a mainstream ‘communication’ subject. In the second semester English language skills will be further extended and reinforced. The subject specifically aims to: increase student’s proficiency in communicating in Australia, both orally and in writing at an academic/professional level; enable students to achieve acceptable pronunciation and fluency in English; make students aware of correct study skills; listen and note-taking; increase students’ understanding and use of Australian English vocabulary; develop students’ writing abilities by studying various kinds of writing; increase students’ understanding of Australian society by concentrating on specific social themes. Students will be required to attend seminars and complete the exercises prescribed, including weekly class exercises, completion of prescribed reading, summaries and critiques and oral presentation.

Required Reading Murphy, Raymond, 1994, English Grammar in Use, CUP, Cambridge

Recommended Reading McEvedy, R. 1994, Learning Grammar in Context, Nelson, Australia

Class Contact Two hours per week for one semester.

Assessment Final Examination 30%; Written Report 20%; Synthesis 15%; aural test 10%; oral presentation 15%; continuous class work and homework exercises 10%.

ACE1541 COMMUNICATION FOR NSSE ENGINEERS

Campus Footscray Park
Prerequisite(s) Nil

Content The skills of listening, speaking, reading and writing will be taught within an engineering context. Skills focused on include the ability to take notes, summarise, synthesise, research and reference appropriately. Basic grammar structures and writing conventions will be examined and will culminate in the writing of a correctly referenced engineering research report. Tasks designed to improve students’ oral ability, when presenting researched information, are also included.

Required Reading Murphy, R., 1994, English Grammar in Use, CUP, Cambridge. Handbook of Communication Skills for First Year Students in the Faculty of Science, Engineering and Technology, 2003, Faculty of Arts, Victoria University

Class Contact Four hours per week for one semester based on two 2 hour workshops.

Assessment Exam, 30%; Oral presentations, 20%; Research report, 15%; Summary, 10%; Synthesis, 10%; Aural Test, 10%; Class exercises, 5%.

ACE1542 COMMUNICATION FOR ENGINEERS

Campus Footscray Park
Prerequisite(s) Nil

Content Within the context of examining the changing role of engineers in society today, the skills of note taking, summarising, synthesising, researching, referencing, report writing, manual and instruction writing, and a range of oral presentations, techniques (demonstrations, debates, poster presentations, oral reports) will be taught. Written and oral assessment tasks will be based on the role of the professional engineer and the ethics of engineering. CLACS and Engineering lecturers will develop class materials, exercises and assessment tasks collaboratively.
Required Reading  
*Handbook of Communication Skills for First Year Students in the Faculty of Science, Engineering and Technology, 2003,* Faculty of Arts, Victoria University.

Class Contact  
Four hours per week for one semester based on two one hour lectures and a two hour workshop.

Assessment  
Exam, 40%; Oral presentations, 20%; Research report, 15%; Synthesis, 10%; Laboratory report, 15%

### ACE 1801 ENGINEERING COMMUNICATION

**Campus**  
Footscray Park

**Prerequisite(s)**  
Nil

**Content**  
The skills of note-taking, summarising, synthesising, researching, referencing, report writing, manual and instruction writing, and a range of oral presentation techniques (demonstrations, debates, poster presentations, oral reports) will be taught within an engineering context.

**Required Reading**  
*Handbook of Communication Skills for First Year Students in the Faculty of Science, Engineering and Technology, 2003,* Faculty of Arts, Victoria University.

**Class Contact**  
Three hours per week for one semester based on one hour of lecture and two hour workshop.

**Assessment**  
Synthesis, 10%; Oral presentations (from demonstrations, debates, poster presentations, oral reports), 20%; Research report, 15%; Laboratory report, 15%; Examination, 40%.

### ACE 1910 COMMUNICATIONS FOR SCIENCE

**Campus**  
St Albans, Werribee

**Prerequisite(s)**  
Nil

**Content**  
Semester One  
This subject is designed to provide students with written and oral communication skills necessary for their academic studies in science and future employment. Skills include listening and note-taking, reading and summarising, researching and referencing information, writing reports and making oral presentations. These skills are applied in writing memos, memo reports and a major report. Students are required to complete class exercises and oral presentations. Use of clear, concise language in written and spoken contexts is emphasised.

**Semester Two**  
This subject develops and builds upon language and research skills acquired in semester one and introduces students to further communication skills including letter writing, preparation of letters of application and resumes, interview techniques and use of libraries and other research tools. Students are required to research a topic in the science field and present a written and oral report.

**Required Reading**  
*Handbook of Communication Skills for First Year Students in the Faculty of Science, Engineering and Technology.*

**Class Contact**  
Two hours per week for two semesters, comprising lectures and tutorial/workshop.

**Assessment**  
Progressive assessment of written work comprising exercises and tests, Examinations and tests, 40%; Written exercises, 30%; Oral assessment, 30%. Students must demonstrate the ability to use correctly the conventions of the English language in class exercises, tests and the major written report. Students are expected to attend at least 80% of classes.

### ACE 2010 WRITTEN AND ORAL COMMUNICATION 2

**Campus**  
Werribee

**Prerequisite(s)**  
ACE 1010 Written and Oral Communication 1.

**Content**  
This subject develops and builds upon language and research skills acquired in ACE 1010 and introduces students to further communication skills including letter writing, preparation of letters of application and resumes, interview techniques and use of libraries and other research tools. Students are required to research a topic in the science field and present a written and oral report.

**Required Reading**  
*Handbook of Communication Skills for First Year Students in the Faculty of Science, Engineering and Technology.*

**Class Contact**  
Two hours per week for one semester.

**Assessment**  
Progressive assessment of written work comprising exercises and tests, 40%; major written reports (1500 words), 40%; oral presentations, 20%. Students must demonstrate the ability to use correctly the conventions of the English language in class exercises, tests and the major written report. Students are expected to attend at least 80% of classes.

### ACE 2890 PROFESSIONAL COMMUNICATION

**Campus**  
Footscray Park

**Prerequisite(s)**  
Nil

**Content**  
This subject is designed to enable students to communicate effectively in a variety of media at a professional level, and to understand the social context influencing their communications. The coursework will be integrated into the context of the students’ scientific study. On completion of the subject, students should have developed an understanding of and a proficiency in a variety of skills appropriate to tertiary study; and acquired an awareness of their role as communicators in a technological age. Coursework will include: the nature of communication; written communication skills; technical and scientific writing; including reports; oral communication; oral reports and debates; study skills; reading, note-taking and editing; research skills; library research and bibliographic format; employment preparation; preparing a resume and letters of response to position descriptions; document production.

**Required Reading**  

**Class Contact**  
Two hours per week for two semesters.

**Assessment**  
Progressive assessment of written work comprising exercises and reports, 50%; major written and oral presentations, 50%. All assignments must be attempted in order to qualify for assessment in this subject. Regular class attendance is expected.

### ACE 3010 WRITTEN AND ORAL COMMUNICATION 3

**Campus**  
Werribee

**Prerequisite(s)**  
ACE 1010 Written & Oral Comm 1 & ACE 2010 Written & Oral Comm 2 or ACE 1910 Communications for Science.

**Content**  
This subject develops and builds upon language and research skills acquired in ACE 1010 and ACE 2010. Students are introduced to skills relating to preparation for employment including application letters, resumes, interview techniques. Students are also required to research and present a formal written report. The report is also presented orally in a formal setting to an audience of students and staff.

**Required Reading**  
*Handbook of Communication Skills for First Year Students in the Faculty of Science, Engineering and Technology.*

**Class Contact**  
One hour per week for two semesters.

**Assessment**  
Class exercises, 30%; final report and oral presentation, 70%.

### ACE 3020 WRITTEN AND ORAL COMMUNICATION 3 (PART-TIME)

**Campus**  
Werribee

**Prerequisite(s)**  
Three years of approved experience in a chemical or related industry.

**Content**  
This subject is designed to assist students to develop professional communication skills. Students are required to research and present a formal report on a topic approved by the School of Molecular Sciences. The report must be professionally presented and meet technical report writing requirements. Oral communication focuses on presentation of the written report in a formal setting to an audience of students and staff.

**Required Reading**  
*Handbook of Communication Skills for First Year Students in the Faculty of Science, Engineering and Technology.*

**Class Contact**  
Two hours per week for two semesters.

**Assessment**  
Class exercises, 30%; final report and oral presentation, 70%. Students are expected to attend at least 80% of classes.
ACE3H3 ENGLISH LANGUAGE AND COMMUNICATION 3

Campus: Footscray Park, Malaysia
Prerequisite(s): ACE1142 English Language and Communication 2 or Year 12 English or competence in English.

Content: This subject is designed to provide students with written and oral communication skills necessary for their academic studies and future employment. Skills include listening and note-taking, reading and summarising, locating and accessing information sources, writing reports and making oral presentations. Students apply these skills to a research project and learn how to plan, draft, write and edit a research report. Students will present their research findings to an audience. Emphasis is given to the conventions of the English language - grammar, syntax and vocabulary - and to clear writing in a range of contexts. Preliminary preparation for employment is included.


Class Contact: Three hours per week for one semester.
Assessment: Oral Presentation 20%, Employment Preparation 30%, Written Report (1500-2000 words) 20%, Class Exercises 30%.

ACE3H4 ENGLISH LANGUAGE AND COMMUNICATION 4

Campus: Footscray Park, Malaysia
Prerequisite(s): ACE3143 English Language and Communication 3.

Content: This subject builds on language and research skills acquired in previous subjects and introduces students to work-related skills including job applications, resumes, interview techniques, interpersonal skills, small group communication, writing and speaking professionally. Students continue their research project and present their findings in a written report and oral presentation. Students use word processing skills and current software to produce a professional standard in both written and oral presentations.


Class Contact: Three hours per week for one semester.
Assessment: Test, 20%; Orals, 40%; Employment preparation, 20%; Project report (1500-2000 words), 20%.

BAO1001 ACCOUNTING FOR DECISION MAKING

Campus: Footscray Park, Sunbury, Werribee, Kuala Lumpur, Hong Kong.
Prerequisite(s): Nil.

Content: The objectives of the subject are to provide a basis for further accounting studies, yet meet the needs of students from other areas of business studies; to introduce students to basic accounting concepts and selected accounting practices; and to introduce students to the role of, and the processes involved in planning and decision making within the business environment. Topics include: introduction to the roles of accounting; management planning and decision making; accounting concepts; cash and accrual accounting; preparation of financial statements; forms of business ownership; and effect on financial statements; budgeting - an introduction; budgets; control and performance reports; analysis and interpretation; evaluation of performance; the operating cycle; short term decision making and cost behaviour.


Class Contact: Three hours per week. Normally to be delivered as two hours of lectures and one hour of tutorials, workshops or modules; or a delivery mode as approved by the Faculty of Business and Law. Subject equal to 15 credit points.

Assessment: Final examination, 70%; internal assessment, 30%. Students are expected to satisfactorily complete each component of the assessment to gain a pass in the subject. Supplementary assessment will not be available.

BAO3501 ACCOUNTING FOR BUSINESS DECISIONS

(ENGINEERING AND SCIENCE SERVICE SUBJECT)

Campus: Footscray Park.
Prerequisite(s): Nil.

Content: This subject explores the relationship between accounting and business decision making. Basic financial accounting, costing and management accounting.

Required Reading: To be advised by lecturer.

Class Contact: Three hours per week. Normally to be delivered as two hours of lectures and one hour of tutorials, workshops or modules; or a delivery mode as approved by the Faculty of Business and Law. Subject equal to 15 credit points.

Assessment: Continuous assessment, 20%; final examination, 80%. Students are expected to satisfactorily complete each component of the assessment to gain a pass in the subject. Supplementary assessment will not be available.

BAO9913 ACCOUNTING INFORMATION SYSTEMS

(ENGINEERING AND SCIENCE SERVICE SUBJECT)

Campus: Footscray Park.
Prerequisite(s): Nil.

Content: The subject aims to introduce students to the language and concepts of accounting and to the provision of financial information to meet user requirements. Topics include: introduction to the uses and users of accounting information; the presentation and interpretation of accounting reports; provision of information for business management; basic decision making and financial planning.

Required Reading: To be advised by lecturer.

Class Contact: Three hours per week. Normally to be delivered as two hours of lectures and one hour of tutorials, workshops or modules; or a delivery mode as approved by the Faculty of Business and Law.

Assessment: Test and assignment, 30%; final examination, 70%. Students are expected to satisfactorily complete each component of the assessment to gain a pass in the subject. Supplementary assessment will not be available.

BBA3512 ENVIRONMENTAL LEGISLATION AND ECONOMICS

(ENGINEERING AND SCIENCE SERVICE SUBJECT)

Campus: Footscray Park.
Prerequisite(s): Nil.

Content: Introduction to law, types of legislative enactments and the Australian court system. Applications of acts, regulations and other laws and policies to development proposals, managerial responsibilities and environmental protection. Overview of relevant provisions of a range of environment-related legislation. Cost/benefit, cost effectiveness and input-output analysis. Valuation techniques for externalities, assessment of social values, utility and price elasticity considerations, economic instruments of environmental policy including taxes, charges and levies, environmental damage rights and credits, performance bonds, tradeable rights.

Required Reading: To be advised by lecturer.

Class Contact: Three hours per week. Normally to be delivered as two hours of lectures and one hour of tutorials, workshops or modules; or a delivery mode as approved by the Faculty of Business and Law.
BCA9171 INTEGRATED OFFICE SYSTEMS
(ENGINEERING AND SCIENCE SERVICE SUBJECT)
Campus Footscray Park
Prerequisite(s) Nil.
Content This subject introduces the concepts of integrated office systems and knowledge work. It focuses on the use of integrated system support to information processing tools, to support the decision making and communication needs to management. Emphasis is given to the use and evaluation of these tools, and to their application to knowledge work. The aims of this subject are: to develop an appreciation of the nature and types of integrated office systems and knowledge work; develop an understanding of the characteristics and importance of decision making and communication activities to knowledge workers; examine the relationship between information support, information processing, and the decision making process; identify the information needs of knowledge workers; critically study the nature and capabilities of selected information processing tools.
Required Reading To be advised by lecturer.
Class Contact Three hours per week. Normally to be delivered as two hours of lectures and one hour of tutorials, workshops or modules; or a delivery mode as approved by the Faculty of Business and Law.
Assessment Practical work, 50%; examination, 50%. Students must satisfactorily complete each component of the assessment to pass the subject. Supplementary assessment will not be available.

BCF9101 INTRODUCTORY COMPUTING
(ENGINEERING AND SCIENCE SERVICE SUBJECT)
Campus Werribee.
Prerequisite(s) Nil.
Content This introductory subject aims to give students a broad insight into the use and application of computers in the sciences. Topics covered include: computer systems, hardware and software, word processing, spreadsheets, databases, data communications, artificial intelligence, computers as a research tool, social implications of computing.
Required Reading To be advised by lecturer.
Class Contact Three hours per week. Normally to be delivered as two hours of lectures and one hour of tutorials, workshops or modules; or a delivery mode as approved by the Faculty of Business and Law.
Assessment Practical work, 50%; examination, 50%. Students must satisfactorily complete each component of the assessment to pass the subject. Supplementary assessment will not be available.

BCF9301 INFORMATION TECHNOLOGY
(ENGINEERING AND SCIENCE SERVICE SUBJECT)
Campus Werribee.
Prerequisite(s) Nil.
Content This introductory subject aims to give students a broad insight into the use and application of computers in the area of psychology. Topics covered include: computer systems, hardware and software, word processing, spreadsheets, databases, data communications, artificial intelligence, computers as a research tool, social implications of computing.
Required Reading To be advised by lecturer.
Class Contact Three hours per week. Normally to be delivered as two hours of lectures and one hour of tutorials, workshops or modules; or a delivery mode as approved by the Faculty of Business and Law.
Assessment Practical work, 50%, examination, 50%. Students must satisfactorily complete each component of the assessment to pass the subject. Supplementary assessment will not be available.

BCO1101 COMPUTER APPLICATIONS
Campus Footscray Park, Sunbury, Werribee, Kuala Lumpur, Hong Kong.
Prerequisite(s) Nil.
Content Computer systems hardware and software; word processing, graphics; spreadsheets; database management systems; overview of programming languages and program design; data communications; concepts of business information systems; social issues.
Required Reading To be advised by lecturer.
Class Contact Three hours per week. Normally to be delivered as two hours of lectures and one hour of tutorials, workshops or modules; or a delivery mode as approved by the Faculty of Business and Law. Subject equal to 15 credit points.
Assessment Semester assessment, 40%; final examination and tests, 60%. Students must satisfactorily complete each component of the assessment to gain a pass in the subject. Supplementary assessment will not be available.

BCO1102 INFORMATION SYSTEMS FOR BUSINESS
Campus Footscray Park, Sunbury, Werribee, Kuala Lumpur, Hong Kong.
Prerequisite(s) Nil.
Content This subject aims to introduce students to the professional activities involved in developing and applying information systems and the nature and importance of the supporting information technology. The subject introduces students to the nature and types of information systems and their importance to business processes. The student is introduced to the hardware and software technology that lies at the heart of business information systems, and to the principles that need to be applied in the development and application of effective information systems in business.
Required Reading Current Available Textbook – Student to be advised.
Class Contact Three hours per week. Normally to be delivered as two hours of lectures and one hour of tutorials, workshops or modules; or a delivery mode as approved by the Faculty of Business and Law. Subject equal to 15 credit points.
Assessment Assignments including development and documentation of a Database Solution to a business problem and an oral presentation, 40%, final examination, 60%. Students must satisfactorily complete each component of the assessment to gain a pass in the subject. Supplementary assessment will not be available.

BEO103 MICROECONOMIC PRINCIPLES
Campus Footscray Park, Sunbury, Werribee, Kuala Lumpur, Hong Kong.
Prerequisite(s) Nil.
Content This is the first of two Economic Principles subjects. The subject aims to provide a study of basic economic principles, to develop an introduction to economic methods, and to apply these principles and methods to aspects of the Australian economy. Topics include: introduction to economics; nature, method and objectives of economics; the economising problem, relative scarcity, production possibilities, opportunity costs, nature of economic resources; the market economy, demand and supply, theory and applications, including pricing ceilings, price floors, tariffs, taxes, and the labour market; consumer theory; theory of the firm, production and costs, introduction to market structure conduct and performance; price determination in perfect and imperfect
competition; workable competition and competition policy in Australia; alternative theories of the firm; market imperfections.

**Required Reading** To be advised by lecturer.


**Class Contact** Three hours per week. Normally to be delivered as two hours of lectures and one hour of tutorials, workshops or modules; or a delivery mode as approved by the Faculty of Business and Law. Subject equal to 15 credit points.

**Assessment** Continuous assessment, 50%; examination, 50%. Students must satisfactorily complete each component of the assessment to gain a pass in the subject. Supplementary assessment will not be available.

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**BE0104 MACROECONOMIC PRINCIPLES**

**Campus** Footscray Park, Sunbury, Werribee, Kuala Lumpur, Hong Kong.

**Prerequisite(s)** BE0103 Microeconomic Principles.

**Content** This subject aims to develop the basic macroeconomic principles applicable to the Australian economy and familiarise students with the macroeconomic environment within which Australian business operates. Topics include: the measurement of macroeconomic performance with reference to national income accounting and trade cycle analysis; the classical economic model and the Keynesian revolution; Keynesian economics and the theory of income determination; monetary influences on aggregate economic activity; inflation, unemployment; traditional demand management; the Phillips Curve revisited; interflation; incomes policies; the foreign trade sector and policies for external balance.


**Recommended Reading** To be advised by lecturer.

**Class Contact** Three hours per week. Normally to be delivered as two hours of lectures and one hour of tutorials, workshops or modules; or a delivery mode as approved by the Faculty of Business and Law. Subject equal to 15 credit points.

**Assessment** Continuous assessment, 40%; examination, 60%. Students are expected to satisfactorily complete each component of the assessment to gain a pass in the subject. Supplementary assessment will not be available. *Note:* Any hand-held calculator may be used in examinations.

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**BE0106 BUSINESS STATISTICS**

**Campus** Footscray Park, Sunbury, Werribee, Kuala Lumpur, Hong Kong.

**Prerequisite(s)** Nil.

**Content** This subject enables students to acquire the skills and techniques required to analyse data in a business environment. Topics include: introduction to statistics; descriptive statistics; introduction to probability and probability distributions; normal probability distribution; sampling distributions and parameter estimation; hypotheses testing: simple linear regression and correlation; time-series analysis and forecasting; index numbers. Use will be made of a statistical computer package.

**Required Reading** To be advised by lecturer.


**Class Contact** Three hours per week. Normally to be delivered as two hours of lectures and one hour of tutorials, workshops or modules; or a delivery mode as approved by the Faculty of Business and Law. Subject equal to 15 credit points.

**Assessment** Case study(s)/assignment(s), 40%; final examination, 60%. Students must satisfactorily complete each component of the assessment to gain a pass in the subject. Supplementary assessment will not be available.

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**BE0901 FUNDAMENTAL OF BUSINESS**

**(ENGINEERING AND SCIENCE SERVICE SUBJECT)**

**Campus** Footscray Park.

**Prerequisite(s)** Nil.

**Content** The subject provides students with an introduction to business concepts. It examines the relationship between the components of business and develops an appreciation of the structure, goals, operations and decision making processes within business. Business Trends and the Economic Environment: trends affect business; economic issues affecting business; social responsibility of business. Business Formation: forms of business organisation; small business management. Marketing Fundamentals: marketing principles; marketing objectives; marketing mix; product development and pricing; distribution, wholesale and retail. Management: management and leadership; production and operations management; management and public relations; information technology, computers and other business aids, risk management. Management and Human Resources: motivation; human resource management; industrial relations; legislation and human resource management; employee-management issues; multi-skilling, technology and work practices, comparable worth. Accounting and Finance: money and banking; sources of business funds; accounting and financial management; shares and bonds; personal financial planning. Quantitative Aids for Management: accounting analysis; budgeting and forecasting. Statistical analysis, spreadsheets. Law and Business: business law and ethics.

**Required Reading** To be advised by lecturer.

**Class Contact** Equivalent to 39 hours per semester normally to be delivered as a combination of lecture, seminar and/or workshop or a delivery mode as approved by the Faculty of Business and Law. Subject equal to 15 credit points.

**Assessment** Seminar assignments, 50%; final examination, 50%. Students must satisfactorily complete each component of the assessment to gain a pass in the subject. Supplementary assessment will not be available.

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**BHO3473 HUMAN RELATIONS**

**Campus** Footscray Park.

**Prerequisite(s)** Nil.

**Content** Tuning in to one's experience; communication skills; forming relationships; assertion and personal rights; influence and persuasion; dealing with emotions; personal presentation skills.


**Class Contact** Three hours per week. Normally to be delivered as two hours of lectures and one hour of tutorials, workshops or modules; or a delivery mode as approved by the Faculty of Business and Law. Subject equal to 15 credit points.

**Assessment** Assignments, tests, and reflective journals, 100%. Students must satisfactorily complete each component of the assessment to gain a pass in the subject. Supplementary assessment will not be available.
Class Contact Three hours per week. Normally to be delivered as two hours of lectures and one hour of tutorials, workshops or modules: or a delivery mode as approved by the Faculty of Business and Law. Subject equal to 15 credit points.
Assessment Class tests and assignments. Supplementary assessment will not be available.

**BLO2207 EMPLOYMENT LAW**

**Campus** Footscray Park, Sunbury, Werribee.
**Prerequisite(s)** BLO1105 Business Law.

**Content** The subject will address the need for informing and challenging students to develop knowledge and skills in the area of Employment Law. Topics include: an introduction to Australian labour law; the sources of Australian employment law; the nature of the employment relationship; the content of the contract of employment, express terms, implied terms; recruitment and limits of managerial control over hiring; termination and remedies at common law; statutory remedies for arbitrary termination; preventative legislation; discrimination in employment; occupational health and safety issues; reforming the system.

**Required Reading** To be advised by lecturer.

**Class Contact** Three hours per week. Normally to be delivered as two hours of lectures and one hour of tutorials, workshops or modules: or a delivery mode as approved by the Faculty of Business and Law. Subject equal to 15 credit points.

**Assessment** Assignments and class work, 50%; final examination, 50%. Students must satisfactorily complete each component of the assessment to gain a pass in the subject. Supplementary assessment will not be available.

**BLO4511 BUSINESS LAW AND STRUCTURE**

**ENGINEERING AND SCIENCE SERVICE SUBJECT**

**Campus** Footscray Park.
**Prerequisite(s)** Nil.

**Content** The subject is designed as an introduction to the Australian legal system for students who may receive no further formal legal training. Initial lectures briefly outline the sources of law, the concept of precedent, the Commonwealth and State of Victoria Constitutions and the judicial system. In the major portion of the subject students will learn the specialised art of legal reasoning, an analytical tool common to all branches of the law, through the study of the law of contracts. Finally, particular matters of interest to students in their roles as engineers and citizens will be dealt with, such as professional liability for negligence, purchase of real property and sale of goods.


**Class Contact** Three hours per week. Normally to be delivered as two hours of lectures and one hour of tutorials, workshops or modules: or a delivery mode as approved by the Faculty of Business and Law. Subject equal to 15 credit points.

**Assessment** The method of assessment will be announced at the commencement of the semester. Supplementary assessment will not be available.

**BMO1102 MANAGEMENT AND ORGANISATION BEHAVIOUR**

**Campus** Footscray Park, Sunbury, Werribee, Kuala Lumpur, Hong Kong.
**Prerequisite(s)** Nil.

**Content** The aims of this subject are to provide students with an understanding of organisational behaviour and management theory; to assess critically the underlying values of these theories; to assess critically the utility and application of the management practices
informed by these theories in the Australian context; and to analyse critically the values of Australian managers concerning behaviour in organisations and to evaluate the effectiveness of these assumptions. This subject includes the following topics: overview of the development of organisation/management theory; analysis of scientific management, human relations theory; individual behaviour/perception, personality, learning, motivation; group behaviour; group dynamics, conflict resolution, leadership, concentrating on Australian case studies and incorporating a consideration of issues of gender, ethnicity and age; applications of management/organisation theory in Australia; communication processes and quality of work life.

Required Reading

Recommended Reading

Class Contact
Three hours per week. Normally to be delivered as two hours of lectures and one hour of tutorials, workshops or modules; or a delivery mode as approved by the Faculty of Business and Law. Subject equal to 15 credit points.

Assessment
Three internal assessment tasks worth 60% of the subject assessment and a final examination worth 40% of the subject assessment. Students must successfully complete each part of the assessment to gain a pass in the subject. Supplementary assessment will not be available. Subject is equal to 15 credit points.

BMO2271 ORGANISATIONS
Campus Footscray Park, Werribee.
Prerequisite(s) BMO1102 Management and Organisation Behaviour.

Content
This subject examines the practices and functioning of organisations at micro levels, with an emphasis on how the individual interacts and impinges on such organisational settings. It is designed specifically to provide students with practical skills and a better understanding of themselves as people which will enable them to be more effective managers. The topics covered in this subject include: personality, social perception, group dynamics, motivation and the management of personal behaviour such as stress management, conflict negotiation and career management strategies.

Required Reading

Recommended Reading

Class Contact
Three hours per week. Normally to be delivered as two hours of lectures and one hour of tutorials, workshops or modules; or a delivery mode as approved by the Faculty of Business and Law. Subject equal to 15 credit points.

Assessment
Major assignment, 35%; presentation, 15%; final examination, 50%. Students must satisfactorily complete each component of the assessment to gain a pass in the subject. Supplementary assessment will not be available.

BMO3177 ORGANISATION BEHAVIOUR
Campus Footscray Park.
Prerequisite(s) Nil.

Content
An introduction to organisation behaviour; the processes underlying behaviour and its consequences within organisation; practical behavioural skills which contribute to the formulation, implementation and evaluation of effective work practices; the methods and the need of investigation in behavioural studies, the nature of the person, the various capacities of people and some approaches in the study of a person, the relationship between the person and the organisation, identifying various managerial roles such as leadership and power, their use and misuse.

Required Reading

Class Contact
Three hours per week. Normally to be delivered as two hours of lectures and one hour of tutorials, workshops or modules; or a delivery mode as approved by the Faculty of Business and Law. Subject equal to 15 credit points.

Assessment
Tutorial presentation and report, 20%; participation, 10%; multiple choice test No. 1, 20%; multiple choice test No. 2, 20%; major assignment, 30%. Students must satisfactorily complete each component of the assessment to gain a pass in the subject. Supplementary assessment will not be available.

BMO3220 HUMAN RESOURCE MANAGEMENT
Campus Footscray Park Sunbury.
Prerequisite(s) BMO1102 Management and Organisation Behaviour.

Content
The aim of this subject is to introduce the principal components of the human resource management function; and to examine the links between the effective utilisation of human resources and overall organisational effectiveness. This subject
includes the following topics: overview of personnel and human resource management; influences on HRM function, recruitment, selection, orientation, equal employment opportunity and affirmative action, motivation, job design, performance appraisal and training and career development; total remuneration, employment relations, OHS and developments and research in Human Resource Management.

**Required Reading** To be advised by lecturer.

**Recommended Reading**

**Class Contact** Three hours per week. Normally to be delivered as two hours of lectures and one hour of tutorials, workshops or modules, or a delivery mode as approved by the Faculty of Business and Law. Subject equal to 15 credit points.

**Assessment** Group case study and report 35%; individual presentation 10%; mid-semester test 15%; final examination 40%. Students must satisfactorily complete each component of the assessment to gain a pass in the subject. Supplementary assessment will not be available.

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**BMO3351 WORKPLACE INDUSTRIAL RELATIONS**

**Campus** Footscray Park, Sunbury.

**Prerequisite(s)** BMO1102 Management & Organisation Behaviour or equivalent.

**Content** The aims of this subject is for students to develop a critical understanding of the interaction between management, employees and unions at the workplace. Topics include the changing nature of employment and the implications of trends in precarious employment for the future; redefining employment relations in the knowledge economy; strategic employee relations policies and practices; the role of workplace unionism and workplace bargaining; non-union workplaces; workplace consultative processes and grievance handling; women workers and affirmative action and managing diversity.

**Required Reading**
A collection of current readings will be compiled for students to purchase.

**Recommended Reading**

**Class Contact** Three hours per week. Normally to be delivered as two hours of lectures and one hour of tutorials, workshops or modules, or a delivery mode as approved by the Faculty of Business and Law. Subject equal to 15 credit points.

**Assessment** Written assignment 30%; Class presentations 20%; Final Examination 50%. Students are expected to satisfactorily complete each component of the assessment to gain a pass in the subject. Supplementary assessment will not be available.

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**BMO3422 STRATEGIC MANAGEMENT**

**Campus** Footscray Park, Sunbury Werribee.

**Prerequisite(s)** BMO1102 Management and Organisation Behaviour or equivalent subject.

**Content** The aims of this subject are to study normative theories and models of organisation strategy; policy and decision making; to assess critically their value to an organisation and its shareholders; and to develop knowledge, personal skills and competencies in the application of the above approaches. This subject includes the following topics: the nature of strategic management; analyse the environment; planning direction; planning strategy; implementing strategy; global strategic management and future directions.

**Required Reading** To be advised by the lecturer.

**Class Contact** Three hours per week. Normally to be delivered as two hours of lectures and one hour of tutorials, workshops or modules, or a delivery mode as approved by the Faculty of Business and Law. Subject equal to 15 credit points.

**Assessment** Industry analysis, 20%; group case study, 30%; final examination, 50%. Students must satisfactorily complete each component of the assessment to gain a pass in the subject. Supplementary assessment will not be available.

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**BMO3476 TRAINING AND DEVELOPMENT**

**Campus** Footscray Park, Sunbury.

**Prerequisite(s)** BMO3220 Human Resource Management

**Content** The aims of this subject are to provide students with an understanding of the theory and practice of training and development; to assess critically the effectiveness of adult learning principles and training and development techniques; to enable students to develop knowledge and skills with regard to the design, management and evaluation of training and development; and to enable students to analyse the training needs of individuals and to design an appropriate development program. This subject includes the following topics: the importance of training for organisational effectiveness and individual career development; training productivity and quality of worklife; training needs analysis and skills audit and job analysis; computer assisted and managed learning; selling, training and development programs within an organisation.

**Required Reading**

**Recommended Reading** An extensive reading list is handed to students at the beginning of the semester.

**Class Contact** Three hours per week. Normally to be delivered as two hours of lectures and one hour of tutorials, workshops or modules, or a delivery mode as approved by the Faculty of Business and Law. Subject equal to 15 credit points.

**Assessment** Group presentations 20%; syndicate group project 30%; final examination 50%. Students must satisfactorily complete each component of the assessment to gain a pass in the subject. Supplementary assessment will not be available.

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**BMO3522 ENGINEERS AS MANAGERS (ENGINEERING SERVICE SUBJECT)**

**Campus** Footscray Park.

**Prerequisite(s)** Nil.

**Content** Developing process models, analysing process purpose; measuring process purpose; measuring process performance; feedback and corrective action; responding to external changes; motivating for process improvement; alternative approaches to process improvement; total quality management. The role of the engineer from both the customer/systems perspective and the innovation/improvement perspective.

**Required Reading**

**Recommended Reading**

**Class Contact** Three hours per week. Normally to be delivered as two hours of lectures and one hour of tutorials, workshops or modules, or a delivery mode as approved by the Faculty of Business and Law.

**Assessment** Assignments, 60%; tests and oral presentations, 40%. Students are expected to complete each component of the assessment to gain a pass in the subject.

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**BMO3851 ENGINEERING MANAGEMENT 2**

**Campus** Footscray Park.

**Prerequisite(s)** ENM2852 Engineering Management 1

**Content** This subject aims to provide students with basic knowledge of processes of quality management systems in line with ISO9000 and processes of management in an engineering industry, principles of basic management functions, understanding of resources management, resource levelling, history of Australian industrial relations and arbitration system role of unions and
employers, and practical requirements of running a small engineering company.

**Required Reading** Current Available Textbook - To be advised


**Class Contact** Three hours per week. Normally to be delivered as two hours of lectures and one hour of tutorials/computer sessions. Subject equal to 15 credit points.

**Assessment** Class tests and assignments, 40%; end of semester examination, 60%. Supplementary assessment will not be available.

**BMO4512 LABOUR RELATIONS (ENGINEERING AND SCIENCE SERVICE SUBJECT)**

**Campus** Footscray Park.

**Prerequisite(s)** Nil.

**Content** The aim of this subject is to develop an awareness of employee relations at the macro and workplace level. This subject examines the role of the major institutions of industrial relations as well as the nature of workplace relations. Issues covered include the causes, functions and resolution processes of industrial conflict; changing management strategies in industrial relations; the role of equal employment opportunity and affirmative action policies; the nature of union involvement at the workplace; and current issues concerning labour relations.

**Required Reading** To be advised by lecturer.

**Class Contact** Equivalent to three hours per week comprising one two-hour lecture and one one-hour tutorial for one semester.

**Assessment** Written assignment, 30%; class presentations, 20%; final examination, 50%. Students are expected to complete each component of the assessment to gain a pass in the subject. Supplementary assessment will not be available.

**BMO4522 INDUSTRY ECONOMICS (ENGINEERING AND SCIENCE SERVICE SUBJECT)**

**Campus** Footscray Park.

**Prerequisite(s)** Nil.

**Content** This subject will examine how competitive and non-competitive market structures affect the pricing and output decisions of Australian firms. Topics include: market structure, conduct, and performance; market failure; and regulation.

**Required Reading** To be advised by lecturer.


**Class Contact** Three hours per week. Normally to be delivered as two hours of lectures and one hour of tutorials, workshops or modules: or a delivery mode as approved by the Faculty of Business and Law.

**Assessment** Semester assignments, 50%; final examination, 50%. Students must satisfactorily complete each component of the assessment to gain a pass in the subject. Supplementary assessment will not be available.

**BMO4531 HUMAN AND INDUSTRIAL RELATIONS (ENGINEERING AND SCIENCE SERVICE SUBJECT)**

**Campus** Footscray Park.

**Prerequisite(s)** Nil.

**Content** Overview of personnel and human resource management; managing and influencing people; motivation; use of power; management styles; facilitating teams; effective team communication and development; developing and using procedural and operational guidelines; current trends in people management. Major institutions in Australian industrial relations. Nature of workplace relations. The causes, functions and resolution processes of industrial conflict; changing management strategies in industrial relations.

**Required Reading** To be advised by lecturer.


**Class Contact** Three hours per week. Normally to be delivered as two hours of lectures and one hour of tutorials, workshops or modules: or a delivery mode as approved by the Faculty of Business and Law.

**Assessment** Major assignment, 30%; final examination, 70%. Students are expected to complete each component of the assessment to gain a pass in the subject. Supplementary assessment will not be available.
EAB3872 ELECTRICAL POWER DISTRIBUTION 2

Campus Footscray Park
Prerequisite(s) EAB3871


Recommended Reading To be advised by lecturer.

Class Contact Three hours per week for one semester based on two hours of lectures and one hour of tutorial.

Assessment Based on a project, 20%; and a review of all assignments (which may include tests and other class exercises) set during the semester, 10%; and a final three hour examination, 70%.

EAB3892 FIRE SERVICES

Campus Footscray Park
Prerequisite(s) EBK3881


Required Reading To be advised by lecturer.


Class Contact Three hours per week for one semester comprising two hours of lectures and one hour of tutorial.

Assessment Class exercises and assignments, 50%; end of semester examination, 50%.

EAB4831 SERVICES ENGINEERING DESIGN AND CONSTRUCTION

Campus Footscray Park
Prerequisite(s) EAB3842

Content Integrated building design. Building services integration. Coordination aspects of individual building services.


Recommended Reading Barton, P.K., 1983, Building Services Integration, E&NF Spon.

Class Contact Three hours per week for one semester comprising two hours of lectures and one hour of tutorial.

Assessment Class exercises and assignments, 65%; end of semester examination, 35%.

EAB4841 AIR CONDITIONING SYSTEMS 1

Campus Footscray Park
Prerequisite(s) EAB3842


Class Contact Three hours per week for one semester comprising two hours of lectures and one hour of tutorial.

Assessment Class exercises and assignments, 65%; end of semester examination, 35%.

EAB4842 AIR CONDITIONING SYSTEMS 2

Campus Footscray Park
Prerequisite(s) EAB4841


Class Contact Three hours per week for one semester comprising two hours of lectures and one hour of tutorial.

Assessment Class exercises and assignments, 65%; end of semester examination, 35%.
EAB4872 ARCHITECTURAL LIGHTING DESIGN
Campus: Footscray Park
Prerequisite(s): EAB3872


Class Contact: Three hours per week for one semester based on a one hour lecture and two hours of tutorials or seminars.

Assessment: Based on a project, 20%; and a review of all assignments (which may include tests and other class exercises) set during the semester, 10%; and a final three hour examination, 70%.

EAB4892 COMMUNICATIONS SERVICES
Campus: Footscray Park
Prerequisite(s): EAB3872


Class Contact: Three hours per week for one semester based on a one hour lecture and two hours of tutorials.

Assessment: Based on a project, 20%; and a review of all assignments (which may include tests and other class exercises) set during the semester, 15%; and a final three hour examination, 65%.

EAD3832 ARCHITECTURAL ENGINEERING DESIGN 1
Campus: Footscray Park
Prerequisite(s): EAH2831

Content: Eco-philosophy implied in architectural design and its direct consequences for the built environment including sustainability, environmental ethics and ecological impacts. Concepts of environmentally responsive urban and architectural planning. Examination of energy use in the built environment, impact of ineffective use of energy resources, environmentally responsive strategies for architectural and urban design development. Bio-climatic architecture and its effect on urbanisation.


Class Contact: Three hours per week for one semester based on one hour of lecture and two hours of tutorials or seminars.

Assessment: Based on a major project, 60%; and a review of all assignments (which may include tests, class exercises and seminar presentations) set during the semester, 40%; to an equivalent of 5000 words.

EAD4381 ARCHITECTURAL ENGINEERING DESIGN 2
Campus: Footscray Park
Prerequisite(s): EAD3832

Content: Active/passive thermal environmental control of buildings. Simulation of building thermal performance and natural/artificial illuminated building environments will be employed to optimise total energy consumption level and create visually comfortable spaces. Energy auditing techniques for existing and proposed buildings.


Class Contact: Three hours per week for one semester based on one hour of lecture and two hours of tutorials or seminars.

Assessment: Assignments (case studies, simulation exercises, class presentations) equivalent to 5000 words, 50%; and a two hour examination at the end of semester, 50%.

EAH2831 ARCHITECTURAL HISTORY & DESIGN 1
Campus: Footscray Park
Prerequisite(s): Nil.

Content: Using a broad historical context, students will complete a series of readings, studio-based exercises and assignments to study the methods of analysis, abstraction, and synthesis in design that are employed in the architectural design of buildings; the basic composition and applied organisational techniques in use; the effects of planning; theories of spatial order and its conceptualisation; and the impact of building materials, technology and the environment on Architectural design, oral communication skills.


Class Contact: Three hours per week for one semester based on one hour lecture and two hours of tutorials or seminars.

Assessment: Based on a major project, 60%; and a review of all assignments (which may include tests, class exercises and seminar presentations) set during the semester, 40%; to an equivalent of 5000 words.
EAH3831 ARCHITECTURAL HISTORY & DESIGN 2
Campus Footscray Park
Prerequisite(s) EAH2831
Content The history of architecture, modern building construction, urban planning and design, in the context of social, technical and environmental settings. The City: The integration of architectural, constructional, cultural, social and geographical factors in the development of the ‘city’ from ancient times to what we know it to be today. Periods will include antiquity, middle ages, renaissance, and baroque to the 19th century. Urban design principles and practices fundamental to western cultural traditions will be examined. 20th Century: Formative aspects of architectural design both pre and post world war II, and the architectural theories which predominated in western culture. Technology: A study of the materials and methodologies of construction that have evolved over time to support the architecture of buildings.
Class Contact Three hours per week for one semester based on one hour lecture and two hours of tutorials or seminars.
Assessment An essay; 30%; and a review of all assignments (which may include tests, class exercises and seminar presentations) set during the semester, 70%; to an equivalent of 6000 words.

EAP3803 INDUSTRIAL PLACEMENT (SUMMER SEMESTER)
Campus Footscray Park
Prerequisite(s) EAD 3832
Content A monitored and managed (self directed) project relating to the role/activities undertaken within the specific environment in the building industry.
Class Contact Equivalent to three hours contact per week, industry, in Summer Semester 3.
Assessment An individual project from each student to an equivalent of 5000 words.

EBK3881 BUILDING CONSTRUCTION AND LEGISLATION 1
Campus Footscray Park
Prerequisite(s) EAH2831
Required Reading To be advised by lecturer.
Class Contact Three hours per week for one semester comprising two hours of lectures and one hour of tutorial.
Assessment Class exercises and assignments, 50%; end of semester examination, 50%.

EBK4881 BUILDING CONSTRUCTION AND LEGISLATION 2
Campus Footscray Park
Prerequisite(s) EBK3881, EAB3892
Required Reading To be advised by lecturer.
Class Contact Three hours per week for one semester comprising two hours of lectures and one hour of tutorial.
Assessment Class exercises and assignments, 50%; end of semester examination, 50%.

EBK4882 BUILDING CONSTRUCTION AND LEGISLATION 3
Campus Footscray Park
Prerequisite(s) EBK4881
Content Planning and development of a high rise commercial building project. Alternative structural systems. Construction and building technology aspects of commercial buildings including: concrete construction, precast and prestressed concrete construction, steel fabrication and erection, formwork and scaffolding, and construction of curtain and structural walls. Foundation construction and associated problems. Trench support
systems for shallow and deep excavations. Statutory requirements, current regulations and legal issues related to building construction. Preliminary works relating to nature of site. Site establishment. Health and safety regulations. Cranes and equipment. Use of modern framework systems. Emphasis on buildability concept. Quality assurance and control. Site visits to observe commonly used construction techniques and construction sequence applicable to high rise commercial building. Individual preparation of a set of preliminary drawings and outline specifications for a high rise commercial building project, including allotment plan, floor plans, elevations, sections, construction details, services drawings and specification writing.

**Required Reading**
To be advised by lecturer.

**Recommended Reading**

**Class Contact**
Three hours per week for one semester comprising two hours of lectures and one hour of tutorial.

**Assessment**
Class exercises and assignments, 50%; end of semester examination, 50%.

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**EBM4851 QUANTITIES AND COSTS**

**Campus Footscray Park**

**Prerequisite(s)** ENM2852

**Content**

**Required Reading**

**Class Contact**
Three hours per week for one semester comprising two hours of lectures and one hour of tutorial.

**Assessment**
Class exercises and assignments, 50%; end of semester examination, 50%.

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**ECA3413 INDUSTRIAL PLACEMENT**

**Campus Footscray Park**

**Prerequisite(s)** Nil

**Content**
An understanding of the role and duties of professionals in the specific area of the building industry where placement has been arranged. An understanding of professional practice in a specific area of the building industry. A deeper understanding of the building industry via a self directed, self completed project relating to the industry. A favourable exposure (re: skills, knowledge and attributes) to industry as a future graduate in Architectural Engineering.

**Recommended Reading**
To be advised by academic mentor and industry based professionals.

**Class Contact**
Equivalent to three hours per week.

**Assessment**
An individual project from each student to an equivalent of 4000 words.

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**ECA4211 ARCHITECTURAL ENGINEERING DESIGN 2**

**Campus Footscray Park**

**Prerequisite(s)** ECA3211 Architectural Engineering Design 1

**Content**
Active/passive thermal environmental control of buildings. Simulation of building thermal performance and natural/artificial illuminated building environments will be employed to optimise total energy consumption level and create visually comfortable spaces. Energy auditing techniques for existing and proposed buildings.

**Recommended Reading**
To be advised by lecturer.

**Class Contact**
Three hours per week for one semester based on one hour lecture and two hours of tutorials.

**Assessment**
Assignments (case studies, simulation exercises, class presentations) equivalent to 5000 words and a two hour examination at the end of the semester.

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**ECB3460 PRINCIPLES OF AIR CONDITIONING**

**Campus Footscray Park**

**Prerequisite(s)** ECB2230 Building Thermodynamics.

**Content**

**Recommended Reading**


**Recommended Reading**


**Class Contact** Two hours per week for two semesters based on one hour per week of lecture and one hour per week tutorial/laboratory experiments.

**Assessment** Test, assignments and laboratory exercises: 65%; examination: 35%. A pass in each component for each semester is required for a subject pass.

**ECB3470 LIGHTING AND POWER DISTRIBUTION**

**Campus** Footscray Park

**Prerequisite(s)** EEC4511 Software Testing and Quality Assurance and EEP2242 Power System Fundamentals 2.2.

**Content**


**Required Reading**


**Recommended Reading**


**Class Contact** Two hours per week for two semesters based on one hour per week of lectures and one hour per week tutorial/laboratory session.

**Assessment** Assignments, laboratory work, 30%; examinations, 70%.

**ECB3480 HYDRAULIC SERVICES**

**Campus** Footscray Park

**Prerequisite(s)** E2F2250 Building Fluid Mechanics.

**Content**

**Semester one:** Types and components of building water supply systems. Assessment of demands and flows. Diveristy curves. Design criteria, head losses in pipes and fittings. Analysis and design of hot and cold water pipework systems. Pumps, pump performance curves, pump and pipeline systems, pump selection. Pressure systems. Selection and arrangement of mains pressure commercial hot water units to supply hot water to fixture outlets.

**Water treatment:** chemical and microbiological, Legionnaire's disease, testing and disinfection. **Semester two:** Theory and design of roof drainage systems for buildings. Theory and design of stormwater drainage systems for building sites. Introduction to materials, fixtures and fittings for sewer construction. Design of sewer drainage systems. General design requirements for fully vented, fully vented modified, single stack, and single stack modified plumbing systems. Introduction to sewage treatment and sewage treatment processes.

**Required Reading**


**Recommended Reading**


**Class Contact** Two hours per week for two semesters based on one hour per week of lecture and one hour per week tutorial session.

**Assessment** Assignments, project work, 30%; end-of-semester examinations, 70%.

**ECB3430 SERVICES DESIGN AND CONSTRUCTION**

**Campus** Footscray Park

**Prerequisite(s)** ECB3460 Principles of Air Conditioning.

**Content**


**Semester two:** Application of controls in mechanical systems. Impact of regulations on air conditioning design. Role of Australian Standards in the design process. Building design for building services integration. Statutory requirements for building services. Acoustic aspects of building services design. Co-ordination of individual building services (e.g. air conditioning, electrical, building cabling systems, security systems, fire and hydraulic, lifts, special services). Refurbishment projects. Site visits.

**Required Reading**


**Recommended Reading**


**Class Contact** Three hours of lectures in Semester 1 and two hours per week of lecture and one hour per week tutorial/laboratory session in Semester 2.

**Assessment** Assignments: 65%; examination: 35%. A pass in each component for each semester is required for a subject pass.

**ECB3430 AIR CONDITIONING SYSTEMS**

**Campus** Footscray Park

**Prerequisite(s)** ECB3460 Principles of Air Conditioning.

**Co-requisite(s)** ECB4350 Services Design and Construction.

**Content**

**Semester one:** The design process: Contractual responsibilities of parties. The process of design. Design at the early stage. Introduction to estimation and check figures. Principles of integrated design. Pipework and ductwork design: Natural ventilation.

**Required Reading**

**Recommended Reading**

**Class Contact**
Three hours per week on two hours per week of lecture and one hour per week tutorial/laboratory session in Semester 1. Three hours of lectures in Semester 2.

**Assessment**
Assignments and laboratory exercises: 65%; examination: 35%. A pass in each component for each semester is required for a subject pass.

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**ECB4381 FIRE SERVICES DESIGN**

**Campus**
Footscray Park

**Prerequisite(s)**
ECB3480 Hydraulic Services.

**Content**

**Required Reading**
To be advised by lecturer.

**Recommended Reading**

**Class Contact**
Three hours per week for one semester based on two hours per week of lecture and one hour per week design tutorial session.

**Assessment**
Assignments, tests, project work, 40%; examination, 60%.

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**ECB4270 COMMUNICATIONS SERVICES**

**Campus**
Footscray Park

**Prerequisite(s)**
ECB3470 Lighting and Power Distribution.

**Co-requisite(s)**
ECB3450 Services Design and Construction.

**Content**

**Required Reading**
To be advised by lecturer.

**Recommended Reading**

**Class Contact**
Three hours per week for one semester based on two hours per week of lectures and one hour per week tutorial session.

**Assessment**
Assignments, projects, 35%; examination, 65%.

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**ECD3340 ENVIRONMENTAL ENGINEERING DESIGN**

**Campus**
Footscray Park

**Prerequisite(s)**
ECG2260 Earth Science.

**Co-requisite(s)**
ECF3450 Hydrologic Processes; ECT3440 Transportation Engineering.

**Content**
Semester one: Typically three design exercises of about twelve hours each as follows – pipeline and pumping system design, geometric design of a rural road, urban stormwater drainage design. Other design projects of similar duration may be substituted from time to time as appropriate. Semester two: Typically three design exercises of about twelve hours each as follows – flood and retarding basin design, geotechnical elements of a landfill including earthworks, slope stability and liner system; design and analysis of a signalised intersection. Other design projects of similar duration may be substituted from time to time as appropriate.

**Required Reading**
To be advised by lecturer.

**Recommended Reading**
As for the co-requisite subjects above.

**Class Contact**
Three hours per week of design sessions for two semesters.

**Assessment**
Short written and oral assignments, 25%; design reports 75%.

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**ECD3831 CIVIL ENGINEERING DESIGN 1**

**Campus**
Footscray Park

**Prerequisite(s)**
Nil

**Corequisite(s)**
ECG3861, ECF3841, ECT3871

**Content**
Students will perform several designs during the semester in areas drawn from hydraulics, road engineering, geomechanics and hydrologic studies. A design report will be prepared for each design and associated written report on a related issue will be made. Oral presentations will be made by all students on one of their design areas during the semester.

**Required Reading**

**Recommended Reading**

**Class Contact**
Three hours per week for one semester comprising mainly design sessions supported by some lectures and seminars.
Introduction to pre-stressed concrete theory. Losses of pre-stresses. Limit state/ultimate strength design of pre-stressed concrete beams.

**Required Reading**
- **Recommended Reading**

**Class Contact**
- Three hours per week for one semester based on a two hour lecture and a one hour tutorial.
**Assessment**
- Design projects, 30%; and a final three hour examination, 70%.

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**ECT3892 STRUCTURAL ENGINEERING DESIGN 3**

**Campus** Footscray Park  
**Prerequisite(s)** ENF2841

**Content**

**Required Reading**

**Class Contact**
- Three hours per week for one semester based on a two hour lecture and a one hour tutorial.
**Assessment**
- Design projects, 30%; and a final three hour examination, 70%.

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**ECT4490 BUILDING ENGINEERING PROJECT**

**Campus** Footscray Park  
**Prerequisite(s)**
- ENF2841
- Third year subjects relevant to the project chosen.

**Co-requisite(s)**
- Fourth year subjects relevant to the project chosen.

**Content**
- Students will work in small groups (2 to 4 persons per group) to carry out a major project on one or more of the following areas: Structures, building services, construction management, hydraulic engineering, environmental engineering, roads and transport, or geotechnical engineering. Each project will involve an element of research and is encouraged to be unique. Close contact with relevant industry bodies will be encouraged. The projects will be closely supervised by a lecturer.

**Required Reading**
- To be advised by lecturer.

**Recommended Reading**
- To be advised by individual project supervisors.

**Class Contact**
- Three hours per week for two semesters based on a laboratory/tutorial format.
**Assessment**
- Students will be assessed individually based on oral and written presentations and on initiative and work carried out through the year: Oral presentation, 15%; written report, 80%, poster presentation 5%.

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**ECT2842 HYDRAULICS**

**Campus** Footscray Park  
**Prerequisite(s)** ENF2841

**Content**
- Fluid flow through pipelines-reservoir-pipeline flow, branching pipelines, parallel pipelines, development of pipe friction equations and their use. Pumps - positive displacement and


Class Contact Three hours per week for one semester comprising two hours of lectures and one hour of tutorial and laboratory work.

Assessment Class tests and assignments, 50%; end of semester examination, 50%.

ECF3841 ENGINEERING HYDROLOGY

Campus Footscray Park

Prerequisite(s) ECF2842


Class Contact Three hours per week for one semester based on two hours of lectures and one hour tutorial.

Assessment Class tests and assignments, 35%; and end of semester examination, 65%.

ECF3842 WATER RESOURCES ENGINEERING

Campus Footscray Park

Prerequisite(s) ECF2842.


Class Contact Three hours per week for one semester comprising two hours of lectures and one hour of tutorial.

Assessment Class tests and assignments, 35%; end of semester examination, 65%.

ECF3841 HYDRAULIC ENGINEERING

Campus Footscray Park

Prerequisite(s) ECF2842

Content Urban water supply schemes: Demand assessment and management, supply sources, dam types/spillways/outlet works/construction and safety issues, service storage, pumping stations, reticulation system layout and manual/computer analysis. Pipeline design and construction. Irrigation and drainage: Purpose and principles of irrigation, channel design and structures, flood, furrow, sprinkler and trickle irrigation layout and design principles, components and design of land drainage systems.


Class Contact Three hours per week for one semester comprising two hours of lectures and one hour of tutorial.

Assessment Class tests and assignments, 25%; end of semester examination, 75%.

ECF4842 GEOHYDROLOGIC ENGINEERING

Campus Footscray Park

Prerequisite(s) ECF3842, ECG3861, ECN3882

Content River sediment transport processes and reservoir siltation, river bed and bank stabilization. Australian groundwater resources/hydrogeology, more advanced groundwater hydraulics, well design and construction, management issues including basin development, water quality/pollution, saline intrusion, and groundwater modelling. Land degradation processes including erosion, salinisation and soil contamination. Management responses including integrated catchment management, contaminated site clean-up and control. Aspects of coastal engineering including coastal forms, wave generation and height prediction, wave phenomena, sediment transport and impact, beach erosion/rehabilitation, marinas and fixed or floating breakwaters, coastal management.


Class Contact Three hours per week for one semester generally comprising two hours of lectures and one hour of tutorial, plus site visits.

Assessment Class tests and assignments, 40%; end-of-semester examination, 60%.

ECG3861 GEOMECHANICS

Campus Footscray Park

Prerequisite(s) Nil

saturated clays, Mohr-Coulomb strength criterion. Compaction of soils and crushed rock including methods, specification and field evaluation. Site investigation including desk studies, boring/sampling/testing methods, logging and reporting.

**Required Reading**

**Recommended Reading**

**Class Contact**
Three hours per week for one semester comprising on average two hours of lectures and one hour of tutorial/laboratory work.

**Assessment**
Class tests and assignments, 25%; end of semester examination, 75%.

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**ECG3862 GEOTECHNICAL ENGINEERING 1**

**Campus**
Footscray Park

**Prerequisite(s)**
ECG3861

**Content**

**Required Reading**

**Recommended Reading**

**Class Contact**
Three hours per week for one semester comprising on average two hours of lectures and one hour of tutorial/laboratory work.

**Assessment**
Class tests and assignments, 25%; end-of-semester examination, 75%.

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**ECG4861 GEOTECHNICAL ENGINEERING 2**

**Campus**
Footscray Park

**Prerequisite(s)**
ECG4861

**Content**

**Required Reading**

**Recommended Reading**

**Class Contact**
Three hours per week for one semester comprising on average two hours of lectures and one hour of tutorial/laboratory work.

**Assessment**
Class tests and assignments, 25%; end-of-semester examination, 75%.

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**ECK4340 BUILDING CONSTRUCTION AND PROJECT**

**Campus**
Footscray Park

**Prerequisite(s)**
ECK2432 Domestic Construction.

**Content**
Semester one: Planning and development of an industrial building. Alternative structural systems. Tilt-up construction, construction of masonry, portal frame structures. Industrial floor construction techniques. Use of fabric and space structures. Builders' plant and equipment. Use of explosives. Services requirements for industrial buildings. Damp proof courses and water proofing. Recycling, rehabilitation and renovation of buildings. Building maintenance. Concept of intelligent buildings. Materials management on building sites. Site visits to large major industrial construction sites. Semester two: An engineering problem is investigated in the form of a case study or optimisation study. The economic viability of various solutions is carefully considered, and local application of new techniques is carefully taken into account. The planned investigation must be approved and draft report submitted. The main finding is presented to the class as to a professional audience. Finally a technical report is submitted, as from a consultant to a client. Preparation of working drawings, including construction detailing, engineering services drawings. Outline specification for a single storey commercial or industrial building. Building Practice. Modelling of medium-sized building projects.

**Required Reading**
To be advised by lecturer.

**Recommended Reading**

**Class Contact**
Three hours per week in semester one based on two hours per week of lectures and one hour per week tutorial session. Four hours per week in semester two based on two hours per week of lectures and two hour per week tutorial session.

**Assessment**
Assignments, projects, 50%; examination, 50%.

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**ECK4340 COMMERCIAL BUILDING CONSTRUCTION**

**Campus**
Footscray Park

**Prerequisite(s)**
ECK3430 Building Construction and Project; ECM3531 Construction Management.

**Content**
Semester one: Construction and building technology aspects of commercial buildings including concrete construction, prestressed concrete construction, steel fabrication and erection, formwork and scaffolding, construction of curtain and structural walls. Foundation construction and associated problems. Trench
support systems for shallow and deep excavations. Statutory requirements, current regulations and legal issues related to building construction. Development of working drawings and specifications for a multi storey building. Semester two: Construction and technological aspects of highrise buildings including; preliminary works relating to nature of site, structural and building systems, site establishment, health and safety regulations, cranes and equipment, use of modern formwork systems. Emphasis on buildability concept, and quality assurance and control. Simplification of details which aid both design and construction of reinforced concrete and steel buildings. Modelling of parts of large building projects.

**Required Reading** To be advised by lecturer.


**Class Contact** Four hours per week in semester one based on three hours per week of lectures and one hour per week tutorial session. Three hours per week in semester two based on two hours per week of lectures and one hour per week tutorial session.

**Assessment** Assignments, projects 50%; examination, 50%.

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**ECN4562 BUILDING QUANTITIES AND COSTS**

**Campus** Footscray Park

**Prerequisite(s)** ECM3531 Construction Management.


**Required Reading** To be advised by lecturer.


**Class Contact** Three hours per week for one semester based on two hours per week of lectures and one hour per week tutorial session.

**Assessment** Assignments, projects, 40%; examination, 60%.

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**ECN3350 ENGINEERING FOR SUSTAINABILITY**

**Campus** Footscray Park

**Prerequisite(s)** Nil

**Corequisite(s)** ECM2450 Hydrologic Processes.

**Content** Semester one: Desirable features for sustainable land development. Environmental, strategic, regional and local planning, and the Victoria Planning Provisions. Biophysical and socio-economic data collection and inventories, environmental sensitivity mapping, land capability rating systems, data storage and manipulation by GIS systems. Rural and urban land development and use, with an emphasis on dwelling arrangements/density, transportation systems, green city/urban forest/open space and landscape concepts, and energy and water conservation. Residential subdivision and street design, and the role and powers of Local Government. Site investigations and design exercises related to the issues above. Urban water supply systems. Semester two: Rural land and water management, clean production and life cycle analysis. Introduction to environmental audits, management plans and systems, and risk assessment. More detailed consideration of the impact of engineering technologies and development on society, and the ecological, social, economic and political criteria by which they might be assessed from a sustainability viewpoint. Material will consist mainly of case studies and design exercises. An individual major investigation and/or design project and technical report on a relevant and approved topic must also be completed.

**Required Reading** Victoria Department of Infrastructure, 2001, *Victoria Planning Provisions (CD)*, Department of Infrastructure, Victoria.


**Class Contact** Four hours per week for two semesters based on two hours lectures and two hours tutorial, design and project sessions.

**Assessment** Assignments and design exercises, 40%; major project, 15%; end-of-semester examinations, 45%.

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**ECN3882 INTRODUCTION TO ENVIRONMENTAL ENGINEERING**

**Campus** Footscray Park

**Prerequisite(s)** Nil

**Content** Brief review of the interrelationship of engineering with global, regional and local environmental issues/problems. Natural resource management and typical environmental engineering problems relating to aspects of climate, energy, hydrogeology and ecology. Fundamentals of soil and water chemistry. Introduction to microbiology, infectious disease transmission and risk engineering, including public health and environmental risk. Materials balances and reaction kinetics. Environmental auditing. Engineering case studies (eg, from the mining, land and water development industries) to illustrate concepts and principles covered above.


**Class Contact** Three hours per week for one semester comprising two hours of lectures and one hour of tutorial.

**Assessment** Class tests and assignments, 25%; end of semester examination, 75%.
waters, unit processes involved in water treatment and design of components. Estimation of wastewater flows and design of collection systems. Wastewater treatment plant types and applications, unit processes involved and design of components. Land treatment methods and wastewater reuse. On-site wastewater treatment. Maintenance and rehabilitation of wastewater systems.


**Class Contact** Three hours per week for one semester comprising two hours of lectures and one hour of tutorial.

**Assessment** Class Tests and assignments, 25%; end-of-semester examinations, 75%.

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**ECN4881 ENVIRONMENTAL ENGINEERING 2**

**Campus** Footscray Park

**Prerequisite(s)** ECN4881


**Class Contact** Three hours per week for one semester comprising two hours of lectures and one hour of tutorial.

**Assessment** Class Tests and assignments, 25%; end-of-semester examinations, 75%.

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**EC4880 ENGINEERING PROJECT**

**Campus** Footscray Park

**Prerequisite(s)** Third year subjects relevant to the project chosen.

**Content** Students will work in small groups (usually two to four per group) to carry out a major engineering project on one or more of the following areas: structures, building services, construction management, hydraulic engineering, environmental engineering, roads and transport or geotechnical engineering. The project can be of investigation and/or design type, and will involve an element of research. The projects are normally chosen from recent, current or proposed real-world engineering problems. Close contact with relevant industry bodies and consulting engineers is sought for most projects. The project will be closely supervised by a lecturer. In semester one, students are introduced to work related skills including job applications and interview techniques.

**Required Reading** Current available text book - to be advised.

**Recommended Reading** Current available text book - to be advised.

**Class Contact** Three hours per week for two semesters, based on a tutorial/laboratory format.

**Assessment** Students will be assessed individually based on oral and written presentations and on initiative and work carried out throughout the year. Oral presentations, 15%; written reports, 80%; poster presentation, 5%.

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**ECS3821 STRUCTURAL ANALYSIS 1**

**Campus** Footscray Park

**Prerequisite(s)** ENGS222

**Content** Further analysis of determinate plane trusses by method of joints; matrix stiffness analysis of determinate and indeterminate plane trusses (Matrix operations performed using Spreadsheet software); deflections and rotations for statically determinate beams using both Macauley integration and virtual work methods; solution of redundant beams and simple frames; qualitative analysis of beams and simple frames (prediction of deflected shape, direction of reactions and shape of bending moment diagram).

**Required Reading** Current available text - students to be advised.


**Class Contact** Three hours per week for one semester comprising two hours of lectures and one hour of tutorial.

**Assessment** Class tests and assignments, 25%. 3 hour end of semester examination, 75%.

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**ECS3822 STRUCTURAL ANALYSIS 2**

**Campus** Footscray Park

**Prerequisite(s)** ECS3821

**Content** Solution of redundant beams and frames by slope deflection equations and the general concept of structural stiffness; analysis of beams and frames on computer using a commercial analysis program; appraisal of computer results using quantitative checks; plastic analysis of beams and frames including plastic moment, shape factor, partial plasticity, plastic hinge, upper and lower bound collapse load calculations; effect of high axial force on member bending stiffness with regard to stability analysis and buckling of frames.

**Required Reading** Current available text - students to be advised.


**Class Contact** Three hours per week for one semester comprising two hours of lectures and one hour of tutorial.

**Assessment** Class tests and assignments, 25%; 3 hour end of semester examination, 75%.

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**ECS4422 SPECIAL TOPICS IN STRUCTURES**

**Campus** Footscray Park

**Prerequisite(s)** ECS3220 Structural Analysis B; ECS3320 Structural Design B.

**Content** Structural optimisation for minimising weight of structure for given loads and frame arrangement. Introduction to the finite element computer program, STRAND. Fire Engineering: Design of barriers and structures for Fire: application of the Building Code of Australia, engineering design in steel, timber and reinforced concrete. Site visit to laboratory where fire testing of structures is conducted.
Required Reading To be advised by lecturer.
Recommended Reading ASCE, Structural Fire Protection, ASCE.
Class Contact Three hours per week for one semester, based on two hours per week of lectures and one hour per week tutorial session.
Assessment Assignments, projects, 30%; examination, 70%.

ECT3871 HIGHWAY ENGINEERING
Campus Footscray Park
Prerequisite(s) Nil
Content Road construction procedure and equipment. Earthmoving methods and determination of earthwork quantities including use of mass haul diagrams. Types of pavements including bituminous products and concrete pavements. Route location with respect to main environmental considerations including horizontal and vertical alignments and sight distance requirements. Design of horizontal and vertical curves and the development of superelevation. Maintenance of roads and road drainage systems.
Class Contact Three hours per week for one semester comprising two hours of lectures and one hour of tutorial.
Assessment Class tests and assignments, 20%; end of semester examination, 80%.

ECT3872 TRANSPORTATION ENGINEERING
Campus Footscray Park
Prerequisite(s) Nil
Content The history of transport. Transport modes and trip characteristics. Land use planning and the transport planning process including modelling trip generation, distribution and assignment. Traffic engineering including flow theory, capacity, basic queuing theory, traffic survey techniques. Intersection analysis including capacities, signalisation and use of the SIDRA computer program. Travel demand management and local area traffic management strategies.
Required Reading Current available text book - student to be advised.
Class Contact Three hours per week for one semester comprising two hours of lectures and one hour of tutorial.
Assessment Class tests and assignments, 20%; end-of-semester examinations, 80%.

ECT2871 SURVEYING
Campus Footscray Park
Prerequisite(s) Nil
Content Basic surveying computations; Horizontal distances and field note keeping; Vertical distances and field note keeping; Angular measurement and field note keeping; Circular curves; Contours and contouring. Area computations for polygons, Rectangular coordinates; Land title system used in Victoria, Software used to solve survey calculation problems.
Required Reading Current available text - students to be advised.
Class Contact Three hours per week for one semester comprising one hour lecture and two hours of field/class tutorials.
Assessment Field/class tutorials, 20%; 2 hour end of semester examination, 80%. To obtain a pass students must pass field/class tutorials and end of semester examination.
Relevant Reading

Class Contact
Three hours per week for one semester generally comprising one and a half hours of lectures and one and a half hours of tutorial/design sessions, plus site visits.

Assessment
Assignments and designs, 50%; end of semester examination, 50%.

Class Contact
Three hours per week for one semester based on two hours per week of lecture/tutorial and one hour per week of laboratory exercises.

Assessment
Laboratory work/tests/assignment, 30%; examination 70%. Satisfactory result in each component of assessment is necessary for a subject pass.

EEA2002 LINEAR SYSTEMS 2.2

Campus: Footscray Park

Prerequisite(s)
EEA1002 Linear Systems 2.1

Content

Required Reading

Recommended Reading

Class Contact
Three hours per week for one semester based on two hours per week of lecture/tutorial and one hour per week of laboratory exercises.

Assessment
Laboratory work/tests/assignment, 30%; examination 70%. Satisfactory result in each component of assessment is necessary for a subject pass.

EEA2502 CONTROL PRINCIPLES 2.2

Campus: Footscray Park

Prerequisite(s)
EEA1002 Electrical Engineering 1.2; SMA1202 Mathematics 1AQ.

Content

Required Reading

Recommended Reading

Class Contact
Three hours per week for one semester based on two hours of lectures and tutorials and one hour of laboratory.

Assessment
Test, assignments and laboratory exercises, 35%; examination, 65%. A pass in each component of assessment is required for a subject pass.

EEA3001 CONTROL SYSTEMS 3.1

Campus: Footscray Park

Prerequisite(s)
EEA2001 Circuits and Control 2.1.

Content
Introduction to control problems and control systems. Block diagrams and signal flow graphs. Relationship between transfer function and frequency response. Significance of pole zero locations on system response. System stability and steady-state error: Root-locus analysis.

Recommended Reading

Class Contact
Three hours per week for one semester based on two hours per week of lecture/tutorial and one hour per week of laboratory exercises.

Assessment
Test and laboratory exercises, 35%; examination, 70%. A pass in each component of assessment is required for a subject pass.
**EEA3002 CONTROL SYSTEMS 3.2**

**Campus** Footscray Park  
**Prerequisite(s)** EEA3001 Control Systems 3.1  
**Content** Introduction to the design and compensation of control systems. Simple cascade compensators. Compensation using root-locus techniques and using frequency domain methods. PID controllers. Compensator realisation. Introduction to state space analysis of systems.  
**Class Contact** Three hours per week for one semester based on two hours per week of lecture/tutorial and one hour per week of laboratory exercises.  
**Assessment** Laboratory based project, 20%; examination, 80%. A pass in each component of assessment is required for a subject pass.

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**EEA3500 DIGITAL CONTROL PRINCIPLES 3.1**  
**Campus** Footscray Park  
**Prerequisite(s)** EEA2502 Control Principles 2.2  
**Content** Review of continuous and discrete signals, impulse sampling, difference equations, time invariant systems. Properties of the Z transform. Solution of difference equations by the Z transform method. Pulse transfer function of cascade elements and closed-loop systems. Mapping between S and Z-plane. Root locus criteria. Design of discrete time systems - P.I.D., dead beat and pole placement, controllers. Introduction to state space methods, system controllability. MATLAB software is used to design controllers and to simulate responses of controlled systems.  
**Class Contact** Three hours per week for one semester based on two hours of lecture and tutorial and one hour of laboratory.  
**Assessment** Tests, assignments and laboratory exercises, 40%; examination, 60%. A pass in each component of assessment is required for a subject pass.

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**EEA3501 DIGITAL CONTROL PRINCIPLES 3.2**  
**Campus** Footscray Park  
**Prerequisite(s)** EEA3501 Control Principles 3.1  
**Content** The subject comprises one control system project that is to design, develop and implement a digital controller applied to real-time control of an item of electrical equipment. The project is allocated on an individual basis. Students are to start with no prior knowledge of the plant and its transfer function, characteristics, which are to be determined experimentally. Any necessary filtering, transducer equipment, etc. is to be designed and manufactured, before coupling the computer to the actual plant. Measurements of transfer functions should be taken using IEEE-48 bus. One of the controllers is a dead heat controller and the other can be selected from given specifications. It is expected that some of the results for the project will be taken and presented using computer data acquisition techniques.  
**Class Contact** Three hours per week for one semester based on two hours of lecture and tutorial and one hour of laboratory.  
**Assessment** Project 30%, report 30%, oral presentation 40%. A pass in each component of assessment is required for a subject pass.

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**EEA3001 COMPUTER CONTROL 4.1**  
**Campus** Footscray Park  
**Prerequisite(s)** EEA3002 Control Systems 3.2  
**Class Contact** Three hours per week for one semester based on two hours per week of lecture/tutorial and one hour per week of laboratory exercises.  
**Assessment** Test, 10%; laboratory exercises, 40%; examination, 50%. A pass in each component of assessment is required for a subject pass.

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**EEA4002 COMPUTER CONTROL 4.2**  
**Campus** Footscray Park  
**Prerequisite(s)** EEA4001 Computer Control 4.1  
**Content** This subject comprises one control system project, that is to design, develop and implement a digital controller applied to real-time control of an item of equipment. Students are to start by determining a model of the plant. It is required that some of the results for the project will be taken and presented using computer data acquisition techniques.  
**Class Contact** Three hours per week for one semester predominantly of laboratory work.  
**Assessment** Project 40%, report 30%, oral presentation 30%. A pass in each component of assessment is required for a subject pass.

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**EEA4004 ROBOTICS AND AUTOMATION 4.1**  
**Campus** Footscray Park  
**Prerequisite(s)** EEEY2002 Computer Systems 2.2, SMA2201 Mathematics B, ECC2602 Data Structures and Algorithm Analysis 2.2 or equivalent subjects.  
**Content** Programmable Logic Controllers: Introduction to PLCs and programming. Overview of Robotics, classification, control methods, drive mechanisms. Programming and applications of specific robots. Homogenous transforms, configurations. Euler angles. Manipulator Kinematics. Introduction to KAREL. Robotic Vision: vision systems, introduction to image processing, edge detection algorithms, hough transform methods, stereo vision.  
**Required Reading** Notes on each topic are provided. These notes should be supplemented by using the texts mentioned in Recommended Reading.  
**Class Contact** Three hours per week for one semester based on a one hour per week of lecture and two hours per week of laboratory exercises.  
**Assessment** Tests, assignments and laboratory exercises, 50%; examination, 50%. A pass in each component of assessment is required for a subject pass.
EEA4104 FUZZY CONTROL AND APPLICATIONS 4.2
Campus Footscray Park
Prerequisite(s) EEA3002 Control Systems 3.2.

Content Introduction to fuzzy sets theory: vagueness and uncertainty formalisation problem. Fuzzy sets theory and probability theory comparison and discussion, fuzzy set definitions, properties of fuzzy sets, operations on fuzzy sets. Fuzzy relations: classical relations, fuzzy relations, operation on fuzzy relations, the extension principal. Natural language formulation and approximate reasoning: linguistic variables, fuzzy propositions, fuzzy if-then statements, inference rules. Theoretical fundamentals of fuzzy control: the structure of a fuzzy controller, the rule base, the data base, the inference engine, choice of fuzzification and defuzzification procedures. Software and hardware tools for fuzzy control. Fuzzy controller design using software packages. Applications of fuzzy control.


Class Contact Three hours per week or one semester based on a half a hour per week of lectures/tutorial, and one and a half hour per week of laboratory exercises and project work.

Assessment To be advised by lecturer.

EEC2501 SOFTWARE ENGINEERING 2.1
Campus Footscray Park
Prerequisite(s) EEC1002 Programming Structures 1.2 or SCM1312 Programming 2 or equivalent

Content Introduction to the engineering of quality software. The software development lifecycle model. System analysis and the production of a software requirements definition and specification. Process specifications and data dictionary production. Software design process, principles and production. User interface design, information presentation and evaluation. The testing process, planning and strategies. A team project is undertaken to reinforce the principles taught in lectures.


Class Contact Three hours per week for one semester based on two hours of lectures, one hour of tutorial, laboratory.

Assessment Test, assignment and laboratory exercises: 25%, examination 75%. A satisfactory level of assessment for both components is required for a subject pass.

EEC2502 DATA STRUCTURES AND ALGORITHM ANALYSIS 2.2
Campus Footscray Park
Prerequisite(s) EEC1002 Programming Structures 1.2

Content Functions and characteristics of an operating system. Introduction to the UNIX operating system, commands and utilities. Memory management, objectives, virtual memory, allocation policies. Input and output procedures, device handlers, buffering, file devices and spooling. Filing system objectives, sharing, security and integrity. Resource allocation and scheduling, algorithms, control and accounting. Protection and reliability.


Class Contact Three hours per week for one semester based on one hour of lectures and two hours of tutorial/practical work.

Assessment Test, assignments and laboratory exercises: 35%, examination 65%. A pass in each component of assessment is required for a subject pass.

EEC2501 SOFTWARE ENGINEERING 2.1
Campus Footscray Park
Prerequisite(s) EEC1002 Programming Structures 1.2


Required Reading To be advised by lecturer.


Class Contact Three hours per week for one semester based on one hour of lecture and one hour of tutorial and one hour of laboratory.

Assessment Test, assignment and laboratory exercises: 35%, examination: 65%. A pass in each component of assessment is required for a subject pass.

EEC2502 DATA STRUCTURES AND ALGORITHM ANALYSIS 2.2
Campus Footscray Park
Prerequisite(s) SCM2311 Object Oriented Programming 1; EEC2501 Software Engineering 2.1

Content Data Abstraction; Storage Structures; Collection Classes; Arrays; Linked lists; Iterators; Stacks, Queues, Recursion; Priority Queues; Trees; Heaps; Sorting algorithms; Searching algorithms; Tables; Hashing; File processing.


Class Contact Three hours per week for two semesters based on two hours of lectures and one hour of tutorial laboratory.

Assessment Examination, 70%; Test, assignment, laboratories, 30%. A satisfactory level of assessment in each component of the subject is required for a subject pass.

EEC3001 SOFTWARE SYSTEMS 3.1
Campus Footscray Park
Prerequisite(s) EEY2002 Computer Systems 2.2


Required Reading To be advised by lecturer.

**Class Contact** Three hours per week for one semester based on one hour per week of lecture, one hour per week of tutorial and one hour per week of laboratory exercises.

**Assessment** Test, assignment and laboratory exercises, 30%; examination, 60%. A pass in each component of assessment is required for a subject pass.

### EEC3504 COMPUTERS AND SOCIETY 3.2

**Campus** Footscray Park  
**Prerequisite(s)** Completed second year Computer Technology or equivalent.  
**Content** History of computing and its impact on society. The role of education in shaping society's attitudes. The computer industry: hardware, software and applications. The computer profession: career paths, responsibilities and professional associations. Social and ethical issues, copyrights. The protection of data being stored and communicated for security and privacy. Legal aspects, security and computer crime. Trends in computing, forecasting the technological future.  
**Required Reading** To be advised by the lecturer.  
**Class Contact** Three hours per week for one semester based on three hours per week of lecture/seminar.  
**Assessment** Assessment will be based on written assignments, participation and seminar presentation.

### EEC3511 SOFTWARE ENGINEERING 3.1

**Campus** Footscray Park  
**Prerequisite(s)** EEC2501 Software Engineering 2.1.  
**Content** Introduction to requirements elicitation, analysis and modelling. Development of a software system design from the requirements model. Comparison of analysis and design techniques. Software reliability and reuse. Verification and validation. CASE tools and software engineering environments. Software project planning and estimating.  
**Class Contact** Three hours per week for one semester comprising one hour per week of lecture, and two hours per week of tutorial/laboratory class.  
**Assessment** Test, assignment and laboratory exercises, 35%; examination, 65%. A pass in each component of assessment is required for subject pass.

### EEC3601 WINDOWS PROGRAMMING 3.1

**Campus** Footscray Park  
**Prerequisite(s)** EEC2602 Data Structures and Algorithm Analysis 2.2 or EEE2001 Computer Systems 2.1  
**Content** Introduction to graphical user interfaces (GUI). Application of object oriented techniques to the production of windows-based programs. Window design, placement and sizing. Menu types and implementation. Development of class libraries for windows applications. Platform independent window toolkit case study.  
**Required Reading** To be advised.  
**Recommended Reading** To be advised by lecturer.  
**Class Contact** Three hours per week for one semester based on one hour of lecture and two hours of tutorial/laboratory.

### EEC3604 PROGRAMMING TOOLS AND COMPILERS 3.2

**Campus** Footscray Park  
**Prerequisite(s)** EEC2602 Data Structures and Algorithm Analysis 2.2.  
**Content** Programming tools. Language structures. Lexical analysis. Syntax analysis. Code generation and optimisation. Compiler construction tools. LALR.  
**Class Contact** Three hours per week for one semester based on two hours of lecture, and one hour of tutorial/practical work.  
**Assessment** Tests, assignments and laboratory exercises, 35%; examination, 65%. A pass in each component of assessment is required for a subject pass.

### EEC3704 NETWORK SOFTWARE AND MANAGEMENT 3.2

**Campus** Footscray Park  
**Prerequisite(s)** EEC2602 Data Structures and Algorithm Analysis 2.2, or SCM3311 Object Oriented Programming 2.  
**Class Contact** Three hours per week for one semester based on two hours of lecture and one hour of laboratory.  
**Assessment** Test, assignment and laboratory exercises, 35%; examination, 65%. A pass in each component of the subject is required for a subject pass.

### EEC3801 DATABASE SYSTEMS 3.1

**Campus** Footscray Park  
**Prerequisite(s)** EEC2602 Data Structures and Algorithm Analysis 2.2 or SCM2311 Object Oriented Programming 1, or EEE2001 Computer Systems 2.1  
**Class Contact** Three hours per week for one semester based on two hours of lecture and one hour of tutorial/laboratory.  
**Assessment** Test, assignments and laboratory exercises, 35%; examination, 65%. A pass in each component is required for a subject pass.

### EEC3802 INTRODUCTION TO ARTIFICIAL INTELLIGENCE 3.2

**Campus** Footscray Park
**Prerequisite(s)** EEC2602 Data Structures and Algorithm Analysis 2.2 or SCM2311 Object Oriented Programming 1, or EYEY2001 Computer Systems 2.1

**Content** Representing knowledge using various techniques such as predicate calculus, semantic networks and frames. Demonstrating the need for heuristics to search amongst alternatives to find a solution. Production systems and the development of expert systems and expert system shells. Organisation of knowledge and the management of uncertainty. Natural language processing, analysis and parsing. Introduction to neural networks. Practical application of real-world problems suitable for an expert system solution, using a suitable AI language.


**Class Contact** Three hours per week for one semester based on one hour of lecture and two hours of tutorial/lab.

**Assessment** Test, assignment and laboratory exercises, 35%; examination, 65%. A pass in each component of the subject is required for a subject pass.

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**EEC4001 SOFTWARE PROJECT MANAGEMENT 4.1**

**Campus** Footscray Park

**Prerequisite(s)** Completed Year 3.

**Content** The subject identifies the role of practical management in the acquisition and control of software based projects. It develops project management strategies suitable for software based systems, and demonstrates the efficiency of suitable management in a project environment. Students are introduced to the appropriate industry standards and their work will be expected to comply with these.


**Class Contact** Three hours per week for one semester comprising one one-hour lecture, one one-hour laboratory and one one-hour tutorial.

**Assessment** Examination, 50%; practical work, assignment/tutorial, 50%. A satisfactory level of assessment in each component of the subject is required for a subject pass.

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**EEC4311 COMPUTER IMAGE PROCESSING 4.1**

**Campus** Footscray Park

**Prerequisite(s)** Completed Year 3.

**Co-requisite(s)** EEL4401 Neural Networks and Fuzzy Logic 4.1.

**Content** This subject introduces the students to computer imaging and image processing. It provides a thorough grounding in the topic areas to prepare students for research and applications. Subject material includes image acquisition and representation, image transformations, image coding, image enhancement, segmentation, object identification and representation. Also included are architectures for image processing systems including neural networks and their application on pattern recognition.

**Recommended Reading** Prescribed notes.


**Class Contact** Three hours per week for one semester comprising two hours per week of lectures and one one-hour laboratory.

**Assessment** Semester examination, 50%; tests, assignments and laboratory work, 50%. A satisfactory level of assessment in all major areas of the subject is required for a subject pass.

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**EEC4511 SOFTWARE TESTING AND QUALITY ASSURANCE**

**Campus** Footscray Park

**Prerequisite(s)** EEC3511 Software Engineering 3.1

**Content** Limitations of testing, Lifecycle of testing, Initial, Requirement and Design phase testing, Implementation phase testing, Software Testing Lifecycle. Requirements-based test case design, code-based test case design. Unit, sytest, and production-level testing. Fundamentals of Software Quality, Cost-Effective Quality Control Practices. The role of SQA team, Software configurations management, Infrastructure tools. Capability Maturity Model for Software, ISO Quality standard, Quantifying and Communicating.

**Required Reading** Ammann, P. and Offutt, J., *Coverage Criteria for Software Testing*, To be published

**Recommended Reading** IEEE Software Magazine; IEEE Transaction on Software Engineering

**Class Contact** Three hours per week for one semester, based on two hours of lecture, and one hour of laboratory/tutorial.
Assessment Test, assignment and laboratory exercises, 30%; examination, 70%.

EEC4700 RESEARCH PROJECT 4.0
Campus Footscray Park
Prerequisite(s) Nil.
Co-requisite(s) Need to be enrolled in (or have completed) three elective subjects.
Content This subject provides students with experience of in-depth research concepts by means of a substantial software oriented project. Students are expected to apply the principles of software engineering to ensure the successful completion of their project.
Required Reading Nil.
Class Contact Thirteen hours per week for two semesters. This includes time for the presentation of formal progress reports but is mainly to be used by the student for research work using facilities on Campus.
Assessment The emphasis is in the research technique, and disciplines utilised (20%), as the project may be open-ended or one of an overall design. Assessment also includes a formal written thesis (65%) and an oral presentation at a formal seminar (5%). These are supplemented by several progress reports presented both on a written and oral basis (10%). A typical design project requires the student to spend a significant number of ‘out of class’ hours on the project work in the final year.

EEC2002 DESIGN A 2.2
Campus Footscray Park
Prerequisite(s) EED1012, EEE2001, EEH2001
Content This subject gives the student a grounding in the planning, design, construction, and evaluation of electronics hardware, and leads to on to more advanced project work in later years of the course. Two design and construction projects will be undertaken. The first a minor project, will be carried out on an individual basis and involve a PCB fabrication. The second a major project, will be a group project to specifications given. Design and construction of the major project is shared by the group, and a group report is prepared. Each student presents a seminar with emphasis on the student’s contribution to the project.
Required Reading To be advised by the lecturer.
Class Contact Three hours per week for one semester consisting of one hour per week of lecture and two hours per week of laboratory work.
Assessment Minor project, 30%; Major project, 40%; Individual seminar, 10%; Group project report, 20%.

EEC2502 DESIGN PROJECT 2.2
Campus Footscray Park
Prerequisite(s) EEE2701 Digital Systems 2.1
Co-requisite(s) EEH2702 Digital Systems 2.2
Content Electronic circuit prototype and debugging methods. An introduction to project planning. Design journal maintenance, team working and technical reporting. To design, build and test an electronic system of the student’s choice based on either the Algorithmic State Machine design method and PLDs or a microcontroller interfaced to external sensors/ actuators.

Class Contact Three hours per week for one semester based on design group workshop sessions.
Assessment Design journal (log book), 15%; attendance and presentation at weekly group meetings, 20%; written reports, 25%; technical merit and quality of final hardware/software, 40%. A pass in each component of the assessment is required for an overall subject pass. Supplementary assessment is not available.

EED3600 DESIGN 3.0
Campus Footscray Park
Prerequisite(s) All second year subjects except EMW2001, SMA2201, SMA2212, SMA2242
Content The concepts developed in previous years are consolidated by project work of a more specialised nature allocated on an individual basis. The theory is more applications orientated, and covers the concepts of reliability, heat transfer, illumination design, acoustic noise control, and equipment and system reliability. In project work, modelling and computer techniques are emphasised as a path to a working prototype which bypasses the cut and try brainstorming stage.
Class Contact Four hours per week based on one hour per week of lecture, and three hours per week of tutorial/project work.
Assessment Theory Exam: Assessment: Assignments, examination, 40%. Project work consists of two individual projects. Each project 50%.

EED3100 DESIGN PROJECT
Campus Footscray Park
Prerequisite(s) Completed 2nd year
Co-requisite(s) ACE3143 and ACE3144 English Language and Communications 3 and 4. EEC3511 Software Engineering 3.1
Content Application of systems analysis and design principles to develop an individual project with a substantial software and/or hardware component. Development of a system and the associated documentation is undertaken as a staged process, with deliverables and presentation at the end of each stage. The stages are: system requirements elicitation and analysis, including validation activities, system design, implementation, verification and testing. Computer-aided design tools are used as appropriate.
Class Contact Three hours per week for two semesters comprising one hour per week tutorial and two hours per week of project work.
Assessment Project, 100%.

EED4000 DESIGN AND PROJECT MANAGEMENT 4.0
Campus Footscray Park
Prerequisite(s) Completed third year.
Content The concepts developed in previous years are consolidated by an advanced project of specialised nature allocated on an individual basis. The theory covers system design, mass production design, and studies relating to grounding, shielding and electromagnetic compatibility. A humanities communication component of the subject is designed to improve written and oral communication skills, to assist in the planning and preparation of engineering reports, and in competing for contracts and employment.


Class Contact Semester one: Seven hours per week based on three hours per week of lecture and four hours per week of project work.

Semester two: Seven hours per week based on three hours per week of lecture and four hours per week of project work.

Assessment Engineering theory and project 70%, of this the project is 70% and the examination is 30%; Humanities communication skills 30%.

EEE4510 ADVANCE DESIGN PROJECT 4

Campus Footscray Park

Prerequisite(s) Completed third year.

Content Application of software engineering principles and project management skills to a team project.


Recommended IEEE Software Magazine; IEEE Transaction on Software Engineering

Class Contact Three hours per week for two semester of laboratory/tutorial.

Assessment 100 % project work.

EEE2001 ELECTRONICS 2.1

Campus Footscray Park

Prerequisite(s) EEE1001 Electronics 1.1

Content PSPICE; Introduction to semi-conductor materials PN-Junction, Diodes, Characteristics and applications. BJTs small signal models, BJF amplifiers. MOSFET and JFET amplifiers and their SPICE parameters.


Class Contact Three hours per week for one semester based on one hour per week of lecture, one hour of tutorial and one hour of laboratory exercises.

Assessment Test, assignment and laboratory exercises, 35%; examination, 65%. A pass in each component of assessment is required for a subject pass.

EEE2002 ELECTRONICS 2.2

Campus Footscray Park

Prerequisite(s) EEE2001 Electronics 2.2

Content Differential amplifiers: large and small signal operation. Voltage gain, input impedance and common mode aspects. The frequency response of BJT and JFET amplifiers. RC Oscillator, Dual integrator oscillators, LC oscillators and Crystal Oscillators. Data Conversion; D/A and A/D converters. Switching regulators and switch mode power supplies principles.


Class Contact Three hours per week for one semester based on one hour per week of lecture, one hour of tutorial and one hour of laboratory exercises.

Assessment Test, assignment and laboratory exercises, 35%; examination, 65%. A pass in each component of assessment is required for a subject pass.

EEE2501 ELECTRONICS 2.5

Campus Footscray Park

Prerequisite(s) EEL1001 Circuit Theory and Application I.


Required Reading Lecture Notes.


Class Contact Three hours per week for one semester based on one hour per week of lecture, one hour of tutorial and one hour of laboratory.

Assessment Test, assignment and laboratory exercises, 35%; examination, 65%. A pass in each component of assessment is required for a subject pass.

EEE2503 ELECTRONICS 2.6

Campus Footscray Park

Prerequisite(s) EEE2501 Electronics 2.5


Recommended Reading Bogart, T.F. 1993, Electronic Devices and Circuit, 3rd edn, Merrill.

Class Contact Three hours per week for one semester based on one hour per week of lecture, one hour of tutorial and one hour of laboratory.

Assessment Test, assignment and laboratory exercises, 35%; examination, 65%. A pass in each component of assessment is required for a subject pass.
EEE3001 ELECTRONIC CIRCUITS 3.1
Campus Footscray Park
Prerequisite(s) EEE3001 Electronic Circuits 3.1
Class Contact Three hours per week for one semester based on one hour per week of lecture and two hours per week of laboratory/practical work.
Assessment Practical work, 60%; examination or test, 40%. A pass in each component of assessment is required for a subject pass.

EEE3002 ELECTRONIC CIRCUITS 3.2
Campus Footscray Park
Prerequisite(s) EEE3001 Electronic Circuits 3.1
Class Contact Three hours per week for one semester based on one hour per week of lecture, one hour per week of tutorial and one hour of laboratory exercises.
Assessment Test, assignments and laboratory exercises, 35%; examination, 65%. A pass in each component of assessment is required for a subject pass.

EEE4001 RF ENGINEERING 4.2
Campus Footscray Park
Prerequisite(s) EEE3002 Electronic Circuits 3.2; EET3101 Communication Engineering 3.1
Class Contact Three hours per week based on one hour per week of lecture, one hour per week of tutorial and one hour per week of laboratory exercises.
Assessment Tests, assignment and laboratory exercises, 10%; examination, 90%. A pass in each component of assessment is required for a subject pass.

EEE4002 DIGITAL ELECTRONICS 2.1
Campus Footscray Park
Prerequisite(s) EEE2001 Digital Electronics 2.1
Class Contact Three hours per week based on one hour per week of lecture, one hour per week of tutorial and one hour per week of laboratory exercises.
Assessment Tests, assignment and laboratory exercises, 10%; examination, 90%. A pass in each component of assessment is required for a subject pass.

EEE2001 DIGITAL ELECTRONICS 2.2
Campus Footscray Park
Prerequisite(s) EEE2001 Digital Electronics 2.1
Class Contact Four hours per week comprising two hours of lecture, one hour of tutorial and one hour of laboratory exercises.
Assessment Class test, 30%; Laboratory exercises, 10% and final examination, 60%.

EEE2001 DIGITAL ELECTRONICS 1
Campus Footscray Park
Prerequisite(s) Nil
Class Contact Four hours per week comprising two hours of lecture, one hour of tutorial and one hour of laboratory exercises.
Assessment Class test, 30%; Laboratory exercises, 10% and final examination, 60%.
EEH 2601 MICROPROCESSOR SYSTEMS 2.1
Campus: Footscray Park
Prerequisite(s): EEH2601 Microprocessor Systems 2.1, EEH2701 Digital Systems 2.1, EEC2501 Software Engineering 2.1, SCM23110 Object Oriented Programming I
Content: A revision of assembly language programming using advanced addressing modes. Object codes and post bytes. Stack and stack instructions. Subroutines. Assembly language programming extended to cover engineering applications involving serial and parallel data input and output handling, interrupts, event counting, timing and analog to digital conversion. Microprocessor hardware design principles covering bus architectures, address decoding, digital to analog conversion and input/output techniques. Students will also construct and test their own 68HC11 microcomputer board.
Required Reading: Students may select one of the following as an appropriate text book for this subject. The others may then be considered as appropriate Recommended Reading.
Miller, G.H., Microcomputer Engineering, Prentice Hall
Tocci, R.J., et al., Microprocessors and Microcomputers, Prentice Hall
Class Contact: Three hours per week for one semester based on one hour of lecture, tutorial and laboratory.
Assessment: Tests, assignments, tutorials, laboratory work, etc., 35%; examination, 65%. Students must achieve satisfactory performance in each component of the assessment and attend a minimum of 80% of all labs and tutorials to obtain a pass in the subject.

EEH 2602 MICROPROCESSOR SYSTEMS 2.2
Campus: Footscray Park
Prerequisite(s): EEH2601 Microprocessor Systems 2.1, EEH2701 Digital Systems 2.1, EEC2501 Software Engineering 2.1, SCM23110 Object Oriented Programming I
Content: An introduction to assembly language programming and programs controlling devices (e.g. RAM, ROM and Input/Output) and the Memory Map. Instruction set, addressing modes etc. Microcomputer system comparators, counters, registers, ALUs, etc. Device function, controller design and implementation.
Required Reading: The 68HC11 Microcontroller, Harcourt, Brace, Jovanovich.
Class Contact: Three hours per week for one semester based on one hour of lecture and one hour of tutorial and one hour of laboratory exercises.
Assessment: Laboratory, 10%; final examination, 90%. A pass in each component of assessment is required for a subject pass. Supplementary assessment is not available.

EEH 2702 DIGITAL SYSTEMS 2.2
Campus: Footscray Park
Prerequisite(s): EEE2701 Digital Systems 2.1, EEE1001 Electronics 1.1
Content: PLD types and architectures. Fusesmap interpretation. Implementation of data path elements and sequential controllers on PLDs using a programmable logic compiler (CUPIL). The ASM technique implemented on PLDs. Digital to analog and analog to digital conversion. Device interfacing between logic families and to external sensory actuators.
Class Contact: Three hours per week for one semester based on one hour of lecture and one hour of tutorial and one hour of laboratory exercises.
Assessment: Laboratory 10%; final examination, 90%. A pass in each component of assessment is required for a subject pass. Supplementary assessment is not available.

EEH 3002 MULTIMEDIA CIRCUITS AND SYSTEMS 3.2
Campus: Footscray Park
Prerequisite(s): EEH2002 Digital Electronics 2.2 or equivalent subjects.
Content: Analysis of multimedia functions and systems. Introduction to silicon fabrication process. Digital and analogue circuit design, static and dynamic design techniques. Circuit protection and scaling. CMOS latch up. CAD Tools. VLSI circuit simulation and testing. GaAs VLSI circuits for multimedia applications. Introduction to VHDL.
Class Contact: Three hours per week for one semester based on one hour of lecture and two hours of laboratory exercises.
Assessment: Laboratory exercises 20%, project 50%, examination 30%. A pass in each component of assessment is required for a subject pass.

EEH 3301 DIGITAL CIRCUITS 3.1
Campus: Footscray Park, Werribee.
Prerequisite(s): EEA2102 Electrical Engineering 2.2.

**Class Contact** Based on one hour per week lecture, one hour per week tutorial and one hour per week laboratory exercises. A pass in each component of assessment is required for a subject pass.

**EEH3201 COMPUTER AND DIGITAL DESIGN 3.1**

**Campus** Footscray Park  
**Prerequisite(s)** EYE2002 Computer Systems 2.2, EEH2002 Digital Electronics 2.2  
**Content** I/O interface programming techniques using both assembler level and C programming techniques. I/O driver programming using BIOS and register level methods. Introduction to interrupts, interrupt vectors and programmable interrupt controllers. Timing facilities including programmable timers and real time clocks. Programming asynchronous serial I/O operations using a UART. Programming parallel I/O operations and DMA. Managing large programs using macros and libraries. Industrial applications of microprocessors.


**Recommended Reading** Breg, B. 1998, *Programming the 80286*, 80386, 80486 and Pentium Based PCs, Prentice Hall.

**Class Contact** Three hours per week for one semester based on one hour per week of lecture, one hour per week tutorial and one hour per week of laboratory exercises.

**Assessment** Tests, assignments and laboratory exercises, 35%; examination, 65%. A pass in each assessment component of the work is required for a subject pass.

**EEH3202 COMPUTER AND DIGITAL DESIGN 3.2**

**Campus** Footscray Park  
**Prerequisite(s)** EYE2002 Computer Systems 2.2  
**Content** Iterative circuits: cell models, design techniques using state machine techniques. Asynchronous circuits: analysis and synthesis techniques, realisation. Algorithmic State Machine design approach: controller/architecture model, top-down design approach, ASM charts, realisation, design pitfalls. Register Transfer Language (RTL) design techniques, RTL language, notation and constructs, data path and data units, bus transfers.


**Class Contact** Three hours per week for one semester based on one hour per week of lecture, one hour per week tutorial and one hour per week of laboratory exercises.

**Assessment** Tests, assignments and laboratory exercises, 35%; examination, 65%. A pass in each assessment component of the work is required for a subject pass.

**EEH3204 INTEGRATED CIRCUIT DESIGN 3.2**

**Campus** Footscray Park  
**Prerequisite(s)** EEH2002 Digital Electronics 2.2 or equivalent  
**Content** Introduction to silicon fabrication process. Digital and analogue circuit design, static and dynamic design techniques, random logic, PLA, domino, NO/RA, multi-clock phase circuits. Circuit protection and scaling CMOS latch up. CAD Tools, Summit, Mentor, HSPICE, VLSI circuit simulation and testing Future fast VLSI circuits (GaAs).


**Class Contact** Three hours per week for one semester based on one hour per week of lecture and two hours per week of tutorial/laboratory exercises.

**Assessment** Laboratory exercises 20%; project 50%, examination, 30%. A pass in each component of assessment is required for a subject pass.
Content Introduction to multiprocessor and concurrent programming. Classification of computer architectures - Von Neumann, SIMD, MIMD, array, and data flow computers; shared memory and distributed memory interconnection network; performance measurement; parallel algorithms; Occam programming: concurrent channel operation; concepts of mutual exclusion; semaphore; monitor; typical concurrent programming problems.

Required Reading Notes on each topic are provided. These notes should be supplemented by using the texts mentioned in recommended reading.


Class Contact Three hours per week for one semester based on one hour per week of lecture two hours per week of tutorial/laboratory.

Assessment Test, assignment and laboratory exercises, 35%; examination, 65%. A pass in each component of assessment is required for a subject pass.

EEH401 COMPUTER AND DIGITAL DESIGN 4.1
Campus Footscray Park
Prerequisite(s) EEH3202 Computer and Digital Design 3.2
Content Introduction to VHDL: traditional design methods, hardware, abstraction. Language elements: basic terminology, entity, modelling of architecture (structural, data flow and mixed) identifiers, data objects and types, operators: ASM and RTL implementation. Packages and libraries. Synthesis: constraints, attributes, realisation with CPLDs and FPGAS-EDA design and development tools.


Class Contact Three hours per week for one semester based on two hours per week of lecture/tutorial and one hour per week of laboratory exercises.

Assessment Assignment, 20%; examination, 80%. A pass in each component of assessment is required for a subject pass.

EEH402 COMPUTER AND DIGITAL DESIGN 4.2
Campus Footscray Park
Prerequisite(s) EEH3204 Integrated Circuit Design 3.2
Content CMOs cell design: device-level design constraints, Circuit optimisation techniques. Layout considerations in CMOs design: cell design techniques, gate matrix method. Review of tools for low-level cell design: Mentor Graphics circuit design and verification tools, HSPICE and SPICE simulation tools. Basic analog building blocks. Timing issues in VLSI circuit design. Design of VLSI system sub-systems: Arithmetic and logic processing elements, adders, counters, etc. data path design and layout. Chip floorplanning.

Required Reading Gopalan, K., 1996, Introduction to Digital Microelectronic Circuits, IRWIN


Class Contact Three hours per week for one semester based on two hours per week of lecture/tutorial and one hour per week of laboratory exercises.
EEP 2001 POWER SYSTEMS 2.1

**Campus** Footscray Park

**Prerequisite(s)** EEA1002 Electrical Engineering 1.2.

**Content** Introduction to magnetic circuits. Single phase transformer theory and performance. Balanced and unbalanced three phase systems (load unbalance only). Complex three phase power and its measurement. Three phase transformer connections. DC machines, circuit models, characteristics and speed control.


**Class Contact** Three hours per week for one semester based on one hour of lecture and two hours of tutorial/laboratory.

**Assessment** To be advised by lecturer.

EEP 2802 ELECTRICAL ENGINEERING 1

**Campus** Footscray Park

**Prerequisite(s)** SPH1602 and SMA1202.

**Content** Fundamentals of electrical circuit theory. DC circuits, series/parallel circuits, Introduction to AC circuits. Basic operation, performance characteristics and selection of motors and generators. Introduction to electronics.


**Class Contact** Three hours per week for one semester based on two hours per week of lecture, and one hour per week of tutorial/laboratory exercises.

**Assessment** Tests, 20%; laboratory exercises, 20%; examination, 60%. A pass in each component of assessment is required for a subject pass.

EEP 3001 POWER SYSTEMS 3.1

**Campus** Footscray Park

**Prerequisite(s)** EEP 2001 Power Systems 2.1.


**Class Contact** Three hours per week for one semester based on two hours per week of lecture, and one hour per week of tutorial/laboratory exercises.

**Assessment** Test, 10%; laboratory exercises, 10%; examination, 80%. A pass in each component of assessment is required for a subject pass.
EFP4004 DISTRIBUTION SYSTEMS 4.2
Campus Footscray Park
Prerequisite(s) EEP3002 Power Systems 3.2.
Content Distribution networks - function, equipment, construction and operation. Insulators: testing, voltage distribution, pollution flashover, HVDC systems: inverter and converter operation and analysis, equivalent circuits, interaction and control, comparison with AC transmission, HVDC, links. Distribution networks - present challenges, Electrical arrangements for industrial and large customer installations. Equipment and its application. Electrical studies for planning, design and operation. Design aspects. Safety, operational practices and maintenance.
Required Reading To be advised by lecturer.

EES1001 PROGRAMMING 1
Campus Footscray Park
Prerequisite(s) Nil
Content An introduction to computer architecture, operating systems and programming languages. How to create and manipulate data objects including input and output operations. Basic constructs of programming including repetition, computer logic, arithmetic expressions, selection and predefined functions. An introduction to problem solving through program design and documentation. Practical exercises include algorithm design and testing using a high level language such as C++.
Required Reading Current available textbook - student to be advised.
Class Contact Four hours per week for one semester based on two hours of lectures and two hours of laboratory/tutorial.
Assessment Test, assignments and project, 40%; examination, 60%. A pass in each component of assessment is required for a subject pass.

EES1002 PROGRAMMING 2
Campus Footscray Park
Prerequisite(s) EES1001
Content Elements of problem analysis and the stages of software development. Data organisation using arrays, pointers and simple data structures. Saving and retrieving data using disk files. Modular software design and implementation using procedures with parameters. Introduction to the principles of object oriented programming and the design of simple classes consisting of data constructors and member functions.
Required Reading Current available textbook - student to be advised.
Class Contact Four hours per week for one semester based on two hours of lectures and two hours of laboratory/tutorial.

EET2001 MULTIMEDIA PROGRAM PRODUCTION 2.1
Campus Footscray Park/ St. Albans
Prerequisite(s) Nil
Required Reading Notes on each topic are provided. These notes should be supplemented by using the texts mentioned in the recommended reading.
Class Contact Three hours per week for one semester based on one hour per week of lecture and two hours per week of workshop and laboratory exercises.
Assessment Assignments and tests 50%, project 50%. A pass in each component is required for a subject pass.

EET2002 COMMUNICATION SYSTEM 2.2
Campus Footscray Park
Prerequisite(s) SMA1202 Mathematics 1AQ
Truyen, N.N. and Leung, P. 1987, Communication Theory, Victoria University Publication.
Class Contact Three hours per week for one semester based on two hours per week of lecture, one hour per week of tutorial/laboratory exercises.
Assessment Test, assignments and laboratory exercises, 35%; examination, 65%. A pass in each component of assessment is required for a subject pass.

EET2003 MULTIMEDIA TECHNIQUES 2.1
Campus Footscray Park
Prerequisite(s) EEC1102 Programming Structures
Content Introduction to the methods processing and transmission of image and video data. The architecture of Digital Video Broadcasting (DVB) systems including terrestrial, cable and satellite methods. Digital image and video camera technology and standard data file formats. Basic steps in image and video compression as employed in the JPEG and MPEG standards including motion estimation and motion compensation in video compression. Techniques for internet and wireless transmission of images and video and problems of congestion and packet loss.
EET3002 MULTIMEDIA COMMUNICATION NETWORKS 3.2

Campus Footscray Park
Prerequisite(s) EET2002 Communication Systems A.


Required Reading To be advised.

Recommended Reading Stallings, W., 1992, ISDN and Broadband ISDN, 2nd ed., MacMillan

Class Contact Three hours per week for one semester based on two hours per week of lecture and one hour laboratory exercises.

Assessment Test, assignment and laboratory exercises, 30%; examination, 70%. A pass in each component is required for a subject pass.

EET3101 COMMUNICATION ENGINEERING 3.1

Campus Footscray Park
Prerequisite(s) EET2002 Communication Systems 2.2.

Content Transmission line theory, wave equation, VSWR, Smith chart, characteristic impedance, coaxial cable, waveguide, microstrip line, stub matching techniques, Maxwell equations, TE, TM and TEM modes, antenna and free space microwave propagation, microwave devices.

Required Reading To be advised by lecturer.


Assessment Test, assignments and laboratory exercises, 30%; examination, 70%. A pass in each component of assessment is required for a subject pass.

EET301 COMMUNICATION ENGINEERING 3.2

Campus Footscray Park
Prerequisite(s) EET3101 Communication Engineering 3.1

Content Spectral analysis of random signals, auto-correlation and cross-correlation functions of non-deterministic communication signals, line coding techniques, pseudo-random sequences and their application, gaussian noise, noise temperature, performance of baseband data communication systems in noise, bit-error rate (BER) calculation, signal to noise analysis of DSB, SSB and FM modulations.

Required Reading To be advised by lecturer.


Class Contact Three hours per week for one semester based on two hours per week of lecture/tutorial and one hour per week of laboratory exercises.

Assessment Test, assignments and laboratory exercises, 30%; examination, 70%. A pass in each component of assessment is required for a subject pass.

EET3501 COMPUTER COMMUNICATIONS 3.1

Campus Footscray Park
Prerequisite(s) EET2502 Computer Communications 2.2 or EET2002 Communication Systems 2.2

Content Computer communication protocols and standards. TCP/IP protocol suite. Underlying technologies IP addressing. Subnetting and supermachining. Routing of IP packets. IP datagram structure. ARP and RARP. ICMP. IGMP. UDP and TCP.


Class Contact Three hours per week for one semester based on two hours per week of lecture and tutorial, and one hour of laboratory.

Assessment Test, assignment and laboratory exercises, 35%; examination, 65%. A pass in each component of assessment is required for a subject pass.

EET3502 COMPUTER COMMUNICATIONS 3.2

Campus Footscray Park
Prerequisite(s) Networking and internetworking devices. Repeaters, bridges, routers and gateways. Routing protocols RIP, OSPF and BGP. Client server model. BOOTP and DHCP. Domain name system. Telnet. FTP and TFTP, SMTP, SNMP, HTTP and WWW. Socket interface.


Class Contact Three hours per week for one semester, based on two hours of lecture and tutorial, and one hour of laboratory.

Assessment Test, assignment and laboratory exercises, 35%; examination, 65%. A pass in each component of assessment is required for a subject pass.

EET4001 SIGNAL PROCESSING 4.1

Campus Footscray Park
Prerequisite(s) EEE3002 Electronic Circuits 3.2; EEA2002 Linear Systems 2.2 or equivalent subjects.
Content Digital signal processing techniques are emphasised. Subject details include: discrete time signals and systems, sampling, z transforms, s to z mapping, discrete convolution, DFT and FFT. Digital filters, IIR and FIR. Computer aided design of linear phase filters.


Class Contact Three hours per week for one semester based on two hours per week of lecture/tutorial and one hour per week of laboratory exercises.

Assessment Test, assignments and laboratory exercises, 50%; examination, 50%. A pass in each component of assessment is required for a subject pass.

EET4002 SIGNAL PROCESSING 4.2

Campus Footscray Park
Prerequisite(s) EET4001 Signal Processing 4.1

Content Application of DFT, discrete convolution, spectrum estimation, windows, DSP building blocks, matched filters, multirate systems; adaptive systems; LMS algorithm; examples. Low sensitivity filter structures.


Class Contact Three hours per week for one semester based on two hours per week of lecture/tutorial and one hour per week of laboratory exercises.

Assessment Project, laboratory exercises and assignment, 50%; examination, 50%. A pass in each component of assessment is required for a subject pass.

EET4104 SATELLITE COMMUNICATION 4.1

Campus Footscray Park
Prerequisite(s) EET3102 Communication Engineering 3.2


Required Reading Nil


Class Contact Three hours per week for one semester based on two hours per week of lecture and one hour per week of design and practice.

Assessment Practical work and assignments, 30%; examination, 70%. A pass in each component of assessment is required for a subject pass.

EET4204 COMMUNICATION SYSTEMS DESIGN 4.2

Campus Footscray Park
Prerequisite(s) EET3102 Communication Engineering 3.2

Content In this unit students are guided in the design of actual communication systems and management of telecommunications networks. The principles of communication systems design are introduced through a series of design assignments using modern communications systems and networks, including: optical fibre, ATM and broadband networks, mobile radio and data communications. The emphasis is placed on technical performance as well as economics and human engineering considerations. Students are also introduced to OSI network management and telecommunications management network standards.


Class Contact Three hours per week for one semester based on one hour per week of lecture and two hours per week of laboratory exercises and design practice.

Assessment Project, 50%; test and assignment, 50%. A pass in each component of assessment is required for a subject pass.

EET4302 MULTIMEDIA SYSTEMS DESIGN 4.2

Campus Footscray Park
Prerequisite(s) EET3102 Communication Engineering 3.2

Content The principles of communications systems design are introduced through a series of designs in key areas, such as multimedia user interface systems and fibre optic networks. Emphasis is placed on the technical performance as well as economic and human engineering considerations of the overall systems. International standards are introduced wherever applicable.

Required Reading To be advised.


Class Contact Three hours per week for one semester based on two hours per week of lecture and one hour per week of laboratory exercises.

Assessment Exercises and design assignments 70%, test 30%. A pass in each component of assessment is required for a subject pass.

EET4401 MOBILE COMMUNICATION SYSTEMS 4.1

Campus Footscray Park
Prerequisite(s) EET3102 Communication Engineering 3.2


Required Reading To be advised by lecturer.
EET4402 TELETRAFFIC ENGINEERING 4.2

Campus Footscray Park
Prerequisite(s) EET3102 Communication Engineering 3.2

Required Reading To be advised by lecturer.
Class Contact Three hours per week for one semester based on two hours lecture and one hour of laboratory.
Assessment Examination 70%, laboratory/assignments 30%. A satisfactory level of assessment for each component is required for a subject pass.

EET4501 BROADBAND ISDN 4.1

Campus Footscray Park
Prerequisite(s) EET3102 Communication Engineering 3.2

Required Reading To be advised.
Class Contact Three hours per week for one semester based on two hours per week of lecture and one hour per week of laboratory exercises.
Assessment Test, assignment and laboratory exercises 30%; examination 70%. A pass in each component of assessment is required for a subject pass.

EET4701 COMMUNICATION SYSTEMS 4.1

Campus Footscray Park
Prerequisite(s) EET3102 Communication Engineering 3.2.
Required Reading To be advised by the lecturer.
Class Contact Three hours per week for one semester based on two hours per week of lecture/tutorial and one hour per week of laboratory exercises.
Assessment Assignments, project and laboratory exercises, 35%; examination, 65%. A pass in each component of assessment is required for a subject pass.

EET4702 COMMUNICATION SYSTEMS 4.2

Campus Footscray Park
Prerequisite(s) EET4701 Communication Systems 4.1
Required Reading To be advised by the lecturer.
Class Contact Three hours per week for one semester based on two hours per week of lecture/tutorial and one hour per week of laboratory exercises.
Assessment Assignments, project and laboratory exercises, 35%; examination, 65%. A pass in each component of assessment is required for a subject pass.

EYEY2001 COMPUTER SYSTEMS 2.1

Campus Footscray Park
Prerequisite(s) EEC1002 Programming Structures or ETC1112 Introduction to Computing I.2
Content Problem solving and programming. Analysis, design and implementation of abstract data types and classes. Input and output streams. Introduction to numerical methods.
Required Reading Bronson, G.J., 1999, C++ for Engineers and Scientists, PWS Publishing.
Recommended Reading Dietel, H.M. and Deitel, P.J., 1998, C++ How to Program.
Class Contact Three hours per week for one semester based on two hours per week of lecture, and one hour per week of tutorial/laboratory exercises.
Assessment Test, assignments and laboratory exercises, 35%; examination, 65%. A pass in each component of assessment is required for a subject pass.

EYEY2002 COMPUTER SYSTEMS 2.2

Campus Footscray Park
Prerequisite(s) EYEY2001 Computer Systems 2.1
Content Introduction to 80x86 architectures and CPU register operations. Computer instruction types including arithmetic, logical, stack and jump instructions. Memory addressing modes including indirect addressing. Assembly-level and mixed language programming techniques. Use of the stack for passing parameters
between assembly and C-language procedures. Source code and machine level debugging techniques. Use of software interrupts to access ROM BIOS functions.


**Class Contact** Three hours per week for one semester based on two hours per week of lecture and one hour per week of tutorial/laboratory exercises.

**Assessment** Test, assignments and laboratory exercises, 35%; examination, 65%. A pass in each component of assessment is required for a subject pass.

**EEY4002 MULTIMEDIA NETWORK MANAGEMENT 4.2**

**Campus** Footscray Park

**Prerequisite(s)** EET3102 Communication Engineering 3.2 and EEE3202 Computer and Digital Design 3.2


**Required Reading** To be advised.


**Class Contact** Three hours per week for one semester, based on two hours per week of lecture and one hour per week of laboratory exercises.

**Assessment** Test, assignment and laboratory exercises 50%, examination 50%. A pass in each component of assessment is required for a subject pass.

**EEY4101 COMPUTER SYSTEMS 4.1**

**Campus** Footscray Park

**Prerequisite(s)** EEC3001 Software Systems 3.1, EEE3201 Computer and Digital Systems 3.1

**Content** Human machine interface: Design principles. Development of an engineering computer system by integration of operating systems, application software and I/O driver design. Neural Computing Systems Real time software design: Requirements and functionality of real time software and real time operating systems.

**Required Reading** To be advised.


**Class Contact** Three hours per week for one semester, based on two hours per week of lecture/seminar and one hour per week of laboratory exercises.

**Assessment** Tests, assignments and laboratory exercises, 50%; examination, 50%. A pass in each component of assessment is required for a subject pass.

**EEY4102 COMPUTER SYSTEMS 4.2**

**Campus** Footscray Park

**Prerequisite(s)** EFY4101 Computer Systems 4.1


**Required Reading** To be advised.


**Class Contact** Three hours per week for one semester based on two hours per week of lecture/seminar and one hour per week of laboratory exercises.

**Assessment** Tests, assignments and laboratory exercises, 35%; examination, 65%. A pass in each component of assessment is required for a subject pass.

**EMC2122 ENGINEERING COMPUTATIONS 2**

**Campus** Footscray Park

**Prerequisite(s)** Computer Programming, Engineering Computations 1.

**Content** Numerical solutions of engineering problems such as non-linear systems, temperature and pressure distribution using the following techniques: Non-linear equations - Bi-Section, Secant methods. Numerical integration and differentiation, finite differences, Interpolation. Solution of ordinary differential equations-Initial and boundary types. Solution of partial differential equations: Parabolic, Elliptical, Hyperbolic solutions. Finite Element and Boundary Elements methods.

**Required Reading** Current available textbook - Student to be advised.


**Class Contact** Three hours per week for one semester based on one hour lecture, two hours tutorial/laboratory session.

**Assessment** Assignments and class tests, 40%, end of semester examination, 60%.

**EMC3111 ENGINEERING COMPUTATIONS C**

**Campus** Footscray Park

**Prerequisite(s)** EMC2122 Engineering Computations B; SMA 2201 Mathematics B.


**Required Reading** Lecture notes and class notes Online Help.


**Class Contact** Four hours per week for one semester based on two one hour lectures and one two hour tutorial/laboratory session.

**Assessment** Assignments, tests, 50%; Examination, 50%.

**EMC3712 ENGINEERING COMPUTATIONS 2**

**Campus** Footscray Park

**Prerequisite(s)** EMC2122 Engineering Computations 1

**Content** Numerical solutions of Engineering Problems such as non-linear systems, temperature and pressure distribution using the following techniques: Non-linear equations- Bi-Section, Secant methods. Numerical integration and differentiation, finite differences, Interpolation. Solution of ordinary differential equations-Initial and boundary types. Solution of partial differential equations: Parabolic, Elliptical, Hyperbolic solutions. Finite Element and Boundary Elements methods.

**Required Reading** Current available book text - student to be advised.
EMD4320 MECHANICAL DESIGN C
Campus: Footscray Park
Prerequisite(s): EMD3310 Mechanical Design B.
Recommended Reading: Australian Standards where required.
Class Contact: Four hours per week for two semesters based on three hours per week for one semester comprising of an hourly lecture and two hour tutorial sessions.
Assessment: Assignments, tests and project work, 50%; examination at the end of semester two, 50%.

EMD4731 MECHANICAL DESIGN 3
Campus: Footscray Park
Prerequisite(s): EMD3732 Mechanical Design 2.
Content: Optimum design of mechanical elements and systems using both analytical and computational methods as follows: Graphical Optimisation, Linear programming, Calculus methods, Lagrange Multipliers, Geometric Programming, Experimental Optimisation, Taguchi Method.
Required Reading: Current available textbook - Student to be advised.
Class Contact: Three hours per week for one semester comprising of an hourly lecture and a two hour tutorial. 
Assessment: Assignments and class tests, 50%; Exam at the end of semester, 50%.

EMD4732 MECHANICAL DESIGN PROJECT
Campus: Footscray Park
Prerequisite(s): EMD4731 Mechanical Design 3.
Content: Major Mechanical Design project. The student will be expected satisfactorily to produce full design specifications and drawings for a significant mechanical.
Required Reading: Current available textbook - student to be advised.
Class Contact: Three hours per week for one semester comprising of an hourly lecture and a two hour tutorial. 
Assessment: Assignments 50%, Satisfactory semester progress 50%
EMF3212 FLUID MECHANICS B
Campus Footscray Park
Prerequisite(s) EMF2210 Fluid Mechanics A.
Content Visous fluid flow in pipes and ducts: Reynolds experiment, head loss due to friction, variation in friction factor; simple pipe problems, major and minor losses in pipe systems, energy and hydraulic grade lines, pipes in series and parallel. Complex system problems: networks and multi reservoirs, pump and pipe system matching. External fluid flow: boundary layer theory, momentum integral equation, drag on a flat plate, boundary layer separation, Navier Stokes equations: exact solutions (Couette flow, Hagen-Poiseuille flow).
Class Contact Three hours per week for one semester based on two hours of lectures and one hour tutorial/laboratory session.
Assessment Assignments 5%, tests 35%; laboratory reports 10%; examination, 50%.

EMF3741FLUID MECHANICS 2
Campus Footscray Park
Prerequisite(s) Fluid Mechanics 1
Content Review of conservation laws in integral form (continuity, linear momentum and energy). Introduction to conservation laws in differential forms. Introduction to viscous flows. Detail analysis of wall shear (pipe and boundary layer) and free shear (jets and wakes) flows.
Required Reading Current available text book - Student to be advised.
Class Contact Three hours per week for one semester based on two lecture hours and one hour tutorial/laboratory session.
Assessment Class tests and assignments, 50%; end of semester examination, 50%.

EMF4411FLUID MECHANICS C
Campus Footscray Park
Prerequisite(s) EMF3212 Fluid Mechanics B.
Required Reading To be advised by lecturer.
Class Contact Three hours per week for one semester based on two hour lectures and one hour tutorial/laboratory session.
Assessment Assignments, class tests and laboratory work, 30%; end of semester examination, 70%.

EMF4742 FLUID MECHANICS 4
Campus Footscray Park
Prerequisite(s): EMF4741 Fluid Mechanics 3
Content Review of conservation laws in differential forms (continuity, momentum and energy) and physics of viscous flows. Review of various numerical schemes (Runge-Kutta, Crank Nicolson) and discretization methods. Introduction to the finite-volume finite difference technique. Solving engineering problems involving fluid flows using CFD packages and validation of the CFD results. Introduction to Direct Numerical Simulation (DNS) and Large Eddy Simulation (LES) techniques.
Class Contact: Three hours per week for one semester comprising two hours of lectures and one hour of tutorial and laboratory work.
Assessment: Class tests and assignments, 70 %; end of semester examination, 30 %

EMM3110 MECHATRONICS 1
Campus Footscray Park
Prerequisite(s) Electrical Engineering 1.2, Electronics 1.2, Dynamics 1
Content Coordinate and measurement systems, actuator and control systems, application of kinematics and dynamic concepts, trajectory planning and control, electronic and mechanical devices, sensors and instrumentation, application of power motors, actuators and transmission devices.
Recommended Reading To be advised by lecturer.
Class Contact Three hours per week for one semester comprising two hours of lectures and one hour of tutorial and laboratories as required.
Assessment Class tests and assignments, 30%; examination, 70%.

EMP4780 PROJECT
Campus Footscray Park
Prerequisite(s) Completion of Year 3
Content Students will apply engineering knowledge and problem solving and project management skills learnt from the course. Each student is expected to work in collaboration with technical support staff and fellow students and may be required to work, construct and test prototypes of the proposed solution, and report and appraisal of the project.
Required Reading To be advised by lecturer.
Class Contact Three hours per week for two semesters.
Assessment Major report, 80%; Progress Report, 10%; Oral presentation, 10%.

EMR1110 ROBOTICS 1
Campus Footscray Park
Prerequisite(s) Nil
Content Classification, applications, industrial automated processes, design features and specifications. Programming of robotic and automated systems, safety, installation and maintenance requirements. Special purpose. Social implications. Required Reading To be advised by lecturer.
Recommended Reading To be advised by lecturer.
Class Contact Three hours per week for one semester comprising two hours of lectures and one hour of tutorial and laboratories as required.
Assessment Class tests and assignments.

EMS2211 SOLID MECHANICS B
Campus Footscray Park
Prerequisite(s) E2S1210 Solid Mechanics A.
Required Reading Lecture notes and handouts.
Class Contact Three hours per week for one semester based on two hours of lecture and one hour tutorial/laboratory. Assessment Test, assignment and laboratory exercises, 30%; examination, 70%.

EMS3210 STRESS ANALYSIS
Campus Footscray Park
Prerequisite(s) EMS2211 Solid Mechanics B.
Required Reading Danh Tran, Stress Analysis A and Stress Analysis B, Lecture Notes.
Class Contact Three hours per week for two semesters based on two hours of lectures and one hour tutorial/laboratory session. Assessment Assignments, 30%; examinations, 70%.

EMS3721 STRESS ANALYSIS 1
Campus Footscray Park
Prerequisite(s) Solid Mechanics 3
Required Reading: Lecture Notes: Danh Tran, 2002, Stress Analysis, VUT.
Class Contact: Three hours per week for one semester comprising of an hourly lecture and a two hourly tutorial/laboratory.
Assessment: Assignments, laboratory and class tests, 30%; End of Semester Examination 70%
pump and refrigeration cycles, psychrometry and basics of air conditioning, psychrometric mixtures, dew point, properties of moist air, specific and relative humidity, percentage saturation, measurement of relative humidity, psychrometric chart - A.I.R.A.H. chart, processes on psychrometric chart, air-conditioning systems, summer and winter air-conditioning, cooling towers.

**Required Reading**


**Recommended Reading**


**Class Contact**

Three hours per week for one semester based on two hours lecture and one hour tutorial/laboratory session.

**Assessment**

Assignment, test, laboratory report, 30%; examination, 70%.

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**EMT3781 THERMODYNAMICS 2**

**Campus** Footscray Park

**Prerequisite(s)**

Thermodynamics 1.

**Content**


**Required Reading**


**Recommended Reading**


**Class Contact**

Three hours per week for one semester based on two hours lecture and one hour tutorial session.

**Assessment**

Class tests and assignments, 40%; end of semester examination, 60%.

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**EMT3782 HEAT TRANSFER**

**Campus** Footscray Park

**Prerequisite(s)**

Thermodynamics 2.

**Content**


**Required Reading**


**Recommended Reading**


**Class Contact**

Three hours per week for one semester based on two lecture hours and one hour tutorial/laboratory session.

**Assessment**

Class tests and assignments, 30%; Semester examination, 70%.

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**EMT4212 HEAT TRANSFER**

**Campus** Footscray Park

**Prerequisite(s)**

EMT3211 Thermodynamics B.

**Content**


**Required Reading**


**Recommended Reading**


**Class Contact**

Three hours per week for one semester based on two hours of lecture and one hour tutorial/laboratory session.

**Assessment**

Assignments, tests, projects, work, 30%; examination, 70%.

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**EMT4412 HEATING AND AIR-CONDITIONING**

**Campus** Footscray Park

**Prerequisite(s)**

EMT3211 Thermodynamics B.

**Content**


**Required Reading**


**Class Contact**

Three hours per week for one semester based on two hours of lecture and one hour tutorial.

**Assessment**

Assignments, tests, 65%; examination, 35%.

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**EMT4421 AUTOMOTIVE ENGINEERING**

**Campus** Footscray Park

**Prerequisite(s)**

EMT3211 Thermodynamics B.

**Content**

Design and analysis of piston type internal combustion engines: thermodynamic analysis of fuel-air cycle, piston engine mechanics, design and stress analysis of piston, connecting rod and crank shaft, piston engine balance and flywheel, flow loss in manifolds and valve openings, heat energy distribution and dissipation, mechanics of combustion, diesel injection and combustion chambers. Design and analysis of automotive chassis components: movement of momentum analysis through torque converter elements, ratio changing, torque reaction and transmission for gearing, clutching, banding of planetary transmissions, hydraulic control of ratio changing, mechanics of braking systems, suspension and steering, mathematics of understeer for handling by computer analysis.

**Recommended Reading**

To be advised by lecturer.

**Recommended Reading**


**Class Contact**

Three hours per week for one semester based on one hour of lecture and two hour tutorial/laboratory sessions.
EMT 4782 HEATING AND AIR CONDITIONING

Campus: Footscray Park
Prerequisite(s): EMT 3781
Content: Simple air conditioning systems, psychrometric representation of the air/water systems, human comfort. The design of ductwork and piping systems used in air conditioning systems. The calculation of building and heating loads. System components and selection. Air handling plant. Site visit.
Class Contact: Three hours per week for one semester comprising two hours of lectures and one hour of tutorial
Assessment: Assignments, 65%; Examination, 35%

EMU 4401 TRANSPORTATION DYNAMICS

Campus: Footscray Park
Prerequisite(s): N/A
Class Contact: Three hours per week for one semester based on one hour of lecture and two hours tutorial/laboratory sessions.
Assessment: Assignments, 30%; examination, 70%.

EMU 4402 DESIGN AND TESTING OF CONTAINERS

Campus: Footscray Park
Prerequisite(s): EMU 4401 Transportation Dynamics.
Required Reading: To be advised by lecturer.
Class Contact: Three hours per week for one semester comprising two hours of lectures and one hour of tutorial plus one hour extra for laboratories as required.
Assessment: Class tests and assignments, 40%; Semester examination, 60%.

EMU 4782 HEATING AND AIR CONDITIONING

Campus: Footscray Park
Prerequisite(s): EMT 3781
Content: Simple air conditioning systems, psychrometric representation of the air/water systems, human comfort. The design of ductwork and piping systems used in air conditioning systems. The calculation of building and heating loads. System components and selection. Air handling plant. Site visit.
Class Contact: Three hours per week for one semester comprising two hours of lectures and one hour of tutorial
Assessment: Assignments, 65%; Examination, 35%

EMU 4881 AUTOMOTIVE ENGINE TECHNOLOGY

Campus: Footscray Park
Prerequisite(s): EMT 3781
Content: Design and analysis of piston-type internal combustion engines; thermodynamics of fuel-air cycle; piston engine mechanics, design and stress analysis of pistons, connecting rods and crankshafts; piston engine balance and flywheels, flow losses in manifolds and valve openings; heat energy distribution and dissipation; mechanics of combustion, diesel injection and combustion chambers. Design and analysis of automotive chassis components, momentum analysis through torque converter elements, ratio changing, torque reaction and transmission for gearing, clutching, banding of planetary transmissions, hydraulic control of ratio changing, mechanics of braking systems, suspension and steering mathematics of understeer for computer analysis.
Class Contact: Three hours per week for one semester comprising two hours of lectures and one hour of tutorial
Assessment: Assignments and laboratory reports, 70%; Examination, 30%

EMV 3120 DYNAMICS 2

Campus: Footscray Park
Prerequisite(s): Dynamics 1
Content: Plane motion of rigid bodies – Introduction, absolute motion, relative motion, instantaneous centre of zero velocity, relative acceleration, motion relative to rotating axes. Kinetics of plane motion of rigid bodies – General equations of motion, translation, fixed axis of rotation, work and energy, impulse and momentum. Introduction of three dimensional dynamics of rigid bodies, translation, fixed axis rotation, rotation about a fixed point, general motion, angular momentum, kinematic energy, momentum and energy equations, gyroscopes.
Required Reading: To be advised by lecturer.
Class Contact: Three hours per week for one semesters comprising two hours of lectures and one hour of tutorial plus one hour extra for laboratories as required.
Assessment: Class tests and assignments, 40%; Semester examination, 60%.

EMV 320 DYNAMICS 3

Campus: Footscray Park
Prerequisite(s): Dynamics 2
Content: Systems with single degree-of-freedom, free vibration, harmonic vibration, systems with multi-degree-of-freedom, matrix methods, determination of natural frequencies and mode shapes of dynamic structures, vibration measurement, vibration of elastic bodies, vibration control.
Required Reading: To be advised by lecturer.
Class Contact: Three hours per week for one semesters comprising two hours of lectures and one hour of tutorial plus one hour extra for laboratories as required.
Assessment: Class tests and assignments, 40%; semester examination, 60%.
EMV3210 DYNAMICS B
Campus Footscray Park
Prerequisite(s) EMV2212 Dynamics A.

Semester two: Systems with single-degree-of-freedom: free vibration, harmonic vibration; systems with multi-degree-of-freedom: free vibration, harmonic vibration; matrix methods; determination of natural frequencies and mode shapes of dynamic structures; vibration measurement; vibration of elastic bodies, vibration control.

Required Reading To be advised by lecturer.

Class Contact Three hours per week for two semesters based on two hours lecture and one hour laboratory/tutorial session.
Assessment Tests, assignments and laboratory exercises, 40%; examination at the end of each semester, 60%.

EMV3771 DYNAMICS 2
Campus Footscray Park
Prerequisite(s) Dynamics 1
Content Plane motion of rigid bodies – Introduction, absolute motion, relative motion, instantaneous centre of zero velocity, relative acceleration, motion relative to rotating axes. Kinetics of plane motion of rigid bodies – General equations of motion, translation, fixed axis of rotation, work and energy, impulse and momentum. Introduction of three dimensional dynamics of rigid bodies, translation, fixed axis rotation, rotation about a fixed point, general motion, angular momentum, kinematic energy, momentum and energy equations, gyroscopes.

Required Reading Current available text book - Student to be advised.

Class Contact Three hours per week for one semester based on two hours lecture and one hour tutorial plus one hour extra for laboratories as required.
Assessment Assignments and class tests, 40%; end of semester examination, 60%.

EMV3772 DYNAMICS 3
Campus Footscray Park
Prerequisite(s) Dynamics 2
Content Systems with single degree of freedom, free vibration, harmonic vibration, systems with multi degree of freedom, matrix methods; determination of natural frequencies and mode shapes of dynamic structures; vibration measurement, vibration of elastic bodies, vibration control.

Required Reading Current available text book - Student to be advised.


Class Contact Three hours per week for one semester based on two hours lecture and one hour tutorial plus one hour extra for laboratories as required.
Assessment Assignments and class tests, 40%; end of semester examination, 60%.

EMV4410 DYNAMICS OF SYSTEMS
Campus Footscray Park
Prerequisite(s) EMV3210 Dynamics B. EMC3111, Engineering Computation.
Content Semester one: System equations and terminology; transfer functions; block diagrams and their applications to systems; time and frequency response of first and second order systems; Bode plots; root locus construction; Stability. Semester two: Open loop feedback and feedforward control; on-off control; closed loop compensation; PID control; Frequency compensation design; pole placement design.

Required Reading To be advised by lecturer.

Class Contact Three hours per week for two semesters based on two hour lectures and one hour tutorial/laboratory session.
Assessment Tests, assignments and laboratory exercises, 40%; examination at the end of semester, 60%.

EMV4411 VIBRATION AND MODAL ANALYSIS
Campus Footscray Park
Prerequisite(s) EMV3210 Dynamics B; EMY3712 Measurement and Signal Analysis.
Content Philosophy of modal analysis; fundamentals of modal analysis; modal analysis in modern industries; theoretical basis of modal analysis; frequency response function measurement; modal analysis identification methods; applications of modal analysis; use of modal analysis software packages.

Required Reading He, J. et al, 1997, "Theoretical and Experimental Modal Analysis", Research Studies Press, UK, and John Wiley and Sons Inc., USA

Class Contact Three hours per week for one semester based on one hour lecture and two hours tutorial/laboratory sessions.
Assessment Assignments, tests and laboratory work, 40%; examination at the end of semester, 60%.

EMV4772 DYNAMICS OF SYSTEMS
Campus Footscray Park
Prerequisite(s) EMY3772 Dynamics 3


Class Contact Three hours per week for one semester comprising two hours of lectures and one hour of tutorial.
Assessment Assignments and class tests, 30%; end of semester examination, 70%.
EMV471 VIBRATION AND MODAL ANALYSIS

Campus: Footscray Park
Prerequisite(s): EMV3772
Content: Fundamentals of vibration of a multi-degree of freedom system. Frequency response functions: measurements, displaying formats. Fundamentals of modal analysis, various curve fitting techniques, application software such as ICATS. Modelling and Identification techniques. Experimental modal analysis using vibration tests.
Required Reading: He, J. and Fu, Z.F., 2001, Modal Analysis, Butterworth-Heinemann
Class Contact: Three hours per week for one semester comprising two hours of lectures and one hour of tutorial
Assessment: Class tests and assignments, 50%; end of semester examination, 50%

EMV4872 TRANSPORTATION AND PACKAGING DYNAMICS

Campus: Footscray Park
Prerequisite(s): Measurement and Signal Analysis EMY3712, Dynamics 3 EMV3772
Required Reading: Current available text book - student to be advised.
Class Contact: Three hours per week for one semester comprising an hourly lecture and a two hourly tutorial/laboratory session
Assessment: Assignments and class tests, 30%; End of Semester Examination 70%

EMW2001 MATERIALS

Campus: Footscray Park
Prerequisite(s): SPH1601 Physics 1A, SPH1602 Physics 1B.
Required Reading: To be advised by lecturer.
Class Contact: Three hours per week for one semester based on two hours per week of lecture and one hour per week of tutorial/laboratory exercises.
Assessment: Test, assignments and laboratory exercises, 35%; examination, 65%. A pass in each component of assessment is required for a subject pass.

EMW3110 ENGINEERING MATERIALS

Campus: Footscray Park
Prerequisite(s): EZW2210 Principles of Material Science.
Required Reading: Lecture notes and published papers.
Class Contact: Three hours per week for two semesters based on two hours of lectures and one hour tutorial/laboratory session.
Assessment: Assignments, tests and laboratory work, 35%; examination, 65%.

EMW4401 POLYMER PROCESSES

Campus: Footscray Park
Prerequisite(s): EMW3110 Engineering Materials.
Class Contact: Three hours per week for one semester based on two hours of lectures and one hour tutorial/laboratory session.
Assessment: Assignments, tests, 40%; examination, 60%.

EMW4402 COMPOSITE MATERIALS

Campus: Footscray Park
Prerequisite(s): EMW3110 Engineering Materials; EMS3210 Stress Analysis.
Required Reading: To be advised by lecturer.
Class Contact: Three hours per week for one semester based on two hours of lecture and one hour tutorial/laboratory session.
Assessment: Assignments, tests, project, 30%; examination, 70%.
EMY4861 MATERIALS IN MANUFACTURING
Campus: Footscray Park
Prerequisite(s): Second and third year Materials and Thermodynamics

Content: Review of solidification processes and their application to casting of metals and plastics. Diffusion in solid matter and its application in mathematical analysis in micro-alloying and surface treatments of metals. Thermo-mechanical processes in metals; introduction to mechanical shaping and thermo-mechanical heat treatments. Structure-property relationship in non-Ferrous alloys; and application of these alloys in product design and materials replacement. Introduction to glass and ceramic engineering and the role of powder metallurgy. Introduction to structure-property relationship of polymer and their selection as packaging materials. Discussion of manufacturing processes in polymer industry.

Required Reading: Rajtor, J. 2002, Manufacturing and Materials, Victoria University, Melbourne.

Recommended Reading: Kalpakjian, S. 1996, Manufacturing Engineering and Technology, Addison - Wesley, Trade Journal and Research Articles as prescribed in the lecture course

Class Contact: Three hours per week for one semester comprising two hours of lectures and one hour of tutorial

Assessment: Class tests and assignments, 40%; end of semester examination, 60%

EMY3712 MEASUREMENT AND SIGNAL ANALYSIS
Campus: Footscray Park
Prerequisite(s): Engineering Computations 1.


Required Reading: Printed course materials and class handouts.


Class Contact: Four hours per week for one semester based on two hour lectures and two hour laboratory/tutorial sessions.

Assessment: Assignments, tests and laboratory work, 40%; examination, 60%

EMY4410 PROJECT
Campus: Footscray Park
Prerequisite(s): Completion of Year 3.

Content: The subject content requires each student to carry out and report on a preliminary investigation of an engineering related problem incorporating a literature review, a critical analysis of the problem, and a proposed solution. The student is expected to work in collaboration with technical support staff and fellow students and may be required to work, construct and test prototypes of the proposed solution, and report and appraisal of the entire project.

Required Reading: To be advised by supervisor.


Class Contact: Three hours per week for two semesters.

Assessment: Major report, 80%; Progress report, 10%; Oral presentation, 10%.

EMY4411 COMPUTATIONAL MECHANICS
Campus: Footscray Park
Prerequisite(s): EMS3210 Stress Analysis.


Recommended Reading: Danh Tran, Finite Element Analysis, lecture notes.

Class Contact: Three hours per week for one semester based on two hours of lecture and one hour tutorial/laboratory session.

Assessment: Assignments, 30%; three hour open book examination, solving engineering problem by Finite Element Software, 70%

EMY4412 ENERGY AND ENVIRONMENT
Campus: Footscray Park
Prerequisite(s): EMT3211 Thermodynamics B; EMF3212 Fluid Mechanics B; EMY3210 Dynamics B; EMY3712 Measurement and Signal Analysis.


Required Reading: To be advised by lecturer.


Class Contact: Three hours per week for one semester based on two hours of lecture and one hour tutorial/laboratory session.

Assessment: Assignments, tests, and laboratory work, 40%; examination, 60%

ENC112 COMPUTING FOR ENGINEERS
Campus: Footscray Park
Prerequisite(s): Nil


Class Contact: Three hours per week for one semester based on one hour of lecture and two hours laboratory/tutorial sessions.

Assessment: Class tests, 80%; Assignments and laboratory work, 20%.
ENC2812 ENGINEERING COMPUTATIONS 1

Campus Footscray Park
Prerequisite(s) Engineering Mathematics

Content Numerical solutions of engineering problems such as transient heat flow, dynamic systems, vibration and impacts using the following techniques: Newton-Raphson method of solving non-linear equations, Numerical differentiation and integration, Numerical solution of ODEs, Numerical solution of simple PDEs, Linear programming. Eigen value solutions. Use of relevant computer software.


Class Contact Three hours per week for one semester comprising an hourly lecture and two hourly tutorial/laboratory.

Assessment Assignments and tests, 40%; end of semester examination, 60%.

END2832 ENGINEERING DESIGN

Campus Footscray Park

Content The approach to structural engineering design. Understanding the problem. Combined stress and energy theories of material failure. Strategies and methods in the structural engineering design process. Fatigue effects of repeated loading. Dynamic vs static loading. Students will be given a number of simple structural engineering problems in timber, steel, reinforced concrete and other materials under static and dynamic loading, and will prepare and document appropriate design solutions to each problem including impacts and costs.


Class Contact Three hours per week for one semester comprising one hour lecture and two hours of tutorials and design sessions.

Assessment Assignments, 50%; examination, 50%.

ENF2841 FLUID MECHANICS 1

Campus Footscray Park

Prerequisite(s) SPH1602, SMA1202

Content Review of fundamentals of fluids. Fluid statics – Forces on submerged planes, Archimedes’ principle, and stability of floating bodies. Fluid dynamics – Basic concepts of fluid flow, continuity and momentum equations, Bernoulli and general energy equations, Applications of these equations to pipe flow and pumps/turbines. Flow measurements. Dimensional analysis, dimensionless numbers and introduction to modeling principles.

Required Reading Current Available Text Book – Student to be advised.


Class Contact Three hours per week for one semester comprising two hours of lectures and one hour of tutorial and laboratory work.

Assessment Class tests and assignments, 40%; end of semester examination, 60%.

ENM1851 ENGINEERING IN SOCIETY

Campus Footscray Park

Prerequisite(s) Nil

Content The changing role of engineering and science including the history of engineering and contributions of engineers and scientists to society. The need for creativity, leadership and the consideration of aesthetics. Role of professional societies and ethics. Influence of scientists and engineers on environmental issues. Politics, power and decision making and an introduction to the role of engineering in industry and business. The concept and significance of sustainability in engineering and business. Approaches to conservation and sustainable development. Consideration of the interrelationship between engineering, population and the environment, including case studies on a range of infrastructure development issues. The definition of ethics and its application to engineering. Analysis of case studies relating to engineering issues and design and development.

Required Reading Handbook of Communication Skills for First Year Students in the Faculty of Science, Engineering and Technology, 2003, Faculty of Arts, Victoria University. Beder, S., 1998, The New Engineer, Macmillan.
ENM2852 ENGINEERING MANAGEMENT 1

Campus: Footscray Park

Prerequisite(s): Nil


Class Contact: Three hours per week for one semester comprising two hours of lectures and one hour of tutorial/computer sessions.

Assessment: Class tests and assignments, 40%; end of semester examination, 60%.

ENM4852 ENGINEERING PROJECT MANAGEMENT

Campus: Footscray Park

Prerequisite(s): ENM3851

Content: The role of engineering project management in the industry. Tendering process, strategies and practices. Forms of construction contracts. Contract administration phases. Financial management system for the progressive cost control of a project. Plan site administration of medium sized projects. Financial feasibility for long term development projects, break even analysis, engineering project evaluation, and preparation of project cash flow budgeting, current construction industry practices. Understand various forms of project delivery methods.


Class Contact: Three hours per week for one semester comprising two hours of lectures and one hour of tutorial/computer sessions.

Assessment: Class tests and assignments, 40%; end of semester examination, 60%.

ENSB22 SOLID MECHANICS 1

Campus: Footscray Park

Prerequisite(s): SPH1601 Physics 1AP


Class Contact: Three hours per week for one semester based on two hours of lectures and one hour tutorial.

Assessment: Based on minor and major model construction projects, 25%; tests, 10%; 3 hour examination, 65%.

EN52821 SOLID MECHANICS 2

Campus: Footscray Park

Prerequisite(s): ENS1822


Class Contact: Three hours per week for one semester based on two hour lecture and a one hour tutorial.

Assessment: Based on minor and major model construction projects, 25%; tests, 10%; examination, 65%.

EN52822 SOLID MECHANICS 3

Campus: Footscray Park

Prerequisite(s): EN52821


Class Contact: Three hours per week for one semester based on two hours of lectures and one hour tutorial.

Assessment: Assignments and tests, 25%; and end of semester 3 hour examination, 75%.

ENT2881 THERMODYNAMICS 1

Campus: Footscray Park

Prerequisite(s): SPH1602


UNDERGRADUATE SUBJECT DETAILS

ENW1861 PRINCIPLES OF MATERIALS SCIENCE 1

Campus Footscray Park
Prerequisite(s) Nil

Content Introduction to atomic theory and bonding and its relationship to physical and mechanical properties of solids. Quantitative methods in chemistry used in processing, combustion, acid-base reactions. Introduction to electrochemistry and its significance to energy storage and corrosion of metals. Corrosion protection of metals. Manufacture processes of materials such as cements, aluminium, steel and polymers.


Class Contact Three hours per week for one semester based on two hours of lectures and one hour tutorial.

Assessment Class tests and assignments, 25%; end of semester examination, 75%.

ENW1862 PRINCIPLES OF MATERIALS SCIENCE 2

Campus Footscray Park


Class Contact Three hours per week for one semester based on two hours of lectures and one hour laboratory/ tutorial.

Assessment Class tests, laboratory work and technical reports, 25%; end of semester examination, 75%.

ENX183 ENGINEERING EXPERIMENTATION

Campus Footscray Park

Prerequisite(s) Nil

Content Measurement, use of instrumentation, laboratory and technical procedures, workplace safety requirements, machine shop practice, report writing and oral presentation (in conjunction with Engineering Communication subject), data analysis and presentation.


Class Contact Three hours per week for one semester comprising of two hours of lectures and one hour of tutorial.

Assessment Class tests and assignments, 30%; end of semester examination, 70%.

EPP1001 PHYSICS 1.1

Campus Footscray Park
Prerequisite(s) Nil


Class Contact Six hours per week for one semester comprising of lectures, tutorials and laboratories.

Assessment End of semester examination, 60%; tests, 20%; laboratories, 20%.

EPP1002 PHYSICS 1.2

Campus Footscray Park

Prerequisite(s) EPP1001, SMA1201


Class Contact Six hours per week for one semester comprising of lectures, tutorials and laboratories.

Assessment End of semester examination, 60%; tests, 20%; laboratories, 20%.

EPP2001 QUANTUM OPTICS

Campus Footscray Park

Prerequisite(s) EPP1002, SMA1201

Corequisite SMA1202


Class Contact Three hours per week for one semester comprising of lectures and tutorials.

Assessment End of semester examination plus assignments as advised by lecturer.

115
EPP3000 PHOTONICS TECHNICAL PROJECT

Campus Footscray Park
Prerequisite(s) EPP3002 plus at least 90 credit points of 2nd year subjects.

Content The aim of this subject is to develop in students the ability to approach an investigative or developmental problem in a logical manner. Students will be placed in an industrial, government or university facility to carry out individual projects in the optical engineering field.

Required Reading Nil.

Class Contact No formal classes are held. Students are required to work on their projects for the equivalent of two full days per week for one semester (approximately 11 hours per week).

Assessment is made by a committee of the academic staff taking into account the student’s performance in the following: written project proposal; written and oral progress report; final written and oral report. The final written report is assessed primarily by the project supervisor.

EPP3001 OPTICS 3

Campus Footscray Park
Prerequisite(s) EPP2001, EPP2002


Class Contact Three hours per week for one semester comprising of lectures and tutorials.

Assessment End of semester examination plus assignments as advised by lecturer.

EPP3002 FIBRE OPTIC COMMUNICATION SYSTEMS

Campus Footscray Park
Prerequisite(s) EPP2001, EPP2002


Class Contact Three hours per week for one semester comprising of lectures and tutorials.

Assessment End of semester examination plus assignments as advised by lecturer.

EPP3003 OPTICS & LASERS

Campus Footscray Park
Prerequisite(s) EPP2001, EPP2002


Class Contact Three hours per week for one semester comprising of lectures and tutorials.

Assessment End of semester examination plus assignments as advised by lecturer.

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**EPP3004 OPTICS LABORATORY 3.1**

Campus Footscray Park

Prerequisite(s) EPP2002, EPP2004

Units including SPH2091, SPH2092 and SPH2432

Content A series of graded laboratory exercises designed to support and enhance the students' understanding of modern optics through hands on experience of physical measurement and the limitations thereof.

Required Reading *Physics Laboratory 3.1 Manual*, Victoria University.

Class Contact Three hours per week for one semester comprising of laboratory experiences.

Assessment Based on student performance in the laboratory exercises and on a series of formal reports.

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**EPP3005 OPTICS LABORATORY 3.2**

Campus Footscray Park

Prerequisite(s) EPP2002, EPP2004, units including SPH2091, SPH2092 and SPH2432

Content A series of graded laboratory exercises designed to support and enhance the students' understanding of modern optics through hands on experience of physical measurement and the limitations thereof.

Required Reading *Physics Laboratory 3.2 Manual*, Victoria University.

Class Contact Three hours per week for one semester comprising of laboratory experiences.

Assessment Based on student performance in the laboratory exercises and on a series of formal reports.

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**EPP4001 QUANTUM OPTICS 4**

Campus Footscray Park

Prerequisite(s) EPP2001, SMA3311

Content Perturbation Theory, Einstein A and B coefficients, interaction of radiation field with atoms. Introduction to Dirac Bra-ket notation. Scattering.


Class Contact Three hours per week for one semester comprising of lectures and tutorials.

Assessment End of semester examination plus assignments as advised by lecturer.

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**EPP4002 ATOMIC SPECTROSCOPY**

Campus Footscray Park

Prerequisite(s) EPP2001, SMA3311


Class Contact Three hours per week for one semester comprising of lectures and tutorials.

Assessment End of semester examination plus assignments as advised by lecturer.

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**EPP4003 OPTICAL PROPERTIES OF MATERIALS**

Campus Footscray Park

Prerequisite(s) EPP3001

Content The aim of this subject is to acquaint students with the principles governing the use, suitability and applications of materials for various optical applications. In each category, currently-used materials will be extensively reviewed. General Properties: Propagation of E/M waves in dielectric media; models of the refractive index; dispersion, absorption and the refractive index; frequency dependence; scattering; cross-sections. Properties of Lens Materials: commonly used materials in the ultra violet, visible and infrared regions; transmittance, dispersion and the refractive index; environmental properties; examples. Solid State Laser Materials: Host materials, crystalline materials, semiconductors, active ions; colour centres, Non-Linear Materials: Electro optic effect; magnetoptic effect. Thin Film Materials Substrates. Optical damage mechanisms; self focusing; damage thresholds; specification of cosmetic surface quality of optical components.


Class Contact Three hours per week for one semester comprising of lectures and tutorials.

Assessment End of semester examination plus assignments as advised by lecturer.

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**EPP4004 ADVANCED OPTICS AND OPTICAL DESIGN**

Campus Footscray Park

Prerequisite(s) EPP3001

Content The aim of this subject is to familiarise students with the principles of optical system design, including a knowledge of the parameters commonly used to specify system performance and describe system aberrations. To familiarise students with the principles of multi-layer thin film design. To give students experience in the use of optical system and thin film design software. Optical System Design Analysis and matrix ray-tracing techniques. Cardinal points of lenses. Stops windows and pupils. The Gaussian constants of an optical system. Longitudinal and transverse chromatic aberration and the design of an achromat. Meridional ray traces with spherical surfaces. Spot diagrams. Skew


**Class Contact** Three hours per week for one semester comprising of lectures and tutorials.

**Assessment** End of semester examination plus assignments as advised by lecturer.

### EPP4002 ATOMIC SPECTROSCOPY

**Campus** Footscray Park

**Prerequisite(s)** EPP2001, SMA3311


**Class Contact** Three hours per week for one semester comprising of lectures and tutorials.

**Assessment** End of semester examination plus assignments as advised by lecturer.

### EPP4003 OPTICAL PROPERTIES OF MATERIALS

**Campus** Footscray Park

**Prerequisite(s)** EPP3001

**Content** The aim of this subject is to acquaint students with the principles governing the use, suitability and applications of materials for various optical applications. In each category, currently-used materials will be extensively reviewed. General Properties: Propagation of E/M waves in dielectric media; models of the refractive index; dispersion, absorption and the refractive index; frequency dependence; scattering. Cross-sections. Properties of Lens Materials: commonly used materials in the ultra violet, visible and infrared regions; transmittance, dispersion and the refractive index; environmental properties; examples. Solid State Laser Materials: Host materials, crystalline materials, semiconductors, active ions; colour centres. Non-Linear Materials: Electro optic effect; magnetooptic effect. Thin Film Materials Substrates: Optical damage mechanisms; self focusing; damage thresholds; specification of cosmetic surface quality of optical components.


**Class Contact** Three hours per week for one semester comprising of lectures and tutorials.

**Assessment** End of semester examination plus assignments as advised by lecturer.

### EPP4004 ADVANCED OPTICS AND OPTICAL DESIGN

**Campus** Footscray Park

**Prerequisite(s)** EPP3001

**Content** The aim of this subject is to familiarise students with the principles of optical system design, including a knowledge of the parameters commonly used to specify system performance and describe system aberrations. To familiarise students with the principles of multi-layer thin film design. To give students experience in the use of optical system and thin film design software. Optical System Design Analysis and matrix ray-tracing techniques. Cardinal points of lenses. Stops windows and pupils. The Gaussian constants of an optical system. Longitudinal and transverse chromatic aberration and the design of an achromat. Meridional ray traces with spherical surfaces. Spot diagrams. Skew rays. The Nature of Aberrations. The Aberration Function. Primary and Higher order Aberrations. General Properties of Aberration coefficients. The third order Seidel Aberrations: spherical aberration, coma, astigmatism, field curvature and distortion. Ray path analysis: the point spread function, line spread function and modulation transfer function. Features of typical commercial optical design systems. Detailed study of the capabilities and use of optical ray-tracing software. The use of computerised optical components catalogues and standard components. Thin Film Multi-Layer Design Principles of multi-beam interference and multi-layer coatings. Thin film design parameters. Detailed study of the capabilities and use of computer-based design software. Evaluation of thin film designs at normal and non-normal incidence, optimisation parameters and methods and the simulation of manufacturing errors.


**Class Contact** Three hours per week for one semester comprising of lectures and tutorials.

**Assessment** End of semester examination plus assignments as advised by lecturer.

### EPP4005 FIBRE SENSORS

**Campus** Footscray Park

**Prerequisite(s)** EPP3001

**Content** The aim of this subject is to develop the theory of optical fibre waveguides using a rigorous wave treatment of the propagation of light, and then to use this theory in understanding the operation of optical fibre sensors and components. Optical Waveguide Theory: Maxwell's Equations for waveguides, boundary conditions and eigenvalue equations, planar dielectric waveguides and their modes, cylindrical dielectric waveguides and their modes, LP mode description, Gaussian approximation, dispersion in multimode and single mode fibres, normal mode theory of single
mode fibre couplers. Optical Fibre Sensors: Introduction and basic concepts, materials interactions in optical fibre sensors, fibre optic components, special optical fibres for sensors, interferometric sensors, fibre optic gyroscope, intensity and wavelength based sensors, multiplexed and distributed sensors, applications of fibre sensors e.g. smart structures.

**Recommended Reading**


**Class Contact** Three hours per week for one semester comprising of lectures and tutorials.

**Assessment** End of semester examination plus assignments as advised by lecturer.

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**EPP4006 DATA ACQUISITION 2**

**Campus** Footscray Park

**Prerequisite(s)** EPP2006

**Content** In this subject students will learn advanced features of modern data acquisition and computer interfacing software such as LabView. Students will be assigned projects that will involve the automation of an experiment, both in terms of the hardware and software requirements.


**Recommended Reading** LabVIEW Manuals, National Instruments.

**Class Contact** Three hours per week for one semester comprising of lectures and tutorials and laboratory classes.

**Assessment** Laboratory project work plus assignments as advised by lecturer.

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**EPP4007 COMPUTATIONAL PHYSICS**

**Campus** Footscray Park

**Prerequisite(s)** Successful Completion of Year 2.

**Content** This subject introduces students to advanced computational tools for solving physical problems. A modern computer algebra package (currently *Maple*) is used as an aid in solving a range of problems that arise in physics. Typical problems include: solution of rate equations for lasing materials; the dynamics of coupled pendula; solution of Schrodinger equation for selected potentials, least squares fitting of non linear functions to data. The fundamentals of the FORTRAN (or other appropriate) scientific language will be presented including the following features: statements, data types and constants, arithmetic and character expressions, assignment and control statements, arrays, loops, formatting printed data, structured modular programming, subroutine and function calls, parameter passing, control structures, data structures, file types, file operation, file I/O formatting.


**Class Contact** Three hours per week for one semester comprising of lectures and tutorials.

**Assessment** End of semester examination plus assignments as advised by lecturer.

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**EPP4008 ADVANCED FIBRE OPTICS**

**Campus** Footscray Park

**Prerequisite(s)** EPP3002, EPP3003

**Content** The aim of this subject is to develop the theory of optical fibre waveguides and related devices using a rigorous wave treatment of the propagation of light. Maxwell’s Equations for waveguides, boundary conditions and eigenvalue equations, planar dielectric waveguides and their modes, cylindrical dielectric waveguides and their modes, LP mode description, Gaussian approximation, dispersion in multimode and single mode fibres, normal mode theory of single mode fibre couplers. Optical amplifiers. Use of Bragg gratings for switching and dispersion compensation. Design and operation of current systems including those using dense wavelength division multiplexing.


**Class Contact** Three hours per week for one semester comprising of lectures and tutorials.

**Assessment** End of semester examination plus assignments as advised by lecturer.

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**ETC1001 COMPUTER TECHNOLOGY 1**

**Campus** Footscray Park

**Prerequisite(s)** Nil

**Content** Basic computer systems and popular packages. Computer I/O and interfacing design. The concepts and application of information literacy. Internet design and use. Professionalism in computer usage. Independent and group learning.


**Class Contact** Three hours per week for one semester.

**Assessment** Examination, 50%; Various forms of continuous assessment, 30%; Students must achieve satisfactory results in each aspect of the assessment to attain a pass in the subject.
ETC1111 PROGRAMMING FOR TECHNOLOGY 1

Campus Footscray Park
Prerequisite(s) Nil

Content
Introduction: Course overview; editing, compiling and executing programs. Basic Data Types; Arithmetic Operations; Precedence Rules; Association Rules; Type Conversion. Objects and Classes: Class Definition (Instance Variable, Constructor; Method); Instantiation of Objects; Access Modifiers (private, protected, public); Methods; Brief Introduction to Inheritance and User Interface. Using Selected Classes from Class Libraries (e.g. Random, Math, String). Introduction to the Graphical User Interface.

Required Reading

Recommended Reading

Class Contact
Four hours per week for one semester comprising of two hours of lectures, one hour of tutorial and one hour of supervised practical work.

Assessment
Practical work, 10%; Assignment, 10%; Mid-Semester test, 20%; Final Examination, 60%. Satisfactory completion of each component of assessment is required for a subject pass.

ETC1112 PROGRAMMING FOR TECHNOLOGY 2

Campus Footscray Park
Prerequisite(s) ETC1111

Content

Required Reading

Recommended Reading

Class Contact
Four hours per week for one semester comprising of two hours of lectures, one hour of tutorial and one hour of supervised practical work.

Assessment
Practical work, 10%; Assignment, 10%; Mid-Semester test, 20%; Final Examination, 60%. Satisfactory completion of each component of assessment is required for a subject pass.

JCB0110 CHEMISTRY

Campus Footscray Park
Prerequisite(s) Nil

Content
The aim of this subject is to provide students with an adequate basis for degree level subjects. Areas of study include: Atomic theory; The periodic table; Properties of atoms and their ions; Chemical bonding; Chemical reactions and stoichiometry; energy; Organic chemistry; Equilibria; Kinetics; Solution chemistry; Forensic chemistry; A selection of industrial processes from thermal polymer, pharmaceutical / organic and food industries.

Class content
Five hours per week for two semesters, including two hours of laboratory time per week.

Assessment
Semester one examination, 30%; Class and practical work, 40%; Semester two examination, 30%.

JCM0080 INFORMATION TECHNOLOGY

Campus Footscray Park
Prerequisite(s) Nil

Content
Levels of computer languages; Operating systems and user support - command language and its uses; Files and disk management; Telecommunications, local and wide area networks; Computer architecture – Basic computer model (e.g. CPU, memory, I/O); Basic data representation; number systems, characters, ascii, us-roman; Social, ethical and professional context - impact of technology on today's society; Ethics in an electronic community; Team solution of problems; Computer applications - computer-aided design / manufacture; computer speech, music synthesis and art; Database systems; Electronic mail and bulletin boards; Multimedia presentation graphics; software engineering (e.g. system development, software development cycle, modelling and diagramming).

Class content
Three hours per week for two semesters.

Assessment
Semester one examination, 25%; Class and practical work, 50%; Semester two examination, 25%.

JCM0100 MATHEMATICS

Campus Footscray Park
Prerequisite(s) Year 11 Mathematics or equivalent

Content
Semester one – Algebra and graphic sketching; polynomial and other algebraic functions, expansion and factorisation; Factor theorem and algebraic division; Equation solving - linear quadratic and general polynomial; Simultaneous equations; Factorial notation; Binomial theorem for positive integer indices; Graphic sketching - general polynomial functions, straight lines, parabolas, circles, ellipses, hyperbolas and rational functions; Exponential and logarithmic functions; Revision of basic trigonometry; Trigonometric functions, identities and graphs; Solution of simple trigonometric equations.

Semester two – Introductory calculus; Limits and continuity; Differentiation from first principles; Derivatives of algebraic, logarithmic, exponential and trigonometric functions; Product, quotient and chain rules; Applications of differentiation: tangents and normals, maxima and minima, rates of change; Basic rules of integration: algebraic, exponential and trigonometric functions. Integration as a process of summation; Statistics: mean, median and mode, histograms, cumulative frequency polygons, linear regression; Complex numbers: Cartesian form and operations; Vectors: two-dimensional Cartesian form, operations, graphical representation, dot product.

Class content
Three hours per week for two semesters.

Assessment
Semester one examination, 20%; Class tests and assignments, 60%; Semester two examination, 20%.

120
JHL0110 ENGLISH LANGUAGE AND COMMUNICATION SKILLS

Campus Footscray Park
Prerequisite(s) Nil

Content The aim of this subject is to provide students with a familiarity with and skills necessary to communicate effectively in English. The attainment of verbal and written skills will be of a high priority. Skills gained will assist students in general English communication, as well as their participation in formal academic contexts. Subject content includes: verbal exchanges, development of vocabulary, grammatical structures, written communication skills, effective reading and listening skills, self-evaluation of communication skills and strategies for language learning.

Class contact Three hours per week for two semesters.
Assessment Semester one examination, 30%; Class work, 40%; Semester two examination, 30%.

JSP0100 PHYSICS

Campus Footscray Park
Prerequisite(s) Year 11 Mathematics or equivalent

Content Sound – Wave nature of sound, intensity and sound level, standing waves, production, transmission, absorption and detection of sound; Electricity and magnetism – Electric and magnetic fields, forces on charges and currents in those fields, D.C. current, voltage and resistance, Electric power – Generation and transmission; Electronics – voltage dividers, amplifiers, logic gates; Kinematics and mechanics – displacement, velocity and acceleration in two dimensions, projectile motion, friction, momentum, energy and collisions, circular motion and gravity; Light – refraction, diffraction, interference; Modern physics – Quantum interpretation of light, wave-like nature of photons, electrons and matter in general, Relativity.

Class contact Five hours per week for two semesters, including two hours of laboratory time per week.
Assessment Semester one examination, 30%; Class and practical work, 40%; Semester two examination, 30%.

SBF0111 INTRODUCTORY MANAGEMENT SKILLS

Campus Werribee
Prerequisite(s) Nil

Content The aim of this subject is to develop or improve personal skills and individuals to assist them to operate as effective managers in the modern Australian meat industry. Personal aspects covered include self awareness and life plans; analysis and management of stress, personal health and fitness and time management. A communications skills program will cover communications theory, problem solving, writing, report planning, organisational communication and giving presentation skills. Skills in computing will be developed to include an understanding of PC operations, software packages, with an emphasis on Microsoft Word and Excel, O H & S topics.

Required Reading To be advised by lecturer.

Class Contact Twelve hours per week for a five week period comprising workshops, seminars, lectures and practicals.
Assessment There is no formal examination. Performance will be assessed on assignments, reports, presentations, demonstration of computing skills, class participation and examinations, 50%.

SBF0222 THE AUSTRALIAN MEAT INDUSTRY

Campus Werribee
Prerequisite(s) Nil

Content The aim of this subject is to provide students with a working knowledge of the Australian Meat Industry in terms of an organisational structure, supply of raw material, processing capability and participation in various markets. Topics will cover three main areas. Firstly, the production of meat animals in Australia, farm management techniques, variations according to location, feed production, breed and species. Aspects of yield and quality of production is included. Secondly, the nature and structure of markets for various products locally and overseas will be examined and thirdly, the size, location, diversity and ownership of the processing sector will be covered with overseas competitors. This section also includes a coverage of the main organisations servicing the Australian Meat Industry.


Class Contact Twelve hours per week for a five week period comprising lectures, seminars and a field visit.
Assessment Assignments, case studies, 40%; reports, 20%; examination 40%.

SBF0213 MANAGEMENT OF EMPLOYEES

Campus Werribee
Prerequisite(s) SBF0111 Introductory Management Skills.

Content This subject is an introduction to the task of managing people on the job. It focuses on an understanding of the industrial environment and the best way of maximising performance in an acceptable and harmonious way. Topics covered include organisation, structure and development, job analysis, position descriptions, recruitment, selection and induction of staff; performance planning and appraisal; leadership styles and interpersonal skills; participative management and conducting meetings; awards, unions and industrial relations. Advanced Computing covering the use of Powerpoint, databases, the internet and introduction to processing related software.

Required Reading To be advised by the lecturer.

Class Contact Eight to ten hours per week of lectures, case studies, workshops and laboratory work over a five week period.
Assessment Assignments, 30%; presentations, 20%; competency tests, 20%; final examination, 30%.

SBF1110 INDUSTRY PROJECT

Campus Werribee
Prerequisite(s) Year 1 of the Diploma of Meat Management.

Content The aim of this project is to provide an opportunity for students to apply some of the knowledge and skills learnt in the first year of the course to work-based situations. This is the first in a series of three projects which will be done in between years of the course. The first project will cover the organisation and structure of the company and its business interests; personnel and job profiles; stock supply and processing operations; products and markets etc.

Required Reading Not applicable.

Class Contact Fifteen hours on introduction, consultation and presentation of 1500-word report.
Assessment Report, 75%; oral presentation, 25%.
### SBF1130 INTRODUCTORY MEAT TECHNOLOGY

**Campus** Werribee  
**Prerequisite(s)** Nil  

**Content** The aim of this subject is to provide an understanding of the basic sciences which explain the nature of meat and meat products and changes which take place during the production, processing and storage phases. Topics covered will be drawn from three main areas: *Basic Science*: The nature and structure of chemical substances; chemical reactions of solids, liquids, gases; acids bases (alkalis), salts, proteins, carbohydrates (sugars) fats and alcohols; water supplies and chlorination; chemical nature of odours, smells. Laboratory exercises on the above including analyses on meat, meat products and chemicals used in meatworks. *Microbiology*: Nature and structure of bacteria, yeasts/moulds, and viruses; growth, reproduction and counting of micro-organisms; nutritional requirements and control of micro-organisms; groups of micro-organisms important to the meat industry; introduction to food and water-borne pathogens. *Animal Biology*: Classification of animals, structure of meat animals; components of animal foodstuffs; intake of food and factors affecting quantity and growth rate; the structure and functioning of the digestive system, muscles and bones; the nature and significance of fat and skin tissue; reproductive system; coordination of body functions; respiratory and cardiovascular (blood) system; metabolic processes in meat animals.


**Class Contact** For Microbiology and Animal Biology four hours of lectures plus six hours practical for each section weekly for a five week period. Basic Science will be four hours of lectures plus six hours of practical work per week for the same period.

**Assessment** Assignments, 40%; practical reports, 20%; final examination, 40%.

### SBF1120 MEATWORKS ENGINEERING SERVICES

**Campus** Werribee  
**Prerequisite(s)** Nil  

**Content** Services and operations which relate to the engineering department of a meat processing works have a major influence either directly or indirectly on unit costs of production. This subject provides an introduction to basic engineering principles to help students interface better with professional engineers. It will also form the basis for further studies in meat processing unit operations. Basic Science will provide a foundation of knowledge about the Australian meat industry, its components and organisation, both in Australia and internationally; the presentation and processing of meats and vegetables, grains and oilseeds, dairy products, meat, poultry, fish and beverages.

**Required Reading** To be advised by lecturer.

**Class Contact** Six hours of lectures and three hours of practicals, demonstrations, and plant visits per week for five weeks.

**Assessment** Assignments, 30%; practical reports, 30%; final examination, 40%.

### SBF1140 NUTRITION AND SOCIETY

**Campus** Werribee  
**Prerequisite(s)** Nil  

**Content** This subject provides a brief introduction to the principles of nutrition, food composition and the significance of food in health.

**Required Reading** To be advised by lecturer.


**Class Contact** Three hours per week comprising lectures/tutorials for one semester.

**Assessment** Assignments, 40%; final examination, 60%.

### SBF1150 GLOBAL ENVIRONMENTAL ISSUES

**Campus** St Albans  
**Prerequisites** Nil  

**Content** Human population growth and measurement factors; population regulation in China and India; population growth momentum; environmental history and spectrum of environmental thought; environmental groups and their work; connections between social justice and environmental issues - education levels, status of women, human rights and relative levels of wealth, resource consumption and pollution in developing and developed countries; deforestation and biodiversity loss; food production - green and gene revolutions and the African experience; energy resources - a contrast of renewables and fossil fuels/nuclear; water and soil resources - appropriate agriculture and permaculture; chemistry and sources of indoor and outdoor air pollution - the enhanced greenhouse effect and depletion of stratospheric ozone; the role of traditional economics in environmental degradation.


**Class Contact** Four hours per week for one semester.

**Assessment** Case study and assignments: 60 %; Examination: 40 %

### SBF1160 AUSTRALIAN LANDSCAPES AND BIOTA

**Campus** St Albans  
**Prerequisites** Nil  

**Content** To introduce students to the range of environments and landscapes that are present across the Australian continent, and the nature of the plants and animals that inhabit these landscapes. This will be achieved by: 1) discussing the factors that have shaped various Australian environments, including geomorphological and climatic processes, and historical factors; 2) introducing the distinctive flora and fauna of Australia and the evolutionary pressures that have shaped the Australian biota; and 3) reviewing relationships between the biota and the environment. The subject will provide a foundation of knowledge about the Australian environment even for students not continuing in the biological sciences.

**Required Reading** To be advised


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122
SBF130 BIOLOGY 1

Campus St Albans, Werribee.

Prerequisite(s) Nil.

Content Biology of the cell. Mammalian biology with particular reference to the structure and function of various human physiological systems.


Recommended Reading To be advised by lecturer.

Class Contact Six hours per week for one semester comprising three hours of lectures and three hours of practical work.

Assessment Assignments, 10%; practical work, 40%; final examination, 50%.

SBF1320 BIOLOGY 2

Campus St Albans, Werribee.

Prerequisite(s) Nil.


Recommended Reading To be advised by lecturer.

Class Contact Six hours per week for one semester comprising three hours of lectures and three hours of practical work.

Assessment Assignments, 10%; practical work, 40%; final examination, 50%.

SBF179 BIOCHEMISTRY 1 (OSTEOPATHY)

Campus City, St Albans

Prerequisite(s) Normal entry requirements into the Osteopathy course.

Content Revision of basic concepts in biology and chemistry (body tissues, cells and organelles; molecules and chemical bonds, pH, redox chemistry, functional groups). Introduction to biochemistry; structure and function of molecules of life (carbohydrates, proteins, lipids nuclear acids); vitamins - dietary requirements and their role in metabolism; effects of vitamin deficiencies; energy and nutritional requirements of the body; biochemistry of the skeletal-muscular system. Specific biochemical systems that will be studied in the first year include glycolysis, Krebs cycle, oxidative phosphorylation, gluconeogenesis, the pentose phosphate pathway, glycogen metabolism, lipid metabolism. Cholesterol transport through lipoproteins, its metabolism and role in atherosclerosis will also be discussed.

Required Reading To be advised by lecturer.


Class Contact Two semesters comprising 26 hours of lectures/tutorials plus 39 hours of practicals/workshops.

Assessment Examinations (theory and practical), 50%; tutorial participation, 10%; assignments and practical reports, 40%.
SBF221 PRINCIPLES OF MEAT SCIENCE

Campus Werribee
Prerequisite(s) SBF1111 Introductory Meat Technology.

Content Meat science is a study of the physical and chemical changes occurring in meat resulting from slaughter and post mortem conditions. Topics covered are elementary chemistry and structure of protein, fats, collagens, enzymes etc. found in meat; structure of meat relative to contraction, rigor mortis, condition and tenderness; effects of pre-slaughter stress, chilling and freezing; chemistry of cured meats; biochemical by-products (gelatine, cholic acid, enzymes, hormones etc.), preservation techniques; meat colour; packaging of meat in different atmospheres; nutritional aspects of meat.


Class Contact Nine hours per week of lectures, practical and plant visits over a five week period.

Assessment Assignments, 30%; reports, 20%; final examination, 50%.

SBF2130 MEATWORKS PLANT OPERATIONS

Campus Werribee
Prerequisite(s) SBF1120 Meatworks Engineering Services.

Content A comprehensive study of the efficient use and operating principles of different types of equipment used in meatworks, including monitoring services and energy conservation strategies. Refrigeration and freezing principles and plant; criteria for system selection: capacity, prediction of practical cooling rates and costs; product-plant interactions related to quality and efficiency. Mechanically aided meat operations. Rendering plant unit operations; waste control and effluent treatment systems, felmongery, legislative requirements. Equipment selection and safety considerations.

Required Reading To be advised by lecturer.

Class Contact Ten hours per week for five weeks comprising lectures, practicals and plant visits.

Assessment Assignments, 30%; practicals and reports, 30%; final examination, 40%.

SBF2192 APPLIED MICROBIOLOGY

Campus Footscray Park
Prerequisite(s) SBM1570 Biology 1.

Content The aim of this subject is to provide an overview of the structure and characteristics of microorganisms. To study growth of microorganisms in culture, metabolism and function. To investigate application of microorganisms in industry and biological waste treatment. Mutagenics, genetic and strain improvement.


Class Contact Two hours of lecture and three hours of practical work per week for one semester.

Assessment Based upon short tests, practical reports and an end-of-semester examination.

SBF2210 FOOD INTERACTIONS

Campus Werribee
Prerequisite(s) SBF2410 Food Components

Content The aim of this subject is to provide an integrated study of food components, their interactions and the manipulation of these to enhance texture and other food attributes which influence consumer acceptance of products. Topics covered include: changes occurring during food processing; food additives; processing aids; oxidative deterioration and rancidity; anti-oxidants; colour measurement, pigments; browning reactions; natural and synthetic colorants and flavouring agents and other additives; gels, colloids, foams and emulsions; food rheology; texture modification.


Class Contact Three hours per week comprising lectures/tutorials for one semester.

Assessment Assignments, 40%; final examination, 60%.

SBF2220 PRINCIPLES OF INSTRUMENTAL ANALYSIS

Campus Werribee
Prerequisite(s) SCS1003 Chemistry 1E.

Content This subject deals with the analysis of foods and other biological materials particularly by instrumental techniques. Topics covered include: proximate analysis of foods; food rheology, texture, viscosity and colour measurement; applications of enzyme technology in analysis; principles of instrumentation; spectroscopic and chromatographic techniques including high performance liquid chromatography; gas chromatography, mass spectrometry, UV/Visible and InfrAred Spectroscopy and other advanced instrumentation; laboratory management and quality control of analytical data.


Class Contact Three hours per week comprising lecture/tutorial sessions for one semester.

Assessment Assignments and tests, 30%; final examination, 70%.

SBF2221 INSTRUMENTAL TECHNIQUES

Campus Werribee
Prerequisite(s) SBF2220 Principles of Instrumental Analysis

Content This subject is a practical introduction to the analysis of foods and other biological materials particularly by instrumental techniques. Topics covered include: proximate analysis of foods; food rheology, texture, viscosity and colour measurement; applications of enzyme technology in analysis; high performance liquid chromatography, gas chromatography, mass spectrometry, UV/Visible and InfrAred Spectroscopy and other advanced instrumentation.


Class Contact Three hours per week comprising laboratory sessions for one semester.

Assessment Practical skills 20%, team involvement 10%, assignments 20%, laboratory reports 56%.

SBF2230 MEAT (BIOLOGICAL) QUALITY

Campus Werribee
Prerequisite(s) SBF1111 Introductory Meat Technology.

Content This subject concentrates on factors affecting the microbiological quality of meat, and considers the sources of pathogens and contamination of public health significance. An introduction to the recognition of relevant meat safety aspects; microbial contamination of meats and sources; microbiological examination of meat, line surveys; food-borne diseases related to meat and meat products; control mechanisms and the effect of chilling/freezing; microbiology of cured meats and by-products; sampling schemes. Cleaning and sanitation; personal hygiene.

Required Reading To be advised by lecturer.
Class Contact Fifteen hours per week of lectures, practicals and demonstrations for a three-week period.
Assessment Assignments, 30%; practicals, 30%; final examination, 40%.

SBF2300 MICROBIOLOGY 1
Campus Werribee.
Prerequisite(s) SBF1310 Biology 1.
Required Reading To be advised by lecturer.
Class Contact Six hours per week comprising three hours of lectures and three hours of practical for one semester.
Assessment Assignment, 20%; practical work, 30%; examination, 50%.

SBF2330 CELL BIOLOGY
Campus St Albans, Werribee.
Prerequisite(s) SBF2300 Microbiology 1.
Content This subject aims to build on material covered in SBF2300 Microbiology 1 to further develop the student's knowledge of microbiology. Topics include: introduction to microbial ecology, evolutionary and ecological aspects of interactions between microbes and higher organisms, microbiota associated with selected animals and plants, non-specific host defences in a range of plants and animals, entry of pathogens into a range of plant and animal hosts, pathogenic effects in a range of plant and animal hosts, clinical and diagnostic microbiology, basic principles of public health microbiology.
Required Reading To be advised by lecturer.
Class Contact Six hours per week comprising two hours of lectures, three hours of laboratory work and one one-hour tutorial for one semester.
Assessment Assignment, 20%; practical work, 30%; final examination, 50%.

SBF2310 MOLECULAR GENETICS
Campus Werribee.
Prerequisites SBF2520 Biochemistry 1; SBF2330 Cell Biology.
Content Introduction to developments at the forefront of molecular biology of gene structure and function and molecular genetics. The subject will build on material covered in Biochemistry 1 and Cell Biology and strengthen the foundations for the unit 'Genetic Engineering' in the final year of the degree program. Main topics include: organisation of eukaryotic genomes including repetitive and nonrepetitive DNA sequences, multigene families, pseudogenes; organisation of prokaryotic genomes; genomic rearrangements including transposable genetic elements, retroviruses and other mechanisms, genetic rearrangements in the immune system, replication of DNA, telomeres and telomerase, methylation and imprinting of DNA, mutations and repair mechanisms, regulation of gene expression, specialised genetic systems including genes in early development, genes responsive to hormones and heat shock.
Required Reading To be advised by the lecturer.
Class Contact Four hours per week, comprising three hours of lectures and one hour tutorial, for one semester.
Assessment Assignment work, 40%; examination, 60%.

SBF2300 FOOD COMPONENTS
Campus Werribee.
Prerequisite(s) SCS1003 Chemistry 1E
Content The aim of this subject is to provide an integrated study of food components as a basis for further studies in nutrition and food processing. Topics covered include: food composition and classification of constituents; water in foods; structure, chemistry, stability and functional properties of proteins, carbohydrates, fats and oils, vitamins and minerals; Function of nutrients, proximate analysis of foods; the use of food composition tables.
Class Contact Three hours per week comprising lectures/tutorials for one semester.
Assessment Assignments, 40%; final examination, 60%.

SBF2520 BIOCHEMISTRY 1
Campus St Albans, Werribee.
Prerequisite(s) SBF1310 Biology 1; SCS1003 Chemistry 1E or equivalent.
Content This subject aims to provide a general introduction to biochemistry and includes: structure and functions of carbohydrates, lipids, proteins and nucleic acids. Biological membranes. Enzymes: kinetics and regulatory enzymes. Metabolism: bioenergetics, glycolysis, citric acid cycle, chemiosmosis, gluconeogenesis, amino acid metabolism, fatty acid metabolism, photosynthesis. DNA: structure, replication, expression, and basic gene cloning.
Required Reading To be advised by lecturer.
Class Contact Seven hours per week, comprising three hours of lectures, three hours of laboratory, and one hour of tutorial work for one semester.
Assessment Practical work, 30%; final examination, 60%; assignment/test, 10%.

SBF2530 BIOCHEMISTRY 2
Campus Werribee.
Prerequisite(s) SBF2520 Biochemistry 1.
Content The aim of this subject is to expand on material covered in Biochemistry 1, and complement the Molecular Cell Biology and Microbiology subjects. Along with Biochemistry 1, this subject will provide a solid foundation in biochemical principles, reactions and applications. Topics covered include bioenergetics, the pentose phosphate pathway, amino acid and nucleotide metabolism, photosynthesis, aspects of plant metabolism and biochemistry of...
neurotransmitters. Other topics covered will include the structure and function of biological molecules, ligand binding and conformational changes, mechanisms of enzyme action, advanced enzyme kinetics, regulation of biochemical systems such as hormonal and transcriptional control. Applied aspects of biochemistry will also be considered.

**Required Reading**
To be advised by lecturer.

**Class Contact**
Seven hours per week, comprising three hours of lectures, three hours of laboratory work and one hour tutorial for one semester.

**Assessment**
Tutorials and assignments, 25%; practical work (including test), 30%; final examination 45%.

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**SBF2600**
**FUNDAMENTALS OF ECOLOGY**

**Campus**
St. Albans

**Prerequisites**
SBF1310 Biology 1, SBF 1320 Biology 2

**Content**
History and nature of ecology; Ecology & evolution - natural selection & speciation; Niche concept - ecology, limiting factors; Population biology - individuals, species & populations, population growth, demographics, life tables, age distributions, population regulation, intra- & interspecific competition, predation, parasitism, mutualism; Behaviour; Community - species diversity, species abundance models, succession, food chains, trophic relationships; Ecosystems - energy transfer, geochemical cycles, global patterns & processes; World biogeography & biomes; Palaeoecology

**Required Reading**
To be advised by lecturer.

**Recommended Reading**
To be advised by lecturer.

**Class Contact**
Four hours per week for one semester, comprising two hours of lectures and two hours of practicals (mainly field excursions)

**Assessment**
Field studies and assignments: 50%; Examination: 50%

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**SBF2620**
**AUSTRALIAN ANIMALS**

**Campus**
St. Albans

**Prerequisites**
SBF1310 Biology 1, SBF 1320 Biology 2

**Content**
Diversity of animal life, with an emphasis on the Australian fauna; the science of systematics, including cladistic analysis; Bausplans, evolution and origin of biodiversity in marine and terrestrial environments; historical and ecological biogeography; including faunal regions and habitat types; ‘uniqueness’ of the Australian fauna.

**Required Reading**

**Recommended Reading**

**Class Contact**
Four hours per week for one semester, comprising two hours of lectures and two hours of practical classes composed mainly of field excursions.

**Assessment**
Practical: 50%; Examination: 50%

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**SBF2630**
**COMMUNITY AND ENVIRONMENT**

**Campus**
St. Albans

**Prerequisites**
Nil

**Content**
Exploration of the various socially-based conceptual frameworks for understanding the range of environmental viewpoints in the community, and the consequences of these frameworks for practical environmental protection and repair. Practical experience in working with a wide range of community representatives on environmental protection and repair projects. Practical skills development in how to communicate with community groups and individuals, including clear, simple explanations, active and reflective listening, negotiating, consulting and drawing up and presenting project proposals. Insights into the range of skills and experience required to gain employment in environmental management fields, and the range of employment available.

**Required Reading**
To be advised

**Recommended Reading**

**Class Contact**
Four hours per week in total, timetabled as a block, and consisting of a mix of lectures, tutorials, practical workshops and site visits.

**Assessment**
Assignment: 20%; practical workshop and field reports: 30%; final examination: 50%.

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**SBF2640**
**AUSTRALIAN PLANTS**

**Campus**
St. Albans

**Prerequisites**
SBF1310 Biology 1, SBF1320 Biology 2

**Content**
An understanding of: 1) the diversity and evolution of plants and fungi, with emphasis on Australian native plants and fungi; 2) the characteristic morphology and life history of the major plant groups and fungi; 3) the basic principles of the systematics of Australian plants including biological nomenclature, identification and classification; and 4) how the biogeography of Australian plants can be explained by their life history and the history of the continent, particularly to instill an understanding of how and why that Australia has evolved a diverse and highly endemic primarily sclerophyllous flora where the forests and woodlands are dominated by two tree genera, Eucalyptus and Acacia.

**Required Reading**

**Recommended Reading**

**Class Contact**
Four hours per week for one semester, comprising two hours of lectures and two hours of practical.

**Assessment**
Practicals and assignments: 60%; examination: 40%.

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**SBF2739**
**BIOCHEMISTRY 2 (OSTEOPATHY)**

**Campus**
City, St Albans

**Prerequisite(s)**
SBF1719 Biochemistry 1 or equivalent

**Content**
Further extension of the biochemical pathways looked at in Biochemistry 1: pentose phosphate pathway; amino acid metabolism, nucleotide metabolism and the urea cycle; regulatory points, interconnections and flow of intermediates between various pathways; enzyme kinetics; neurotransmitters metabolism and action; DNA replication; transcription, protein synthesis and processing; hormonal regulation and mechanisms; biochemical pathology: biochemical basis of pain, arthritis and diseases such as PKU, Parkinson’s Disease, Thalessemia and Myasthenic Gravis; clinical biochemistry.

**Required Reading**
To be advised by lecturer.

Class Contact Two semesters comprising 26 hours of lectures/tutorials plus 26 hours of practicals/workshops.

Assessment Examinations (theory and practical), 50%; tutorial participation, 10%; assignments and practical reports, 40%.

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**SBF2740 PRINCIPLES OF FOOD PRESERVATION**

**Campus** Werribee

**Prerequisite(s)** SBF1130 Introductory Food Science and Technology


**Required Reading** To be advised by lecturer.


**Class Contact** Four hours per week comprising lectures/tutorials for one semester.

**Assessment** Assignments and tests, 30%; final examination, 70%.

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**SBF2822 SCIENCE AND SOCIETY**

**Campus** St Albans, Werribee.

**Prerequisite(s)** Nil.

**Content** The subject aims to encourage students to appreciate modern scientific culture as an historically unique phenomenon, and thus to enable them to analyse specific developments and events in modern society. The subject looks at the failure of philosophical attempts to establish a scientific method, and explores the view that science is fantastically creative rather than ‘ dull-but-honest’. Two case-studies are used: the development of Darwinism, and the transition from Newton’s theory of gravitation to Einstein’s theory of general relativity. The development of modern scientific culture is analysed in the following case studies in particular: China and Japan’s divergent responses to confrontation with Western culture, technological developments in Nazi Germany and Stalinist Russia, the structure and funding of American basic research, and the development of the nuclear industry. The teaching of science subject and popular perceptions of science will also be looked at.

**Required Reading** Chalmers, A.F. 1982, *What Is This Thing Called Science?*, 2nd edn, University of Queensland Press, St Lucia, Qld. A course reader available at St Albans.

**Class Contact** Four hours per week for one semester, comprising one two-hour lecture and one two-hour tutorial.

**Assessment** Assignments, 50%; semester examination, 50%. A satisfactory assessment will require satisfactory attendance (80%) at tutorials.

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**SBF3120 PRODUCT AND PROCESS DEVELOPMENT**

**Campus** Werribee

**Prerequisite(s)** Successful completion of Years 1 and 2 of the Diploma of Meat Management.

**Content** This subject looks at the value adding process for meat and meat products. It considers existing and future opportunities for new products and processes. Topics include introduction to marketing; the product development process; sensory evaluation of foods; production of smallgoods, restructured meats, cured meats; canned meats; packaging materials, systems, costs and selection criteria; meat products as ingredients for the food and pharmaceutical industries; advanced processing techniques, programmable and computer control systems; robotics (Fututech).

**Required Reading** To be advised by lecturer.

**Class Contact** Eight hours per week for ten weeks comprising lectures, practicals and projects.

**Assessment** Assignments, 30%; projects, 50%; progressive assessments, 20%. Selection of projects will be made by students after successful completion of Year 2, and submitted for assessment and approval prior to starting Year 3.

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**SBF3130 INDUSTRY PROJECT**

**Campus** Werribee

**Prerequisite(s)** Year 3 of the Diploma of Meat Management.

**Content** This subject requires students to prepare a confidential report on a new initiative or development for the Company. Alternatively, a generic assignment which relates to the industry can be undertaken if a company based project is not available. Report to be finalised prior to graduation.

**Required Reading** To be advised by lecturer.

**Class Contact** Fifteen hours on introduction, consultation and presentation of a 1500-2000 word report.

**Assessment** Report, 75%; oral presentation, 25%.

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**SBF3131 PLANT AND PROCESS DESIGN**

**Campus** Werribee

**Prerequisite(s)** SBF2130 Meatworks Plant Operations.

**Content** This is a project based subject involving aspects of design, construction, equipping, costing and layout for a meatworks or smallgoods operation. Topics include master planning; site selection and layout; building materials selection criteria, plant layout, equipment design and materials of construction; ventilation and air conditioning; design and construction of cold stores; corrosion in buildings and plant; costs and project management - critical path network; basic drafting, and use of computer aided design software; legislative requirements.

**Required Reading** SCARM, *Construction of Premises for Processing Meat for Human Consumption*, CSIRO. AQIS, *Construction Guidelines for Export Meatworks*, AQS.

**Class Contact** Six hours per week for ten weeks comprising lectures, plant visits, and project work.

**Assessment** Written project, 60%; oral presentation, 20%; assignments, 20%. A choice of project will be made following successful completion of Year 2 and submitted for approval prior to starting Year 3.

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**SBF3140 MANUFACTURING MANAGEMENT**

**Campus** Werribee

**Prerequisite(s)** SBF0213 Management of Employees.

**Content** The subject provides a thorough grounding in analytical techniques and financial methods required for effective management of a manufacturing process. Topics include strategic development of companies; capital budgeting and decision making; cost analysis and control options; financial management and profit; production planning and control, logistics and distribution; data capture and
manpower information systems; computer integrated manufacture.


Class Contact Nine hours per week for ten weeks comprising lectures, workshops and projects.

Assessment Assignments, exercises, 60%; final examination, 40%.

**SBF3210 ADVANCED NUTRITION**

**Campus** Werribee

**Prerequisite(s)** SBFM2700 Nutrition or equivalent

**Content** This subject provides a study at an advanced level of the diet; energy supply and activity; nutrition throughout the lifespan and nutrition for athletes and other particular groups.


**Class Contact** Three hours per week comprising lectures/tutorials for one semester.

**Assessment** Assignments, 40%; examination, 60%.

**SBF3220 INDIGENOUS FOODS**

**Campus** Werribee

**Prerequisite(s)** SBF2410 Food Components

**Content** This subject discusses indigenous foods and Australian bush foods, including their potential for commercial production; as sources of anti-microbial and other functional food ingredients, their role in health and development of new applications.


**Class Contact** Three hours per week comprising lectures/tutorials for one semester.

**Assessment** Assignments, 40%; final examination, 60%.

**SBF3230 NUTRITION AND HEALTH**

**Campus** Werribee

**Prerequisite(s)** SBFM2750 Nutrition or equivalent

**Content** This subject demonstrates the relationship between diet and human health, nutrition deficiencies, obesity, metabolism of carbohydrates, lipids and protein; role of vitamins and minerals; food allergies and intolerances.


**Class Contact** Three hours per week comprising lectures/tutorials for one semester.

**Assessment** Assignments, 40%; examination, 60%.

**SBF3240 FUNCTIONAL FOODS**

**Campus** Werribee

**Prerequisite(s)** SBFM2750 Nutrition

**Content** This subject examines the role and potential of functional ingredients and foods in human nutrition; natural anti-microbial substances in human nutrition; the role of intestinal flora in human health; prebiotics, probiotics, probiotic bacteria and symbiosis.


**Class Contact** Three hours per week comprising lectures/tutorials for one semester.

**Assessment** Assignments, 40%; final examination, 60%.
design and construction; materials and services; cleaning, disinfection and sterilisation; water and effluent treatment; costing. Required Reading To be advised by lecturer.


Class Contact Six hours per week for one semester comprising lectures and tutorials.

ASSESSMENT ASSIGNMENTS, 40%; FINAL EXAMINATION, 60%; SBF3330 FOOD SCIENCE ETHICS

Campus Werribee
Prerequisite(s) SBF1130 Introductory Food Science and Technology

Content This subject discusses the ethical issues relevant to food production, processing and marketing, including the conduct of research and development activities; competition and fraud in food production and marketing; toxicological evaluation of additives and ingredients.

Required Reading Nil

Class Contact Three hours per week comprising lectures/ tutorials for one semester.

Assessment Assignments, 40%; final examination, 60%.

SBF3382 INTRODUCTION TO MOLECULAR BIOLOGY AND BIOTECHNOLOGY

Campus Footscray Park
Prerequisite(s) SBF2192 Applied Microbiology; SCS2381 Biochemistry I.

Content This subject will cover current knowledge about genes (what they are, how they work and how they are manipulated), and examine various techniques used to study and manipulate genes. Topics include: the function of genes, the chemical identity, structure and properties of genes, strategies used by nature or developed in the laboratory for manipulating genes and specific uses of laboratory based gene manipulation.

Required Reading To be advised by the lecturer.

Class Contact Two hours of lectures per week and two hours of practicals on alternate weeks.

Assessment Short tests, practical reports and end-of-semester examination.

SBF3350 PREPARATIVE AND ANALYTICAL BIOCHEMISTRY

Campus Werribee
Prerequisite(s) SBF2520 Biochemistry I.

Content This subject will further develop the students' skills in modern approaches to molecular biology. Topics covered include: genomic and proteomic analysis, covering differential gene expression and bioinformatics (use of computer databases and analysis of gene and protein sequences), analytical and preparative chromatography; electrophoresis, and centrifugation, a broad range of preparative and analytical techniques including GC and HPLC; spectroscopy; qualitative and quantitative use of radioisotopes, scintillation counting, fluorography and autoradiography, use of physical biochemical techniques to determine protein structure.

Required Reading To be advised by lecturer.

Class Contact Eight hours per week, comprising three hours of lectures and five hours of laboratory work for one semester.

Assessment Assignments 20%; practical work (including test), 40%; final examination 40%.

SBF3330 ENVIRONMENTAL PHILOSOPHY

Campus St Albans
Prerequisite(s) Nil.

Content Philosophy; a brief overview of Ancient, Medieval and Modern Western philosophy. Environmental Philosophy as the search for principles for guidance in conducting our lives in a practical way that is beneficial to the environment and as a spectrum of thought from Anthropocentrism to Ecocentrism. A focus on Ecocentrism, in particular what informs Deep (or Transpersonal) Ecology and the role of nature-based religions and patriarchy in the development of Ecofeminism.

Required Reading To be advised by lecturer.

Class Contact Three hours per week for one semester.

Assessment Assignments, 50%; examination, 50%.

SBF3540 LEADERSHIP AND THE ENVIRONMENT

Campus St Albans
Prerequisite(s) Nil.

Content Three phases in the history of leadership studies: the characteristics or traits of leaders from studies done in the first half of this century; the thirty years of theories of what would lead to effective leader behaviour in certain situations; the 1980's and after, when a broader picture of what might explain leader success began to develop. The current place of ethics, morals, values, feelings and power as sources of information regarding leader behaviour: Leadership as an art and as a service - as a weaving of relationships rather than an amassing of information. The strong links which exist between holistic environmentalism and emerging leadership theory; Case studies from business, government and environmental organisations of successful leaders who show evidence of wholeness, care and service for the other.

Required Reading To be advised by lecturer.

Class Contact Three hours per week.

Assessment Assignments, 50%; examination, 50%.

SBF3600 AQUATIC ECOLOGY

Campus St. Albans (offered subject to minimum enrolments in 2004)

Prerequisites SBF 1310 Biology I, SBF 1320 Biology 2, SBF 2610 Fundamentals of Ecology

Content This subject provides an overview to the ecology and management of freshwater, estuarine and marine ecosystems in southern Australia. The material covered includes: ecology of upland and lowland-floodplain rivers (including impact of flow regulation and environmental water allocations); ecology of lakes and reservoirs (including algal bloom control and impacts of recreation); wetland ecology and management (including international conventions on waterbirds); seagrass, mangrove and saltmarsh ecology and management; significance of rocky shore habitats in southern Australia; estuarine ecology (with particular emphasis on Port Phillip Bay and the Gippsland Lakes) and environmental degradation and repair of aquatic systems.


Class Contact 4 hours per week, comprising 1 x 2 hr lecture, 1 x 1 hr tutorial/directed learning and 2 x day-long field excursions.

Assessment Within-semester (on-going) assessment at Weeks 6 and 13 (60 %) plus two field reports (40 %).
SBF3610 BIOSTATISTICS
Campus St. Albans (offered subject to minimum enrolments in 2004)
Prerequisites Year 12 Mathematics or coordinators discretion, SMA1110 Maths 1 and SMA 1120 Maths 2
Content This subject aims to introduce students to the practical use of statistics in the biological, ecological and health sciences. Particular emphasis is given to experimental design and ‘real world’ use of statistical procedures. Material covered includes: Revision of statistical concepts and the significance of statistics/biometrics in biological/environmental analysis. Distributions and the nature of data; the use of correlation and regression in developing hypotheses. Sampling regimes and units, confounding variables, hypothesis testing, parametric versus non-parametric procedures and assumptions, post-hoc testing Design tools for experimental and field collection of data; type-I versus type-II errors; statistical power and the use of statistical power in experimental design. BACI models and design issues; pseudoreplication and true replication. Optimisation of sampling regime for a given sampling unit and variance. Inferential procedures, multiple factorial designs, univariate versus multivariate procedures in biological and environmental programs.
Required Reading Zar, J.H., 1984, Biostatistical analysis, Prentice Hall
Class Contact Four hours per week over one semester; comprising two hours of lectures and two hours of interactive practicals/tutorials per week.
Assessment Assignments: 30 %; Examinations: 70 %.

SBF3620 CONSERVATION AND SUSTAINABILITY
Campus St. Albans (offered subject to minimum enrolments in 2004)
Prerequisites SBF 1310 Biology 1, SBF 1320 Biology 2, SBF 2610 Fundamentals of Ecology, or at the discretion of the subject co-ordinator
Content The subject ties together, in both theoretical and practical ways, concepts and practices for maintaining biological diversity, and how these concepts and practices can be integrated with social and economic needs. The subject covers: the development of conservation theory and practice in Australia; extinction and its significance, including pathways to extinction; the meanings, levels and interpretation of concepts of biodiversity; ecological and adaptive management approaches to conservation and recovery, including design of reserves, setting priorities, off-reserve conservation and ex-situ (captive breeding, reintroduction and translocation). Practical field studies and site visits will investigate the contributions of zoos, national and state parks, friends groups, councils and shires, other government agencies and private landholders to the conservation and recovery of plant and animal species, from insects to mammals, and from mushrooms to trees. The subject will also include practical appraisals of techniques used to determine integrity of ecosystems, landscapes and overall environment, the contributions made by biodiversity to ecosystem services and integrated methods for recovery and sustainable management of species and ecosystems.

SBF3630 ENVIRONMENTAL IMPACTS AND MONITORING
Campus St. Albans (offered subject to minimum enrolments in 2004)
Prerequisites SBF 1310 Biology 1, SBF 1320 Biology 2
Content This subject aims to introduce students to the ‘real world’ application of ecological studies, especially in the process of sustainable development. Topics covered will include: Overview of Australian natural resource subjects to environmental degradation (e.g. land, soil, water, biota); The social and industrial factors responsible for degradation (e.g. erosion, water pollution, salination, habitat destruction, exotic species, extraction, biodiversity loss etc); The Environmental Impact Assessment process used to quantify impacts (e.g. role of consultants, the EEI process itself); Approaches to monitoring environmental degradation and recovery (e.g. sampling design, monitoring procedures, rapid assessment protocols, ANZECC guidelines); Mechanisms and approaches available to minimise impacts (reserve systems, limits of acceptable change technologies, financial tools, role of government departments). Particular emphasis is given to ‘hands on’ experience.
Class Contact 4 hours per week, comprising 1 x 2 hr lecture, 1 x 2 hr interactive tutorial/directed learning session (including group presentations).
Assessment Within-semester (on-going) assessment at Weeks 6 and 13 (60 %) plus 1 case study report or project (40 %, including group presentation).

SBF3640 TERRESTRIAL ENVIRONMENTS AND REHABILITATION
Campus St. Albans (offered subject to minimum enrolments in 2004)
Prerequisites SBF 1310 Biology 1, SBF 1320 Biology 2, SBF 2610 Fundamentals of Ecology, or at the discretion of the subject co-ordinator
Content The major types of ecosystems, including forests, woodlands, grasslands, tundra and desert. The biological limits and adaptations of the organisms contained in these ecosystems and key ecological relationships between organisms. Case studies of rehabilitation of several of these ecosystems, including approaches based on understanding of biology and ecology. Practical experience in rehabilitation projects.
**SBF3650 POLLUTION BIOLOGY**

**Campus** St. Albans (this subject will first run in 2005)

**Prerequisites** SBF2610 Fundamentals of Ecology, SBF3130 Biology 1, SBF3120 Biology 2, Biometrics SBF3610, or subject coordinators discretion.

**Content** This subject aims to introduce students to the impact of pollutants on natural ecosystems. Topics covered include: Principles and concepts which apply to the analysis and evaluation of pollutant impacts on the natural environment. Experimental methodology employed in the evaluation of organism and ecosystem responses to pollutant exposure with special emphasis on statistical procedures which can be employed in evaluating impacts. Types of and significance of different groups of pollutants. Tolerance and susceptibility of organisms and biological systems to pollutants; pollution monitoring, biological indicators of pollution induced environmental stress; sequestering of exogenous compounds; partitioning, sources and environmental transport; uptake and depuration, case studies.

**Required Reading** To be advised


**Class Contact** Four hours per week in total, timetabled as a block, and consisting of a mix of lectures, tutorials, practical workshops and site visits, including discussions with those currently employed in the field.

**Assessment** Final examination: 50%; Report on field monitoring projects: 20%; Workshop and practical reports: 30%.

**SBF3660 INDIGENOUS SOCIETY AND ENVIRONMENTAL MANAGEMENT**

**Campus** St Albans (offered subject to minimum enrolments in 2004)

**Prerequisites** Nil


**Class Contact** Two hours per week.

**Assessment** Folder plus Case Study/ Video/ Art Work/ Story/ Photo Essay/ Contribution.

**SBF3730 FOOD MICROBIOLOGY**

**Campus** Werribee

**Prerequisite(s)** SBF2300 Microbiology 1.

**Content** The aim of this subject is to develop and increase the student's knowledge and skills in microbiology with particular reference to the role of micro-organisms in food processing, food spoilage and food-borne disease. Topics include: characteristics of major groups of micro-organisms of importance in foods; ecology of food spoilage. Microbial growth in foods; microbial fermentation and fermented products; biomass; waste treatment; food-borne infections and food poisoning; control and prevention of food-borne disease; hygiene and sanitation; mycotoxins; legislation and standards will be covered.


**Class Contact** Six hours per week for one semester comprising lectures, tutorials and practical work.

**Assessment** Assignments, 15%; practical work, 25%; final examination, 60%.

**SBF3731 ANIMAL FOOD PROCESSING**

**Campus** Werribee

**Prerequisite(s)** SBF2410 Food Components, SBF2210 Food Interactions

**Content** World animal food resources: nature, distribution and production. Meat and Meat Products: muscle composition, structure and conversion to meat, post mortem glycolysis and meat quality, nutritional and sensory properties, chiling, freezing, curing and processing. Marine products: composition, structure, quality, spoilage, preservation and processing including chilling, freezing, salting, drying, smoking and fermenting. Milk and Milk Products: composition, chemical and physical properties of milk processing of milk including butter, powdered, fermented and fractionated product manufacture, by-product utilisation. Egg and Poultry Products: structure and composition of egg, storage and preservation of eggs, egg products, poultry processing and poultry products.


**Class Contact** Three hours per week comprising lectures/ tutorials for one semester.

**Assessment** Assignments and tests, 40%; final examination, 60%.
SBF3732 PLANT FOOD PROCESSING
Campus Werribee
Prerequisite(s) SBF2410 Food Components; SBF2210 Food Interactions
Assessment Eight hours per week, comprising three hours of lectures and five hours of laboratory/tutorial work for one semester. Assignments, 20%; practical work, 30%; final examination, 50%.

SBF3733 ANIMAL FOOD PROCESSING LABORATORY
Campus Werribee
Prerequisite(s) SBF3731 Animal Food Processing
Content A program of laboratory and pilot plant exercises and industry visits designed to illustrate the principles and procedures of animal food processing and preservation and to investigate the factors that affect the quality of food during handling, processing and storage.
Required Reading There are no prescribed texts for this subject.
Class Contact Four hours per fortnight of practical work and industry visits for one semester.
Assessment Practical skills 20%, team involvement 10%, practical work and industry visits 70%.

SBF3734 PLANT FOOD PROCESSING LABORATORY
Campus Werribee
Prerequisite(s) SBF3732 Plant Food Processing
Content A program of laboratory and pilot plant exercises and industry visits designed to illustrate the principles and procedures of plant food processing and preservation and to investigate the factors that affect the quality of food during handling, processing and storage.
Required Reading There are no prescribed texts for this subject.
Class Contact Four hours per fortnight of practical work and industry visits for one semester.
Assessment Practical skills 20%, team involvement 10%, practical work and industry visits 70%.

SBF3750 INDUSTRIAL AND ENVIRONMENTAL MICROBIOLOGY
Campus Werribee
Prerequisite(s) SBF2300 Microbiology 1
Content The aim of this subject is to introduce students to the role and use of micro-organisms in industry and the environment. This subject covers: primary and secondary metabolite production; structure and processes of microbial communities; measurement of microbial activity in nature; bioremediation; roles of micro-organisms in processes such as waste treatment and mining; ethical, legal and environmental aspects of release of genetically engineered micro-organisms; microbes as biocontrol agents; control of microbial growth in an industrial setting including: sterilisation, disinfection, and quality control; production and maintenance of commercial strains; culture collection; starter cultures, etc.; screening of microbes for use in industry; legal aspects of industrial and environmental microbiology.
Required Reading To be advised by lecturer.
Class Contact To be advised by lecturer.
Assessment Eight hours per week, comprising three hours of lectures and five hours of laboratory/tutorial work for one semester. Assignments, 20%; practical work, 30%; final examination, 50%.

SBF3760 RECOMBINANT DNA TECHNOLOGY
Campus Werribee
Prerequisite(s) SBF2520 Biochemistry 1; SBF2390 Molecular Genetics
Content This subject seeks to provide students with strong theoretical knowledge and practical skills in molecular analysis of structure and function of genes, applications of such analysis and modification of genes by genetic engineering. Main topics include various cloning vectors, use of restriction enzymes, construction and screening of DNA and genomic libraries for isolation of clones; Southern and Northern Blotting and hybridisation for study of DNA and RNA respectively, use of different probes, use of oligonucleotides, PCR and its applications, DNA sequencing, applications of recombinant DNA technology in areas such as transgenic plants and animals, human genetic diseases, gene therapy, human genome project, environmental studies, ethical considerations in genetic engineering. Laboratory exercises include plasmid preparation, restriction mapping, purification of DNA fragments from agarose gels, cloning of DNA into plasmids, transformation of plasmids and transfection of phage into bacterial cells, Southern blotting and hybridisation, library screening, preparation of probes, use of radioisotopes, PCR and DNA sequencing.
Required Reading To be advised by lecturer.
Class Contact Eight hours per week, comprising three hours of lectures and five hours of laboratory/tutorial work for one semester.
Assessment Assignments, 20%; Practical work, 30%; Final Examination, 50%.

SBF3770 BUSINESS ENVIRONMENT STUDIES
Campus Werribee
Prerequisite(s) Nil.
Content This subject aims to introduce students to some fundamental aspects of organisations and the business environment; in particular to enhance their understanding of accounting, marketing and organisational structures and behaviour. This subject covers: accounting and costing; analysis and interpretation of financial statements; elements of costs; cost behaviour; cost analysis; costs and decision making; budgeting; capital budgeting. Management: types of organisations; management theories; motivation; individual, inter-personal and group dynamics; industrial relations case studies. Marketing: the marketing concept; business environment and marketing; marketing research; marketing strategies; elements of marketing mix; evaluation processes; contemporary issues and business ethics; case studies.
Required Reading To be advised by lecturer.
Class Contact Six hours per week for one semester comprising lectures and tutorials.
Assessment Class presentation, 10%; syndicate exercise, 20%; report, 20%; final examination, 50%.

SBF3900 PROJECT - FOOD TECHNOLOGY
Campus Werribee
Prerequisite(s) Students would normally be expected to have successfully completed all Year 1 and 2 subjects.
Content The subject aims to enable students to become competent in applying research methodology to a specific problem and to enable them to develop an area of personal interest relevant to their degree specialisation. This subject covers project methodology.
SBF4000 SCIENCE HONOURS

Campus St Albans
Prerequisite(s) Nil

Content The equivalent of six hours per week. Three hours of lectures or equivalent, and three hours of laboratory exercises.

Assessment Progressive laboratory assessment tasks, 50%; test, 20%; assignments, 30%.

SBM171 APPLIED NEUROMUSCULAR PHYSIOLOGY

Campus Footscray Park
Prerequisite(s) Nil

Content Students will gain an appreciation of those aspects of nerve and muscle function which form the basis of human movement. Topics will include: basic cell concepts, energy systems, physiology of the neuron, structure and function of muscle fibres, control of muscle contraction; sensory mechanism, higher functions of the nervous system.

Required Reading To be advised by the lecturer.


Class Contact Two hours of lectures and two hours of laboratory class or tutorial per week for one semester.

Assessment Tutorial preparation, topic tests and a final examination.
approach. The following regions are studied in detail: pelvic girdle, gluteal region, hip, thigh, knee, leg, ankle and foot; pectoral girdle, shoulder, arm, elbow, forearm, wrist and hand. The relevance of functional anatomy to health and healing will be highlighted by introducing students to gross anatomy, using models and wet specimens; cross-sectional anatomy using x-rays and scans; surface anatomy; acupuncture anatomy; kinesiology, gait analysis, posture, massage, muscle testing, exercise, stretching and awareness through movement and posture techniques. Topics studied in this subject may be interchanged with those of the subject Functional Anatomy 2.

Required Reading

Class Contact Six hours per week for one semester; 3 hours lecture; 3 hours practical/tutorial

Assessment
Theory examination 55%, practical examination and oral examination 45%

SBM1519 HUMAN BIOSCIENCE 1

Campus St Albans

Prerequisite(s) Nil.

Content
In this subject, Human Bioscience (Nursing), will be introduced and placed in context with nursing in an integrated fashion. Anatomy, physiology and basic concepts in chemistry and microbiology will be taught in an integrated fashion. Content will include a brief overview of the organization of the human body; students will introduced to structure and functions of cells and the various types of tissues in the body. Basic concepts in chemistry are covered. Therefore providing the groundwork to support an understanding of the various types of cells and their functions within the body. Students are also introduced to microbiology which is placed in context with infection control. The importance of homeostasis and the role of the neuro-endocrine system in maintaining equilibrium within the body are emphasised. The nervous system and endocrine system are introduced to highlight their regulatory role for control, co-ordination and communication. The physiology of nerve cells is also covered, and this is followed by a discussion of special senses, in particular sight, hearing and balance.

Required Reading
Grabowski, S.R., 2000, Human Anatomy and Physiology, 5th edn, Benjamin Cummings.

Recommended Reading

Class Contact
Four hours per week for one semester consisting of lectures, tutorials and laboratory work.

Assessment
Theory examination, 40%; practical examination, 30%; test/assignment, 20%; laboratory work, 10%.

SBM1510 HUMAN PHYSIOLOGY 1

Campus St Albans

Prerequisite(s) Nil.

Content
The importance of homeostasis and the role of the neuro-endocrine system in maintaining equilibrium within the body is emphasised. The nervous system and endocrine system are introduced in an integrated way using a regional approach. The nervous system and endocrine system are discussed to highlight their regulatory role for control, co-ordination and communication. The physiology of nerve cells will be used to introduce bioelectrical concepts. This provides the groundwork to support an understanding of the various types of cells and their functions. The musculoskeletal system and cellular replication processes are covered. Topics studied in this subject may be interchanged with those of SBM1528 Physiology 2.

Required Reading
Seeley, Stephens & Tate 2003, Anatomy and Physiology, 6th edn, McGraw-Hill.

Recommended Reading

Class Contact
Six hours per week for one semester, comprising three hours of lectures, two hours of practical and one hour tutorial class per week.

Assessment
Practical reports/test and assignment/worksheets, 45%; test/examination, 55%.

SBM1519 HUMAN BIOSCIENCE 2A

Campus St Albans, Werribee

Prerequisite(s) Students would normally be expected to successfully complete SBM1510 Human Bioscience 1A.

Content
This subject aims to enable the students to extend theoretical knowledge of normal human structure and function developed in SBM1510 Human Bioscience 1A by examining more complex integrated functioning of the various systems in health and comparing these with selected deviations from health. Students will be introduced to fluid and electrolyte dynamics, the role of membrane structures and capillary dynamics, and integration of the neural, endocrine, circulatory, respiratory, and renal sub-systems in maintaining fluid, electrolyte and acid-base balance. Metabolism, body temperature control and nutrition are examined. Microbiology is introduced.
Required Reading To be advised by lecturer.
Class Contact Seven hours per week comprising three hours of lectures, two hours of laboratory and two hours of tutorials for one semester.
Assessment Test and examination, 55%; laboratory reports and assignments, 45%.

SBM1524 FUNCTIONAL ANATOMY 2 (HEAD, NECK AND TRUNK)
Campus St Albans
Prerequisite(s) SBM1514 or equivalent
Content The following regions are studied in detail: skull and cranial cavity, scalp and face, eye and ear, nasal and oral cavities, major structures of the neck, deep and superficial structures of the back, thoracic wall, cavity and contents, abdominopelvic wall, cavity and contents. As with Functional Anatomy 1, the relevance of anatomy to health and healing will be highlighted. Topics studied in this subject may be interchanged with those of the subject Functional Anatomy 1.
Class Contact Six hours per week for one semester; 3 hours lecture, 3 hours practical/tutorial
Assessment Theory examination 55%, practical examination and oral examination 45%.

SBM1525 ANATOMY AND PHYSIOLOGY 2
Campus St Albans
Prerequisite(s) SBM1515 Anatomy and Physiology 1
Content The aim of this subject is to build upon the introductory knowledge of human structure and function covered in ‘Anatomy and Physiology 1’ in order for students to gain an integrated understanding of human organs and body systems. The cardiovascular, respiratory, urinary, gastrointestinal and reproductive systems are placed in context with their overall regulation and coordination via the neuroendocrine system. This provides an understanding of how homeostatic mechanisms regulate variables such as blood pressure, blood gas status, fluid and electrolyte balance and blood glucose. The provision of nutrients to the body by the gastrointestinal system is integrated with the study of biochemistry and metabolism. An introduction to basic concepts of inheritance is followed by the study of the male and female reproductive systems. Topics studied in this subject may be interchanged with those of SBM1518 Physiology 1.
Required Reading Seeley, Stephens & Tate 2003, Anatomy and Physiology, 6th edn, McGraw-Hill.
Class Contact Six hours per week for one semester, comprising three hours of lectures, two hours of practical and one hour tutorial class per week
Assessment Practical report/test and assignment/worksheets, 45%; test/examination, 55%.

SBM1530 HUMAN BIOSCIENCE 2
Campus St Albans
Prerequisite(s) SBM1519 Human Bioscience 1 (Nursing)
Content In this subject, Human Bioscience 2 (Nursing), will be continued in context with nursing in an integrated fashion. Anatomy, physiology and basic concepts in chemistry and microbiology will be taught in an integrated fashion. Content will expand previous knowledge of the organization of the human body, structure and functions of cells and the various types of tissues in the body. Further concepts in chemistry, microbiology, infection control, homeostasis and the role of the neuro-endocrine system in maintaining equilibrium within the body are emphasized. The nervous system and endocrine system are expanded to highlight their regulatory role for control, co-ordination and communication. This will be followed by discussions of other body systems emphasizing the relationship between structure and function and their relevance to Nursing.
Required Reading Marieb, E.N., 2001, Human Anatomy and Physiology, 5th edn, Addison Wesley Longman, California, USA.
Available with five CD’s on Interactive Physiology for Windows and Macintosh.
Class Contact Four hours per week for 12 weeks of one semester; comprising of two hours of lectures and two or three hours of practical/tutorial class.
Assessment Practical/test/assignment, 50%; Theory test/examination, 50%

SBM1529 INTRODUCTION TO PLANT SCIENCE
Campus St Albans
Prerequisite(s) Nil.
Content Plant morphology and internal anatomy of stem, root and leaves; cell structures and contents; parts of flowers and fruits and their variations; Basic taxonomy, orders and families of selected Chinese medicinal plants; Basics of the origin and distribution of primary and secondary metabolites.
Required Reading Kangaratum, N., 1999, Botany Monograph, St Albans, School of Life Sciences and Technology, Victoria University.
Recommended Reading


Class Contact
The equivalent of 40 hours for one semester comprising lectures, tutorials, laboratory sessions and field trips.

Assessment
Practical reports/ examination, 40%; Theory test, 60%. A pass must be gained in each component of  assessment.

SBM 1572 BODY CONTROL MECHANISMS

Campus St Albans
Prerequisite(s) SBM1514 Functional Anatomy 1 (Acupuncture) and SBM1524 Functional Anatomy 2 (Acupuncture)

Content
The importance of  homeostasis and the role of  the neuro-endocrine system in maintaining equilibrium within the body is emphasised. The nervous system and endocrine system are introduced in an integrated way to highlight their regulatory role for control, coordination and communication. The cardiovascular, respiratory and urinary systems are placed in context with their overall regulation and coordination via the neuro-endocrine system. This provides an understanding of how homeostatic mechanisms regulate variables such as blood pressure, blood gas status, acid-base balance, fluid and electrolyte balance and blood glucose. This subject introduces students to basic principles in pharmacology.

Required Reading


Recommended Reading


Class Contact
Three hours per week for two semesters.

Assessment
Examination / test 75%; test / assignment / worksheets 25%.

SBM2260 DIET AND NUTRITION

Campus St Albans
Prerequisite(s) SBM1528 Human Physiology 2 or equivalent

Content
This subject will demonstrate the relationships between gastrointestinal function, diet and human health. The subject examines the gastrointestinal structure and function, body composition, anthropometry, chemical nature of  the nutrients, and their roles in body structure and function, energy intake and regulation, metabolism of  nutrients, nutritional requirements under various environmental and physiological states, diet and disease, dietary guidelines, hormonal control of  digestion, vitamins as antioxidants, nutrition and prevention of  disease, role of  intestinal flora in nutrition.

Required Reading
To be advised by lecturer.

Class Contact
Six hours per week for one semester comprising three lectures hour, two hours laboratory and one hour tutorial.

Assessment
Tests, 20%; laboratory reports, 30%; final examination, 50%.

SBM2360 INTRODUCTION TO MICROBIOLOGY

Campus St Albans
Prerequisite(s) SBM1524 Functional Anatomy 2 or SBM1520 Human Bioscience A or equivalent

Content
Topics include: nature and classification of  microorganisms and their growth requirements, normal flora; host defence mechanisms, immunosresponse; host microbe interaction, infection, sterilisation, disinfection, asepsis, antisepsis; sources and mode of  transfer of  infectious agents and the compromised host, principles of  safe clinical practice, antibiotics, epidemiology, analytical methods and food safety. To investigate application of  micro organisms in industry and biological work products.

Required Reading

Class Contact
Three hours per week for one semester, 1-2h lectures, 1-2h tutorial/laboratory

Assessment
Assignments and laboratory reports 40%; end of  semester examination 60%.
SBM2516 BIOSCIENCE 3: DEVIATION FROM HEALTH

Campus St Albans
Prerequisite(s) SBM1530 Human Bioscience 2 (Nursing).

Content The presentation of major concepts and principles of pathophysiology illustrating their relationship to a range of common/important acute and chronic illness. This subject supports the topics in concurrent nursing units by providing a scientific basis for understanding disease processes such as cellular injury, inflammation, infection, and shock; by elucidating the underlying mechanisms which results in clinical manifestations; and by presenting the rationale for therapeutic interventions. Pharmacological concepts such as route of administration, distribution, metabolism and excretion of drugs will be discussed. The main classes of therapeutic drugs and their mode of action will be outlined. Microbiology will be discussed with reference to the growth and physiology of micro-organisms, their pathogenic potential, infection control and antibiotic treatment. The pathophysiological principles underlying disorders of major body systems and subsystems will be discussed; for example, in cardiovascular pathophysiology, shock, cardiac failure, hypertension and atherosclerosis will be examined. Other topics covered may include haematology, the respiratory system, renal system, and fluid and electrolyte imbalances, however specific systems in this subject may be interchanged with those in the fourth semester subject as appropriate.


Class Contact 400 hours comprising thirteen week (3 hours of lectures and two-hours of tutorial/lab) for eleven weeks.

Assessment Assignment and tutorial/labouratory reports, 40%; examination, 60%.

SBM2524 FUNCTIONAL ANATOMY 3

Campus St Albans
Prerequisite(s) SBM1524

Content The relevance of functional anatomy to health and healing will be highlighted by studying to clinical anatomy, kinesiology, biomechanics, gait analysis, posture, massage, muscle testing, exercise, stretching, basic soft tissue techniques, and awareness through movement and posture. There will be a particular emphasis on muscle testing and surface anatomy. Topics studied in this subject may be interchanged with those of the subject SBM1514 Functional Anatomy 1 and SBM1524 Functional Anatomy 2.


Class Contact Sixteen hours for one semester.

Assessment Theory examination 55%, practical examination and oral examination 45%.

SBM2526 BIOSCIENCE 4: DEVIATION FROM HEALTH

Campus St Albans
Prerequisite(s) SBM2516 Bioscience 3

Content This subject furthers the understanding of pathophysiological principles and disease processes introduced in SBM2516 Bioscience 3: Deviation from Health. Topics will include neoplasia, and disorders of the nervous, endocrine and musculoskeletal and gastrointestinal tract. Disorders of the reproductive tract including infertility will be presented. Microbiology will be discussed with reference to specific diseases associated with the body systems outlined above. Important genetic disorders such as cystic fibrosis and their modes of inheritance will also be examined. But this content may be interchanged with systems listed in the third semester subject.


Class Contact 40 hours per semester of lectures and tutorial.

Assessment Test, 30%; examination, 70%.

SBM2530 PATHOPHYSIOLOGY 1 (HUMAN BIOSCIENCE 3A)

Campus St Albans, Werribee
Prerequisite(s) SBM1520 or SBM1528 or equivalent

Content This subject aims to provide students with an understanding of the control and co-ordination of body systems and the effects of disturbances to body functions. The mental status and some psychosocial factors associated with these processes will be discussed. Students are introduced to major pathologic processes which may affect all parts of the body. Topics include tissue injury, inflammation and repair, normal immune function and deviations from normal, cancer from the molecular level to the whole person, neural and endocrine dysfunction including impaired cognition such as dementia and impaired co-ordination and control. In the laboratory, students will be introduced to basic laboratory techniques and apply scientific principles to the assessment of dysfunction in humans. Students are also introduced to the research literature, research techniques and the communication of scientific information by a series of presentations. There may be some interchange of topic material relating to specific body systems between SBM2530 and SBM2540 and the specific diseases chosen to illustrate major processes may vary as appropriate.


Class Contact Seven hours per week comprising three hours of lectures, three hours of laboratory and one one-hour tutorial for one semester.

Assessment Test and examinations, 65%; practical and tutorial work, 35%. Students are required to obtain a satisfactory grade in all components of the assessment to obtain a pass grade.

SBM2540 PATHOPHYSIOLOGY 2 (HUMAN BIOSCIENCE 4A)

Campus St Albans, Werribee
Prerequisite(s) SBM2530 Human Bioscience 3A or equivalent

Content This subject primarily examines the effects of dysfunction in particular human body systems, drawing on the knowledge of basic pathophysiological processes and overall regulation of the human body discussed in SBM2530. Overall organ and system dysfunction such as hepatic, renal, cardiovascular and respiratory failure will be discussed. Major disease types and processes such as circulatory shock, obstructive airways disorders, atherosclerosis, disorders of acid-base balance and sexually transmitted diseases will be examined and the psychosocial effects of such disorders will be included. Specific diseases will be chosen to illustrate the major concepts as
SBM2560 MEDICAL BIOCHEMISTRY

Campus St Albans

Prerequisite(s) SBM1518 Human Physiology 1, SCS1120 Chemistry for Biomedical Sciences B.

Content The aim of this subject is to provide a foundation in biochemical principles with special emphasis on medical conditions and applications. Firstly, foundations of biochemistry will be covered, e.g. biological buffers, structures of amino acids, carbohydrates, lipids, protein and nucleic acids, vitamins and cofactors. The major biochemical pathways will be covered such as glycolysis, TCA cycle, oxidative phosphorylation, gluconeogenesis, lipid, amino acid and nucleotide metabolism. The biochemistry of diseases such as cystic fibrosis, phenylketonuria (PKU), myasthenia gravis, thalassemia, anorexia nervosa and heart disease will be examined. Other topics covered will be DNA replication, RNA transcription, gene regulation, genetic diseases and their diagnosis, neurotransmitter metabolism, action and detoxification of drug/toxins and hormonal regulation. Clinically measured enzymes for diseases will be studied and assayed.


Class Contact Six hours per week for one semester comprising three one-hour lectures and three practicals/tutorials.

Assessment Written assignments 25%, written examination 25%.

SBM2575 PHYTOPHARMACEUTICS

Campus St Albans

Prerequisite(s) SBM1529 Introduction to Plant Sciences; SBM1525 Anatomy and Physiology 2

Content Basic Phytochemistry and Phytopharmacology; Pharmacological Activities - Chinese drugs acting on the various body systems; Active Constituents of the Chinese pharmacy; Toxic dosages - LD 50 concept; toxic dosages of the Scheduled Poisons List - Chinese herbs; poisoning records and Chinese Medical antitoxins.

themes within this subject. The first theme provides a brief introduction to the evolution of humans and the evolution of consciousness, drawing upon Darwinian theory. Questions such as what it means to be human, what consciousness is and whether there is a biological role for men and women may be discussed. The second theme is the current image of the human body in society with respect to what is considered healthy. Topics which may be discussed here may include how disorders of body-image such as anorexia arise, and how parts or diseases of the human body are used as metaphors for society, for example, the heart, the limbs, the head, and cancer. The third theme examines how biomedical science defines health and disease, sanity and mental illness and influences our concepts of the human body.


**Class Contact** Four hours per week comprising two one hour lectures and one two hour tutorial/seminar session for one semester.

**Assessment** Two essays, 60%; one tutorial presentation, 25%; tutorial attendance and participation, 15%.

**SBM2750 NUTRITION**

**Campus** Werribee

**Prerequisite(s)** SBF1310 Biology 2 or equivalent. Students would be expected to have studied or undertake concurrent study in SBF2520 Biochemistry 1.

**Content** The subject aims to provide an introduction to the principles of human nutrition as a background for further studies in Food Technology (units SBF3731 and SBF3732), to enable students to appreciate the nutritional consequences and responsibilities associated with the provision, processing and development of food and food products. This subject examines: body composition and associated with the provision, processing and development of food to appreciate the nutritional consequences and responsibilities.


**Class Contact** Four hours per week comprising two one hour lectures and one two hour tutorial/seminar session for one semester.

**Assessment** Two essays, 60%; one tutorial presentation, 25%; tutorial attendance and participation, 15%.

**SBM3264 ADVANCED NERVE AND MUSCLE PHYSIOLOGY**

**Campus** Footscray Park

**Prerequisite(s)** SBM2800 Cardiorespiratory and Renal Physiology or equivalent

**Content** The aim of the subject is to examine in detail the mechanisms of nerve and muscle function. Topics include: physico-chemical principles underlying nerve and muscle function; behaviour of excitable cells; mechanisms of muscle contraction; neural influences over muscles and muscle fibre types; muscle fibre recruitment; metabolic processes in active muscle; neuromuscular fatigue; co-ordinating motor activity, and diseases of the nervous and muscular systems. Research techniques in nerve and muscle physiology.

**Recommended Reading** McComas, A.J. 1996, Skeletal Muscle Form and Function. Human Kinetics. **Class Contact** Three hours of lectures, one one-hour tutorial and two hours of practical work each week for one semester.

**Assessment** Based on laboratory reports, tutorial assignments and an end-of-semester examination.
SBM3560 ADVANCED BIOSCIENCE 6A
Campus St Albans, Werribee.
Prerequisite(s) SBM3550 Advanced Bioscience 5A.
Content This subject continues on the theme of development and ageing and the physiological processes that occur, building on SBM3550 Advanced Bioscience 5A. This subject investigates specific areas of human physiology such as immunology, genetics, neoplasia and systems of the body. This includes the exploration of changes that occur throughout the life cycle and interaction with the environment. The subject allows exposure to a range of scientific techniques through the laboratory component and may include a minor project.
Required Reading To be advised by lecturer.
Class Contact Eight hours per week comprising three hours of lectures, tutorials and five hours of laboratory work for one semester.
Assessment Test, examination and project, 70%; practical work and tutorials, 30%. Students are required to obtain a satisfactory grade in all components of the assessment to obtain a pass grade.

SBM3564 CLINICAL PHARMACOLOGY
Campus St Albans
Prerequisite(s) SBM2722 Human Biomedicine 4 and SBM2560 Botanical Pharmaceuticals or equivalent.
Corequisite SBM3554 Clinical Pathophysiology
Content An introduction to the mechanisms of drug action with particular reference to drugs prescribed in the hospital situation. From the subject it is expected that students will be able to identify the selective therapeutic and prophylactic effects of drugs. This is covered by describing the theory of drugs at a molecular level. With these constructs the students should be able to relate the advantages of a particular drug therapy, as well as its unwarranted side effects and drug-drug interactions. This unit is designed to run in conjunction with SBM3554 Clinical Pathophysiology.
Recommended Reading Society of Hospital Pharmacists of Australia, 1995, Pharmacology and Drug Information for Nurses, 4th edn, W.B. Saunders/ Balliere Tindall.
Class Contact The equivalent of two hours per week for two semesters.
Assessment Two Assignments, 25% each; end of semester 1 examination 25%, end of semester 2 examination 25%.

SBM3570 TOXICOLOGY 2
Campus Footscray Park
Prerequisite(s) Nil.
Content The unit covers the possible adverse effects from exposure to hazardous chemicals in work environments. Topics include biotransformation and pharmacokinetics; biological monitoring and health surveillance; air pollutants and respiratory tract irritants; the deposition of particulates and fibres along in the ventilatory system; ecotoxicology; effects of various substances used in industry that have documented effects on the nervous, reproductive, cardiovascular, renal and hepatic system, genotoxins, mutagens and carcinogens. Food toxins, ionising radiation and electromagnetic field effects are also discussed.
Class Contact Two hours per week for two semesters.
Assessment Reports (60%) and assignment (40%).

SBM3590 ADVANCED HISTOLOGICAL TECHNIQUES
Campus St Albans
Prerequisite(s) All year 2 core units (SBM2800, SBM2260, SBM2530, SBM2540), SBM2590 Functional Histology and SBM2560 Medical Biochemistry.
Content This subject introduces students to a variety of histological techniques and the role they play in medical research. There will be a particular emphasis on students receiving practical skills in a histology laboratory setting. Students will obtain skills in tissue sampling, preparation of fixed and frozen sections for light and electron microscopy, basic tissue staining, immunohistochemistry and in situ hybridization. Students will be introduced to light microscopy, confocal microscopy, transmission and scanning electron microscopy, morphology and morphometry.

Class Contact  Six hours per week for one semester comprising 3 hours of lectures and 3 hours of practicals

Assessment  Theory examination 55%, practical examination/assignment 45%

**SBM3610 BIOMEDICAL SCIENCE, ETHICS AND VALUES**

Campus St Albans

Prerequisite(s)  Successful completion of appropriate subject(s) in human biology or psychology at tertiary level.

Content  This subject discusses, with examples, how scientists have investigated the functioning of the human body in health and disease: in-vitro experiments, forced or voluntary participation in experimentation, the use of animal models etc. The ethics of these practices are examined – how do we justify or choose the practices which elucidate the function of the human body? Who regulates the conduct of research? Can research into humans be objective and is objectivity a gendered concept? Issues arising from the practice of biomedical sciences will be examined, such as in-vitro fertilisation, the human genome project, genetic screening, competition and fraud, and toxicity testing. The selected topics may vary as appropriate.


Class Contact  Four hours per week comprising two one-hour lectures and one two-hour tutorial/seminar session for one semester.

Assessment  Two essays, 60%; one tutorial presentation, 25%; tutorial attendance and participation, 15%.

**SBM3620 CHALLENGING THE SCIENTIFIC PARADIGM**

Campus St Albans

Prerequisite(s)  SBF2922 Science and Society or an appropriate unit from the health sciences or complementary therapies.

Content  This subject examines how biomedical science in the twentieth century is under question. Alternative theories of the functioning of the human body will be explored – for example, from the complementary theories and from non-Western cultures. Critiques of complementary therapies from a biomedical sciences viewpoint and critiques of biomedical science from a complementary therapies viewpoint will be examined to address questions such as whether the two perspectives overlap and whether there can be an synthesis biomedical science with aspects of complementary therapies. Environmental philosophy will be drawn upon to examine how humans perceive themselves in relation to the environment in general and other species in particular. Some human-centred versus eco-centric views will be explored.

Required Reading  To be advised by lecturer.

**SBM3630 SCIENCE, MEDIA AND COMMUNICATION**

Campus St Albans

Prerequisite(s)  ACC1042 Communications A; ACC1043 Communications B or equivalent.

Content  In this subject, students will be introduced to the forms by which information about biomedical sciences and health is communicated via the media. A critical understanding will be developed of the ways in which media information is used to persuade individuals about the value or otherwise of biomedical information to market products and influence behaviour will be examined with particular attention paid to the marketing of pharmaceutical products, medical practice, health education programs and complementary therapies. Students will examine materials such as newspapers, popular magazines concerned with health, health education material and examples of the scientific reports of public institutions concerned with the biomedical sciences.

Required Reading  To be advised by lecturer.

Class Contact  Four hours per week comprising two one-hour lectures and one two-hour seminar session for one semester.

Assessment  Assignment, 40%; class presentation, 20%; media scrapbook and critical journal, 40%.

**SBM3640 ADVANCED NEUROSCIENCES**

Campus St Albans

Prerequisite(s)  SBM2530 Pathophysiology (Bioscience 4A)

Content  This subject aims to provide insights into the most important current ideas in the study of neuroanatomy, neuropsychology and developmental neurobiology. This subject provides an advanced series of lectures in specialised areas of neurosciences research. The content of the subject may vary with the expertise and research interests of the lecturing staff.

Required Reading  Various scientific journals

Class Contact  Three hours of lectures per week for one semester

Assessment  Theory examination 55%, practical examination/assignment 45%

**SBM3650 ADVANCED REPRODUCTION AND DEVELOPMENT**

Campus St Albans

Prerequisite(s)  SBM2530 Pathophysiology (Bioscience 4A)

Content  This subject provides an advanced series of lectures examining current research questions in the area of reproduction and development. Topics include: maternal recognition of pregnancy via foetal signalling and the resultant maternal response during the period of implantation; development of the embryonic neural crest, including epithelial-mesenchymal transformation, migration, and contribution to mature differentiated cell types; the role of steroid hormones in placental function; the role of autocrine and paracrine growth factors in the development of the foetal lung; the role of various extracellular matrix cytokines in the breakdown of the foetal membranes at birth. The content of this subject may vary with the expertise and research interests of the lecturing staff.

Required Reading  Various scientific journals

Class Contact  Three hours of lectures per week for one semester

Assessment  Theory examination 55%, practical examination/assignment 45%

**SBM3660 HUMAN DEVELOPMENTAL AND CLINICAL GENETICS**

Campus St Albans

Prerequisite(s)  SBM 2540 Human Bioscience 4A and either SBM 2560 Medical Biochemistry or SBF3330 Cell biology
Content The subject is designed to introduce students to developmental and clinical genetics with a specifically human focus. The major emphasis is on the importance of gene expression in normal development and variation, and the contribution of genetic abnormalities to disease.

Topics may include: The role of genes in development; differentiation and congenital malformation; human genetic principles such as assortment and segregation of genes, genetic variation and genetic defects, the importance of genetic heterogeneity, mendelian inheritance and gene frequencies in populations; Diagnosis and classification of genetic disorders; prenatal screening and diagnosis; disorders with genetic and environmental associations.

Required Reading Research and review articles as appropriate

Class Contact Three hours of lectures and three hours practical work for 1 semester

Assessment Theory examination 50%, practical reports/assignment 50%

SBM3670 MOLECULAR PSYCHOLOGY

Campus St Albans

Prerequisite(s) SBM3560 Advanced Bioscience 5A or equivalent

Content This subject explores the relationships between Molecular Biology, Psychology, Anatomy and Genetics and Human Behaviour and Emotions. These relationships will be discussed in light of current research findings and current literature. The lecture series will explore the current zeitgeist of the medical and scientific community with respect to Molecular psychology, e.g; Topics may include explanation of brain anatomy and psychology and anti-social behaviour patterns e.g violent criminal behaviour.

Required Reading Research and review articles as appropriate

Class Contact Three hours of lectures 1 semester

Assessment Theory examination 50%, assignments 50%

SBM3720 IMMUNOLOGY

Campus St Albans

Prerequisite(s) SBM2360 Microbiology 1 or SBM2530 and SBM2540 Pathophysiology 1&2.

Content The aims of this subject is to provide students with an understanding of theoretical and practical bases of immunology. Subject topics include: active and passive immunity, components of the immune system, the immune response, immunological techniques and their application, molecular diagnostics including the use of monoclonal antibodies. The subject will be explored as a basic science with applications in the agriculture industry, food science, environmental science and medical science.


Class Contact Eight hours per week comprising three hours of lectures and five hours of laboratory/tutorial work for one semester.

Assessment Assignments, 20%; practical work, 30%; final examination, 50%.

SBM3800 PHARMACOLOGY

Campus Footscray Park, St Albans.

Prerequisite(s) SCS1100 Chemistry for Biological Sciences, SBM2560 Medical Biochemistry, SBM1518 and SBM1528 Human Physiology 1 and 2, or equivalent units.

Content The unit examines the pharmacodynamic processes of drug action, molecular pharmacology and specific drug therapies. Aspects relating to both medicinal chemistry, toxicity testing, clinical trials and requirements for the admission of new drugs are covered in topics that relate to new drug development. Pharmacokinetics, pharmacogenetics, sensitivity and resistance to drug therapies are further topics that address variation in drug outcomes. Social drug abuse and types of drug dependence are also discussed in this unit.


Recommended Reading Katzung, B.L., 2001, Basic Clinical Pharmacology, 8th edn, McGraw Hill.

Class Contact Six hours per week over one semester based on two hours of lecture, one hour of tutorial and three hours of practical sessions.

Assessment Assignment 15%; practical reports 20%; end of semester examination 65%.

SBM3810 WELLNESS 1

Campus St Albans

Prerequisite(s) SBM2530 and SBM2540 or equivalent, or SBM2800 Cardiorespiratory and Renal Physiology plus other relevant second year units at the discretion of the co-ordinator.

Content Module A: This unit introduces the concepts of mind, body and spirit. These areas are explored from psychological, physiological, philosophical and sociological perspectives. Current literature will be used to introduce the areas of psychophysiology and psychoneuroimmunology and their connections to the mind/body/spirit paradigm. The ethics of human research and evaluation will be discussed throughout the series of lectures. In addition, students will be introduced to basic methods of information gathering with respect to the mind-body-spirit paradigm including the evaluation of its status in individuals.

Module B: Students will be introduced to fundamental concepts of health and wellness. The difference between professional/scientific concepts and lay concepts will be explored. Wellness promotion will be presented primarily in the context of established public health approaches utilised in health education, promotion and prevention including medical, behavioural, educational, social and empowerment strategies. Some of the dilemmas and pitfalls in health promotion will be canvassed. Students will also be introduced to basic concepts of occupational health and safety and workplace health promotion. Risk assessment, material safety, manual handling and relevant legislation will be discussed. Context will be provided by guest speakers from relevant organisations.


Class Contact Module A: Three hours per week for one semester, comprising two hours of lectures and one hour of tutorial. Module B: Three hours per week for one semester comprising one and a half hours of lectures and one and a half hours tutorial seminar.

Assessment Assignment/ tutorial work, 25%; examination, 25% for each of Module A and B.

SBM3820 WELLNESS 2

Campus St Albans

Prerequisite(s) SBM3810 Wellness 1.

Content Module A: The subject extends the material covered with respect to Mind, Body and Spirit, exploring in greater depth, aspects of psychophysiology and psychoneuroimmunology such as stress and disease, sexuality and the impact of environment on the health of the mind, body and spirit. Techniques used to investigate and address these areas of health and lifestyle will be introduced, for example, needs assessment, relaxation, stress management. Current research literature in the area will be analysed. Module B: Students will be introduced to the systematic planning of health and wellness education and promotion. Examples and discussion will be provided.
in the context of relevant issues, for example, community participation, the role of professionals, young people and STD/AIDS, alcohol use, and the role of the media in health. Guest speakers from health-promoting organisations will be provided to explore health education and promotion issues. Examples include the local government planning process, healthy cities approach, Alzheimer's disease, eating disorders, and the Quit campaign. Other relevant speakers/issues may be discussed as appropriate. An individual health promotion project within the unit requires students to assess their own health/wellness needs, then design, implement and evaluate an appropriate program for themselves over the semester. Students are further strongly encouraged to take the third year project in conjunction with this unit, and to apply their skills to the development of the project as a health promotion and education exercise oriented to the workplace or conducted within an organisation that promotes health.


**Class Contact** Module A: Three hours per week for one semester, comprising two hours of lectures and one hour of tutorial. Module B: Three hours per week for one semester comprising one and a half hours of lectures and one and a half hours tutorial/semiar.

**Assessment** Assignment/tutorial work, 25%; examination, 25% for each of Module A and B.

### SBM4100 Honours Research Project

**Campus** Footscray Park, St Albans, Werribee.

**Prerequisite(s)** Satisfactory completion of an undergraduate degree program with a credit average (65%) in the final year, or at the discretion of the Course Co-ordinator.

**Content** The aim of the project is to enable students to conduct a research project under supervision. The project will comprise a scientific investigation in an area of expertise of the project supervisor. The results of the project will be reported in an oral presentation and a written thesis, which will include an introduction, a description of methodology, results, a discussion of the results (including a critical appraisal of the results) and recommendations for further research in the area.

**Required Reading** To be advised by the supervisor.

**Class Contact** No formal contact hours, although a normal full-time load is considered 20 hours per week. Regular meetings with the supervisor are recommended.

**Assessment** The research project will be assessed on the basis of the literature review, the oral presentation and the quality of the research and its presentation in the thesis.

### SBM4200 Honours Coursework

**Campus** Footscray Park, St Albans, Werribee.

**Prerequisite(s)** Satisfactory completion of an undergraduate degree program with a credit average (65%) in the final year, or at the discretion of the Course Co-ordinator.

**Content** There are two types of coursework associated with this enrolment code which will be chosen from a list provided by the Honours Co-ordinator. The form of each item will vary and may consist of formal lecture series, laboratory based practical program or prescribed reading. The deadline for the completion of the coursework will normally be the beginning of semester 2.

**Required Reading** To be advised by the relevant member of staff offering the unit.

**Class Contact** Coursework units will comprise 10 hours of lectures or the equivalent in prescribed reading.

**Assessment** The nature of the assessment will vary and may consist of a formal examination or written assignments.

### SCA1101 Introductory Aeronautics

**Campus** Footscray Park

**Prerequisite(s)** Nil

**Content** Introductory aeronautics, radiotelephony procedures, career paths and procedures for seeking employment.

**Required Reading** CASA, 2001 AIP Australia, Airservices Canberra. Subject study notes as provided by lecturer.

**Class Contact** 1 x 1 hour workshop per week for one semester or equivalent.

**Assessment** Practical assignment, 40%; examination, 60%.

### SCA1102 Basic Aeronautics

**Campus** Footscray Park

**Prerequisite(s)** SCA1101

**Content** Basic aeronautics, engineering and mechanics sufficient to pass the Basic Aeronautical Knowledge subject as required by the Civil Aviation Safety Authority.
SCA2013 AERONAUTICS AND NAVIGATION
Campus Footscray Park
Prerequisite(s) SCA1102
Content Basic aeronautics, engineering and mechanics, Navigation and Meteorology sufficient to pass the PPL subject examined by the Civil Aviation Safety Authority.
Required Reading Thom, T. et al., 2000, Aeroplane General Knowledge, Aviation Theory Centre, Melbourne. Subject study notes as provided by the subject lecturer.
Class Contact 1 x 1 hour workshop per week for one semester or equivalent.
Assessment Examination as required by the Civil Aviation Safety Authority.

SCA2051 PERFORMANCE AND LOADING FOR THE CPL
Campus Footscray Park
Prerequisite(s) SCA1102
Content Aircraft performance theory, and loading theory sufficient to pass the Commercial Pilot's Licence theory subject 'CPL Performance and Loading' examined by the Civil Aviation Safety Authority.
Class Contact 1 x 1.5 hour workshop per week for one semester or equivalent.
Assessment Examination as required by the Civil Aviation Safety Authority.

SCA2053 AERODYNAMICS AND SYSTEMS FOR THE CPL
Campus Footscray Park
Prerequisite(s) SCA1102
Content Aircraft aerodynamics and systems theory sufficient to pass the Commercial Pilot's Licence theory subject 'CPL Aerodynamics and Systems' examined by the Civil Aviation Safety Authority.
Class Contact 1 x 1.5 hour workshop per week for one semester or equivalent.
Assessment Examination as required by the Civil Aviation Safety Authority.

SCA2055 FLIGHT PLANNING FOR THE CPL
Campus Footscray Park
Prerequisite(s) SCA2013
Content Aircraft flight planning theory sufficient to pass the Commercial Pilot's Licence theory subject 'CPL Flight Planning' examined by the Civil Aviation Safety Authority.
Class Contact 1 x 1.5 hour workshop per week for one semester or equivalent.
Assessment Examination as required by the Civil Aviation Safety Authority.

SCA2057 METEOROLOGY FOR THE CPL
Campus Footscray Park
Prerequisite(s) SCA2013
Content Aircraft flight planning theory sufficient to pass the Commercial Pilot's Licence theory subject 'CPL Meteorology' examined by the Civil Aviation Safety Authority.
Class Contact 1 x 1.5 hour workshop per week for one semester or equivalent.
Assessment Examination as required by the Civil Aviation Safety Authority.

SCA2061 NAVIGATION FOR THE CPL
Campus Footscray Park
Prerequisite(s) SCA2013
Content Aircraft flight planning theory sufficient to pass the Commercial Pilot's Licence theory subject 'CPL Navigation' examined by the Civil Aviation Safety Authority.
Required Reading Thom, T. et al., 2000, Flight Rules and Air Law, Aviation Theory Centre, Melbourne. Subject study notes as provided by the subject lecturer.
Class Contact 1 x 1.5 hour workshop per week for one semester or equivalent.
Assessment Examination as required by the Civil Aviation Safety Authority.

SCA2063 HUMAN FACTORS FOR THE CPL
Campus Footscray Park
Prerequisite(s) SCA2013
Content Human Factors in flying sufficient to pass the Commercial Pilot's Licence theory subject 'CPL Human Factors' examined by the Civil Aviation Safety Authority.
Required Reading Thom, T. et al., 2000, Human Factors Notes, CASA Canberra. Subject study notes as provided by the subject lecturer.
Class Contact 1 x 1.5 hour workshop per week for one semester or equivalent.
Assessment Examination as required by the Civil Aviation Safety Authority.

SCA2101 BASIC AERONAUTICS (AREA SOLO/BAK)
Campus Footscray Park
Prerequisite(s) SCA1101 Introductory Aeronautics.
Content Aeronautical concepts required to satisfy the theory requirements of the Civil Aviation Authority necessary before a student may be permitted to attempt the General Flying Proficiency Test (GFPT).
### UNDERGRADUATE SUBJECT DETAILS

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Campus</th>
<th>Prerequisite(s)</th>
<th>Content</th>
<th>Required Reading</th>
<th>Class Contact</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCA3011</td>
<td>IREX - THE CIVIL AVIATION INSTRUMENT RATING THEORY EXAMINATION</td>
<td>Footscray Park</td>
<td>SCA2013</td>
<td>Aircraft flight planning theory sufficient to pass the IREX examination set by the Civil Aviation Safety Authority.</td>
<td>Thom, T., et al, 2000, <em>The Instrument Rating Manual</em>, Aviation Theory Centre, Melbourne. Subject study notes as provided by the subject lecturer.</td>
<td>2 x 2 hour lectures per week for one semester.</td>
<td>Examination as required by the Civil Aviation Safety Authority.</td>
</tr>
<tr>
<td>SCA3100</td>
<td>INSTRUMENT NAVIGATION (IREX)</td>
<td>Footscray Park</td>
<td>SCA2104 Intermediate Aeronautical Knowledge.</td>
<td>Theory aspects of the use of the different navigation instruments available to a pilot, and their operation under instrument flight rules (IFR) sufficient to meet the theory requirements of the Civil Aviation Authority for the issue of a command instrument rating.</td>
<td>Thom, T. et al, 2000, <em>The Instrument Rating Manual</em>, Aviation Theory Centre, Melbourne. Subject study notes as provided by the subject lecturer.</td>
<td>2 x 2 hour lectures per week for one semester.</td>
<td>Examination as required by the Civil Aviation Safety Authority.</td>
</tr>
<tr>
<td>SCA3104</td>
<td>HUMAN FACTORS FOR THE ATPL</td>
<td>Footscray Park</td>
<td>SCA2051, SCA2053, SCA2055, SCA2057, SCA2059, SCA2061, SCA2063</td>
<td>Human Factors in flying sufficient to pass the ATPL Human Factors theory subject 'ATPL Human Factors' examined by the Civil Aviation Safety Authority.</td>
<td>Thom, T., et al, 2000, <em>Aeroplane Operations Performance and Planning for the Air Transport Pilot</em>, Aviation Theory Centre, Melbourne. Subject study notes as provided by the subject lecturer.</td>
<td>1 x 1 hour workshop per week for one semester or equivalent.</td>
<td>Examination as required by the Civil Aviation Safety Authority.</td>
</tr>
<tr>
<td>SCA3110</td>
<td>FLIGHT PLANNING FOR THE ATPL</td>
<td>Footscray Park</td>
<td>SCA2051, SCA2053, SCA2055, SCA2057, SCA2059, SCA2061, SCA2063</td>
<td>Aircraft flight planning theory sufficient to pass the Air Transport Pilot's Licence theory subject 'ATPL Flight Planning' examined by the Civil Aviation Safety Authority.</td>
<td>Thom, T., et al, 2000, <em>Aeroplane Operations Performance and Planning for the Air Transport Pilot</em>, Aviation Theory Centre, Melbourne. Subject study notes as provided by the subject lecturer.</td>
<td>1 x 3 hour workshops per week for one semester or equivalent.</td>
<td>Examination as required by the Civil Aviation Safety Authority.</td>
</tr>
<tr>
<td>SCA3114</td>
<td>AERODYNAMICS AND SYSTEMS FOR THE ATPL</td>
<td>Footscray Park</td>
<td>SCA2051, SCA2053, SCA2055, SCA2057, SCA2059, SCA2061, SCA2063</td>
<td>Aircraft aerodynamics and systems theory sufficient to pass the Air Transport Pilot's Licence theory subject 'ATPL Aerodynamics and Systems' examined by the Civil Aviation Safety Authority.</td>
<td>Thom, T. et al, 2000, <em>Aeroplane Operations Performance and Planning for the Air Transport Pilot</em>, Aviation Theory Centre, Melbourne. Subject study notes as provided by the subject lecturer.</td>
<td>1 x 3 hour workshop per week for one semester or equivalent.</td>
<td>Examination as required by the Civil Aviation Safety Authority.</td>
</tr>
<tr>
<td>SCA3116</td>
<td>PERFORMANCE AND LOADING FOR THE ATPL</td>
<td>Footscray Park</td>
<td>SCA2051, SCA2053, SCA2055, SCA2057</td>
<td>Aircraft performance theory, and loading theory sufficient to pass the Air Transport Pilot's Licence theory subject 'ATPL Performance and Loading' examined by the Civil Aviation Safety Authority.</td>
<td>Thom, T., et al, 2000, <em>Aeroplane Operations Performance and Planning for the Air Transport Pilot</em>, Aviation Theory Centre, Melbourne. Subject study notes as provided by the subject lecturer.</td>
<td>1 x 3 hour workshop per week for one semester or equivalent.</td>
<td>Examination as required by the Civil Aviation Safety Authority.</td>
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<tr>
<td>SCA311B</td>
<td>METEOROLOGY FOR THE ATPL</td>
<td>Footscray Park</td>
<td>SCA2051, SCA2053, SCA2055, SCA2057</td>
<td>Aircraft flight planning theory sufficient to pass the Air Transport Pilot's Licence theory subject 'ATPL Meteorology' examined by the Civil Aviation Safety Authority.</td>
<td>Thom, T. et al, 2000, <em>Meteorology and Navigation for the Air Transport Pilot</em>, Aviation Theory Centre, Melbourne. Subject study notes as provided by the subject lecturer.</td>
<td>1 x 3 hour workshop per week for one semester or equivalent.</td>
<td>Examination as required by the Civil Aviation Safety Authority.</td>
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SCM1115 COMPUTER SYSTEMS AND ARCHITECTURE
Campus Footscray Park
Prerequisite(s) SCA2051, SCA2053, SCA2055, SCA2057, SCA2059, SCA2061, SCA2063
Content Air law sufficient to pass the Air Transport Pilot’s Licence theory subject ‘ATPL Air Law’ examined by the Civil Aviation Safety Authority.
Required Reading Thom, T., et al, 2000, Flight Rules and Air Law for the Air Transport Pilot, Aviation Theory Centre, Melbourne. Subject study notes as provided by the subject lecturer.
Class Contact 1 x 3 hour workshop per week for one semester or equivalent.
Assessment Examination as required by the Civil Aviation Safety Authority.

SCM1114 INTRODUCTION TO COMPUTING AND THE INTERNET
Campus Footscray Park, Hong Kong, Malaysia, Singapore
Prerequisite(s) Nil
Content Algorithms for computational tasks, Overview of the Internet, Internet Connections, Web Design and Authoring, Characteristics and functions of browsers, Resources on the Internet, Surfing the Internet, Future of the Internet, Scripting Languages, The law and computer crimes, Reliability and safety of software systems, Australian Computer Society code of ethics.
Required Reading Ibrahim, Z., 2000, Mastering the Internet and HTM/L, Prentice Hall.
Class Contact Three hours per week for one semester, comprising one hour lecture and two hour laboratory/tutorial.
Assessment Final examination 70%; assignment/laboratory work, 30%.

SCM1115 COMPUTER SYSTEMS AND ARCHITECTURE
Campus Footscray Park, Hong Kong
Prerequisite(s) Nil
Required Reading Nil.
Recommended Reading Brookssear, J.G., 2003, Computer Science: An Overview, 7th edn, Addison-Wesley.
Class Contact Four hours per week for one semester, comprising two one-hour lectures and two one-hour laboratory/tutorial.
Assessment Final examination, 70%; assignment and tests, 30%.

SCM1113 PROGRAMMING 1
Campus Footscray Park, Hong Kong
Prerequisite(s) Nil
Content Introduction to object oriented programming. Basic constructs of a programming language; sequence, selection and iteration. Use of classes and objects. Applets.
Recommended Reading Lewis, J. and Loftus, W., 2003, Java Software Solutions, 3rd edn, Addison-Wesley.
Class Contact Four hours per week for one semester, comprising two hours of lectures and two hours of laboratory/tutorial.
Assessment Final examination, 80%; assignment, 10% and practical work, 10%.

SCM1112 PROGRAMMING 2
Campus Footscray Park, Sydney, Hong Kong, Tianjin
Prerequisite(s) SCM1311 Programming 1.
Content Structured program development through user defined classes. Array, vectors and string data types. File I/O, Inheritance, exceptions, graphical user interface.
Recommended Reading Lewis, J. and Loftus, W., 2003, Java Software Solutions, 3rd edn, Addison-Wesley.
Class Contact Four hours per week for one semester, comprising two hours of lectures and two hours of laboratory/tutorial.
Assessment Final examination, 80%; assignment, 10% and practical work, 10%.

SCM1613 APPLIED STATISTICS 1
Campus Footscray Park, Sydney
Prerequisite(s) Nil.
Content Displaying and describing data. Control charts, Time series, Experimental design, Survey designs.
Required Reading To be advised by lecturer.
Class Contact Four hours per week for one semester, comprising two one-hour lectures and two one-hour tutorials.
Assessment Final examination, 70%; assignment and tests, 30%.

SCM1614 APPLIED STATISTICS 2
Campus Footscray Park, Hong Kong
Prerequisite(s) SCM1611 Applied Statistics 1.
Class Contact Three hours per week for one semester, comprising two one-hour lectures and one one-hour tutorial.
Assessment Final examination, 70%; assignment and tests, 30%.

SCM1711 MATHEMATICAL FOUNDATIONS 1
Campus Footscray Park
Prerequisite(s) Nil.
Content Set theory: basic principles, operations and applications. Propositional logic and Boolean algebra. Introduction to calculus: limits, derivatives; applications to analysis of functions and solution of non-linear equations. Integration and its relationship to differentiation. Linear algebra: vectors, matrices; applications to geometry and linear equations. Use of computer algebra systems for exploration and enhancement.
Class Contact Two hours per week of lectures; one hour per week of tutorial and one hour per week of laboratory work.
Assessment Final examination, 75%; mid semester test, 15%; laboratory work, 10%.
SCM1712 MATHEMATICAL FOUNDATIONS 2
Campus Footscray Park
Prerequisite(s) SCM1711 Mathematical Foundations 1.
Content Discrete mathematics: recursion, induction and recurrence relations; analysis of algorithms; permutations and combinations with applications to the binomial and multinomial theorems. Further calculus: optimization problems; elementary differential equations with applications; numerical integration: trapezoidal rule and Simpson’s rule. Further linear algebra: determinants and matrix inversion; applications to linear and multilinear regression and interpolation. Further use of computer algebra systems for exploration and enhancement.
Class Contact Two hours per week of lectures; one hour per week of tutorial and one hour per week of laboratory work.
Assessment Final examination, 75%; mid semester test, 15%; laboratory work, 10%.

SCM2111 DATA COMMUNICATIONS AND NETWORKS 1
Campus Footscray Park, Hong Kong
Prerequisite(s) SCM1115 Computer Systems and Architecture.
Class Contact Three hours per week for one semester, comprising two one-hour lectures and one one-hour laboratory/tutorial.
Assessment Final examination, 80%; assignment and tests, 20%.

SCM2112 OPERATING SYSTEMS
Campus Footscray Park, Hong Kong
Prerequisite(s) SCM1115 Computer Systems and Architecture.
Content This subject introduces students to the concept and the functions of an operating system. Processes are studied, including classical scheduling algorithms, deadlock resolution and overall functionality. In addition the topics of memory organization including virtual memory, resource management of files, input/output and distributed systems will also be covered. Unix and Windows 2000 will be the two case studies.
Class Contact Three hours per week for one semester, comprising two one-hour lectures and one one-hour laboratory/tutorial.
Assessment Final examination, 80%; assignment and tests, 20%.

SCM2111 DATABASE SYSTEMS 1
Campus Footscray Park, Hong Kong
Prerequisite(s) SCM1114 Introduction to Computing and the Internet; SCM1312 Programming 2.
Recommended Reading Data, C.J. 2000, An Introduction to Database Systems, 7th edn, Addison-Wesley.
Class Contact Three hours per week for one semester, comprising two one-hour lectures and one one-hour laboratory/tutorial.
Assessment Final examination, 70%; assignment and tests, 30%.

SCM2213 COMPUTER GRAPHICS
Campus Footscray Park
Prerequisite(s) SCM1311 Programming 1 or equivalent.
Content This subject introduces the principles of computer graphics and the art in the representation of 2D and 3D pictures, and gives experience in using graphics package OpenGL. The topics cover the use of popular graphics algorithms and techniques for generating 2D and 3D animations. In addition, some advanced topics, such as curves, surface and shading are discussed. Students will have considerable practice in 2D and 3D graphics programming with package OpenGL.
Class Contact Two one-hour lectures and one one-hour laboratory for one semester.
Assessment Laboteory, 10%; Assignment, 30%; Final examination, 60%.

SCM2212 DATABASE SYSTEMS 2
Campus Footscray Park, Sydney, Hong Kong, Malaysia
Prerequisite(s) SCM2211 Database Systems 1, or equivalent.
Content Data analysis and modelling using the Enhanced Entity-Relationship model and normalization. Constraints beyond the EER model, and advanced data modeling issues. Database transactions concept, ACID properties, specification. Transaction processing: commit and rollback, concurrency control, locking, scheduling, and recovery. Database application development using embedded SQL.
Required Reading To be advised by lecturer.
Class Contact Two-hour lecture and one-hour laboratory per week.
Assessment Final examination, 80%; tests, 20%.

SCM2311 OBJECT ORIENTED PROGRAMMING 1
Campus Footscray Park, Sydney, Sydney, Hong Kong, Malaysia
Prerequisite(s) SCM1311 Programming 1; SCM1312 Programming 2.
Content This subject covers the critical concepts and features that support object-oriented programming. Classes and data abstraction, graphical user interfaces, threads, streams and exceptions. Multimedia and networking applications. Mastery of these concepts provide the foundation to practice object-oriented programming in a productive way and the subsequent mastery of the finer points of object-oriented programming.
Required Reading To be advised by lecturer.
Recommended Reading Deitel, H.M. and Deitel, P.J. 2003, JAVA How to Program, 5th edn, Prentice Hall.
SCM2312 SOFTWARE ENGINEERING 1
Campus Footscray Park, Sydney, Hong Kong
Prerequisite(s) SCM1311 Programming 1; SCM1312 Programming 2.

Content This subject represents an introduction to traditional software development and object oriented analysis and design. It is designed to prepare students for final year computer projects. Topics to be covered include: software life cycle, requirements analysis and specification, structured and object oriented design, documentation of software systems.


Recommended Reading To be advised by lecturer.

Class Contact Three hours per week for one semester; comprising two one-hour lectures and one one-hour laboratory/tutorial.

Assessment Final examination, 70%; assignment and tests, 30%.

SCM2313 SOFTWARE DEVELOPMENT
Campus Footscray Park, Sydney, Malaysia
Prerequisite(s) SCM2312 Programming 1; SCM1312 Programming 2.

Content This subject will introduce students to a high level application development language which supports modern graphical interfaces. Students will be expected to develop simple multimedia and/or relational database applications. It is intended that this subject together with Software Engineering 1 will prepare students for final year computing projects. Software tools such as Visual Basic, Access, JAVA.

Required Reading To be advised by lecturer.

Class Contact Three hours per week for one semester; comprising two one-hour lectures and one one-hour laboratory/tutorial.

Assessment Final examination, 70%; project, 30%.

SCM2315 ADVANCED PROGRAMMING
Campus Footscray Park, Hong Kong, Malaysia, Singapore
Prerequisite(s) SCM1311, SCM1312

Content Basic philosophical differences; Fundamental data types; Specific restrictions imposed by this programming language; Class definition; Polymorphism; Operator overloading; Characters and strings; Input & Output; Exception handling; Features and facilities found only in this programming language.

Required Reading Budd, T., 1999, C++ for Java Programmers, Addison Wesley.


Class Contact Three hours per week for one semester; comprising two one-hour lectures and one one-hour laboratory/tutorial.

Assessment Final examination, 75%; assignment and tests, 25%.

SCM2411 MATHEMATICAL ECONOMICS 1
Campus Footscray Park
Prerequisite(s) SCM1614 Applied Statistics 2.


Required Reading McTaggart, D., Findlay, C. and Parkin, M. 2003, Microeconomics, 4th edn, Addison-Wesley.


Class Contact Three hours per week for one semester; comprising two one-hour lectures and one one-hour laboratory/tutorial.

Assessment Final examination, 80%; assignment and tests, 20%.

SCM2412 MATHEMATICAL ECONOMICS 2
Campus Footscray Park
Prerequisite(s) SCM2411 Mathematical Economics 1.


Required Reading Pindyck, R.S. and Rubinfeld, D.L. 2000, Microeconomics, 5th edn, Prentice Hall.


Class Contact Three hours per week for one semester; comprising two one-hour lectures and one one-hour laboratory/tutorial.

Assessment Final examination, 80%; assignment and tests, 20%.

SCM2511 IMAGE PROCESSING 1
Campus Footscray Park, Sydney, Malaysia
Prerequisite(s) SCM1114 Introduction to Computing and the Internet, and one of SCM1711 or SCM1712.

Co-requisites Nil


Required Reading None.


Class Contact Two hours of lectures per week and one hour of practical work for one semester.

Assessment Final examination 75%, laboratory assessment 25%;
Multiple Regression. Simple Diagnostics. Model Building and validation.

**Required Reading**

**Recommended Reading**

**Class Contact**
Three hours per week for one semester, comprising one one-hour lecture and one one-hour tutorial and one one-hour laboratory.

**Assessment**
Final examination, 70%; assignment: 30%

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**SCM2612 FORECASTING**

**Campus**
Footscray Park, Sydney, Hong Kong, Malaysia

**Prerequisite(s)**
SCM1613, SCM1614

**Content**

**Required Reading**
Nil.

**Recommended Reading**

**Class Contact**
Three hours per week for one semester, comprising one one-hour lecture and one one-hour laboratory.

**Assessment**
Laboratory test, 10%; Project, 40%; Examination, 50%.

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**SCM2613 STATISTICAL DATA MINING**

**Campus**
Footscray Park, Hong Kong, Malaysia, Singapore

**Prerequisite(s)**
SCM1614

**Content**
Statistical datamining methods, cluster analysis, discriminant analysis, issues in sampling and estimation, using the bootstrap, non-parametric methods.

**Required Reading**

**Class Contact**
Three hours per week for one semester, comprising one one-hour lecture, one one-hour tutorial and one one-hour practical.

**Assessment**
Final examination, 60%; assignments and tests, 40%.

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**SCM2712 ANALYSIS OF CONTINUOUS PROCESSES**

**Campus**
Footscray Park

**Prerequisite(s)**
SCM1712 Mathematical Foundations 2.

**Content**

**Required Reading**
Nil.

**Recommended Reading**

**Class Contact**
Three hours per week for one semester, comprising two one-hour lectures and one one-hour laboratory/tutorial.

**Assessment**
Final examination, 80%; assignment, and test, 20%.

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**SCM2713 MODELLING FOR DECISION MAKING**

**Campus**
Footscray Park, Hong Kong, Malaysia, Singapore

**Prerequisite(s)**
SCM1711, SCM1712

**Content**

**Required Reading**

**Recommended Reading**

**Class Contact**
Three hours per week for one semester, comprising two one-hour lectures and one one-hour laboratory/tutorial.

**Assessment**
Final examination, 80%; assignments, 20%.

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**SCM2911 LINEAR OPTIMISATION MODELLING**

**Campus**
Footscray Park

**Prerequisite(s)**
Nil.

**Content**
Introduction to linear programming. Mathematical models; Graphical solution; Maximisation and minimation problems; Spreadsheet models. Sensitivity analysis for LP; Applications of LP; Transportation problem. Simplex method for solving Linear Assignment problems. Pure and mix integer linear programming. Knapsack problems.

**Required Reading**
Current available textbook. Student to be advised.

**Recommended Reading**

**Class Contact**
Three hours per week; two hours and one hour tutorial and/or laboratory.

**Assessment**
Participation in tutorials, 5%; test 15%; assignment, 10%; final examination, 70% three hours; to obtain a grade of pass or better, a student must obtain 50% or more in the final examination.
SCM2912 PROJECT SCHEDULING

Campus: Footscray Park, Sydney, Hong Kong, Malaysia
Prerequisite(s): Nil


Required Reading: Current available textbook - Student to be Advised.


SCM2913 OPTIMISATION METHODS 1

Campus: Footscray Park
Prerequisite(s): SCM1613 Applied Statistics 1 or equivalent


Required Reading: Anderson, Sweeney and Williams, 1999, Contemporary Management Science with Spreadsheets, South Western.

SCM2915 STOCHASTIC AND COMBINATORIAL OPTIMISATION

Campus: Footscray Park, Hong Kong, Singapore
Prerequisite(s): SCM1613 or equivalent.

Content: Decision Analysis: Decision Making without and with Probabilities, Decision Trees, EVPI and ESVI. Multi criteria Decision Making: Scoring Model, analytical hierarchy Process; Spreadsheet Analysis: Selected Combinatorial Optimisation. Models: Network Models - spanning tree, shortest path, and maximum flow problems; Set Covering Problem; Cutting Stock Problem; Bin Packing Problem. Queueing (Waiting Line) Theory: Basic components of a queuing model, arrival and service time distributions, operating characteristics of a queuing system; multiple server models; no waiting time and finite calling population; Economic Analysis; Spreadsheet Analysis.

Required Reading: Anderson, Sweeney and Williams, 1999, Contemporary Management Science with Spreadsheets, South Western College Publishing.

Recommended Reading: Winston, W.L., 1994, Operations Research: Applications and Algorithms, 3rd edn, Duxbury. Subject notes will be supplied to supplement the textbook as necessary.

Class Contact: Three hours per week for one semester; two hours lecture and one hour tutorial/laboratory.

Assessment: Participation in Tutorials, 5%; Class Test, 15%; Assignment, 10% Final examination, 70%. To obtain a grade of pass or better a student must obtain 50% or more in the final examination.

SCM3001 PROJECT 1

Campus: Footscray Park, Sydney, Hong Kong, Malaysia
Prerequisite(s): 10 Electives

Content: This subject is based and involves projects with industry sponsors selected by the University. Students work in groups under the supervision of an Academic Staff member. For computing projects students are required to submit a specification document, a final project report and demonstrate the software. For non-computing projects students are required to submit a project specification and a final project report. In addition, all groups present progress and final oral presentations to other students, staff and industry partners.

Required Reading: Nil.

SCM3002 PROJECT 2

Campus: Footscray Park, Sydney, Hong Kong, Malaysia
Prerequisite(s): 10 Electives

Content: This subject is based and involves projects with industry sponsors selected by the University. Students work in groups under the supervision of an Academic Staff member. For computing projects students are required to submit a specification document, a final project report and demonstrate the software. For non-computing projects students are required to submit a project specification and a final project report. In addition, all groups present progress and final oral presentations to other students, staff and industry partners.

Required Reading: Nil.

SCM3111 DATA COMMUNICATIONS & NETWORKS 2

Campus: Footscray Park
Prerequisite(s): SCM2111 Data Communications & Networks 1


Class Contact: Three hours per week.

Assessment: Based on performance in the projects oral presentations and quality of final reports.

SCM3112 USER INTERFACE DESIGN

Campus: Footscray Park, Sydney, Hong Kong, Malaysia
Prerequisite(s): SCM1114 Introduction to Computing and the Internet 1, plus 8 electives.
SCM3111 MULTIMEDIA SYSTEMS DESIGN

Campus
Footscray Park

Prerequisite(s)
SCM1114 Introduction to Computing and the Internet; SCM1115 Computer Systems and Architecture.

Content

Required Reading

Class Contact
Three hours per week for one semester, comprising two one-hour lectures and one one-hour laboratory/tutorial.

Assessment
Final examination, 50%; assignment and tests, 50%.

SCM3115 ARCHITECTURES FOR ENTERPRISE WIDE COMPUTING

Campus
Footscray Park, Sydney, Hong Kong, Malaysia

Prerequisite(s)
SCM1115, SCM2211

Content
The client/server model. Comparison to mainframe environment; legacy system connections; mission critical services. Client and server roles. Network services; middleware and controlware; Two, three and n-tier architectures; integration layers; interfacing protocols and procedures. Client/server analysis modeling. Requirements determination; data models and object modeling; business process concepts and models. Data Base and user Interface Design. Database systems and services; integrated information architectures; linking multiple databases; GUI standards and design recommendations. Client/server development environments. Object building blocks; prototyping services; rapid application development; testing and validation. Extensions of the client/server model. Remote method invocation; CORBA; applications involving remote processing.

Required Reading

Class Contact
Three hours per week for one semester, comprising two one-hour lectures and one one-hour laboratory/tutorial.

Assessment
Final examination, 70%; assignment and tests, 20%.

SCM3211 DATABASE SYSTEMS 3

Campus
Footscray Park, Singapore, Hong Kong, Malaysia

Prerequisite(s)
SCM2218 Database Systems 2.

Content
Data warehouse, datamart, knowledge discovery in databases, data mining algorithms, online analytical processing (OLAP), online transaction processing (OLTP), hypercubes, star schemas, Multidimensional analysis, ROLAP and MOLAP.

Required Reading
Nil.

Recommended Reading
SCM3411 MATHEMATICAL ECONOMICS 3

Campus: Footscray Park

Prerequisite(s): SCM2411 Mathematical Economics 1.


Class Contact: Three hours per week for one semester, comprising two one-hour lectures and one one-hour laboratory/tutorial.

Assessment: Final examination, 70%; Assignment and test, 30%.

SCM3511 IMAGE PROCESSING 2

Campus: Footscray Park

Prerequisite(s): SCM2511 Image Processing


Class Contact: Three hours per week for one semester, comprising two one-hour lectures and one one-hour laboratory/tutorial.

Assessment: Final examination, 70%; assignment and tests, 30%.

SCM363 TIME SERIES ANALYSIS

Campus: Footscray Park, Hong Kong, Malaysia, Singapore

Prerequisite(s): SCM2612 Forecasting or equivalent.


Class Contact: Three hours per week comprising two hours lecture and one hour laboratory.

Assessment: Final examination, 50%; project, 50%.

SCM3614 EXPERIMENTAL DESIGN 1

Campus: Footscray Park

Prerequisite(s): SCM1613 and SCM1614.

Content: The differences between experiments and observational studies. Completely randomised and randomised block experiments. Two-level factorial and fractional factorial designs. Response Surface designs and analysis. An introduction to designs with factors at more than two levels. Taguchi methods.

Required Reading: To be advised by lecturer.


Class Contact: Three hours per week for one semester, comprising one one-hour lecture, one one-hour tutorial/practical class and one one-hour laboratory.

Assessment: Final examination, 70%; assignment and tests, 30%.

SCM3615 MULTIVARIATE STATISTICS

Campus: Footscray Park

Prerequisite(s): SCM2611 Linear Statistical Models, SCM2711 Discrete Mathematics.

Content: Revision and extension of work previously covered on matrix algebra. Brief discussion of multivariate distributions with particular reference to the multivariate normal distribution and discussion of multivariate statistical tests. A selection of topics from discriminant analysis, principal components, factor analysis, regression analysis.


Class Contact: Three hours per week for one semester, comprising two hours of lectures and one hour of laboratory/tutorial.

Assessment: Final examination, 80%; Test, 20%.
SCM3711 COMPUTATIONAL METHODS
Campus Footscray Park
Prerequisite(s) SCM2712 or SMA2201 or SMA2801.
Content This subject is designed for students interested in applying knowledge of programming techniques to solving applied computational problems. Topics include approximation and interpolation, optimization and root finding, quadrature, spectral decomposition and methods for differential equations. A variety of practical applications will be considered.
Required Reading Nil
Class Contact Three hours per week for one semester, comprising two one-hour lectures and one one-hour laboratory/tutorial.
Assessment Final examination, 80%; assignment and tests, 20%.

SCM3712 CODING, CRYPTOGRAPHY AND COMPUTER SECURITY
Campus Footscray Park, Sydney, Malaysia
Prerequisite(s) SCM1711 Mathematical Foundations 1 and SCM1712 Mathematical Foundations 2.
Content Information Theory, error correcting and error control codes, cryptosystems and secure protocols, one way functions, public key systems, Data Encryption Standard.
Class Contact Three hours per week for one semester, comprising two one-hour lectures and one one-hour laboratory/tutorial.
Assessment Final examination, 80%; assignment and tests, 20%.

SCM3713 DISCRETE MATHEMATICAL MODELLING
Campus Footscray Park
Prerequisite(s) SCM2711 Discrete Mathematics.
Content A selection from: Petri nets; Chaos and Fractals; z-transforms; Combinatorics; Data Compression and Transmission.
Required Reading Nil.
Class Contact Three hours per week for one semester, comprising two one-hour lectures and one one-hour laboratory/tutorial.
Assessment Final examination, 80%; assignment and tests, 20%.

SCM3911 SIMULATION
Campus Footscray Park, Hong Kong
Prerequisite(s) Pass in eight electives (advisory). Students should have successfully completed second year.
Content On completion of the subject, students should be able to: understand the philosophy and concepts of simulation; have a good knowledge and understanding of a modern simulation language including principles of modelling; design, justify, and implement computer-based models of the operation of manufacturing and business systems.
Required Reading SCM3911 Lecture Notes.
Recommended Reading To be advised by lecturer.

Class Contact Six hours per week for one semester comprising three hours of lectures, one hour tutorial and two hour practical classes.

Assessment Assignment, 10%; Practical work, 20%; Examination, 70%.

SCS1500 CHEMISTRY AND BIOLOGY

Campus Footscray Park

Prerequisite(s) Nil.

Content Semester one: Fundamental concepts from general chemistry including: modern atomic theory and the periodic classification of elements; various types of chemical bonding between atoms; chemical reactions, equations, quantities and calculations using molar equivalent entities and stoichiometric balances; the nature of solutions, solubility products, acid-base theory and reactions and the concept of pH; introduction to electrochemistry and oxidation-reduction reactions; reaction equilibrium constants and reaction kinetics; introduction to organic chemistry via polymer chemistry.

Semester two: Characteristics of the living condition, the chemical and structural basis of life, cells and their environment, photosynthesis, respiration, cell energy and growth. The diversity of life. Basic biology of plants and animals, including their natural history, evolutionary history and phylogeny, systems and taxonomy (including basic classification), structure and function, anatomy and physiology. Importance of maintenance of biological diversity and brief introduction to ecology.

Required Reading To be advised by lecturer.


Class Contact Three hours per week for two semesters based on 1.5 hours lectures and 1.5 hours tutorials/ laboratory sessions.

Assessment Assignments, laboratory reports and unit tests, 50%; end-of-semester examinations, 50%. A satisfactory level of assessment for each component is required for a subject pass.

SCS1601 CHEMISTRY IA

Campus Werribee

Prerequisite(s) Nil.

Content Chemistry methods and measurements; atomic theory and the periodic table; structures and properties of ionic and covalent compounds; chemical equation, reactions and solutions; coordination chemistry; acids and bases.

Required Reading Chang, R., Essential Chemistry ( A Core Text for General Chemistry), 2nd edn, McGraw-Hill. Laboratory manuals as directed.

Recommended Reading Denniston, Topping, Caret, General, Organic and Biochemistry, 3rd edn, McGraw-Hill.

Class Contact Three hours per week comprising one hour of tutorial and three hours of practical classes per week.

Assessment Laboratory work, 30%; tutorial assessments, 15%; examination, 55%.

SCS1602 CHEMISTRY IB

Campus Werribee

Prerequisite(s) Nil.

Content States of matter; physical and chemical changes (energy, rate and equilibrium); oxidation-reduction reaction (electrochemistry); the nucleus, radioactivity and nuclear medicine; Organic chemistry; saturated and unsaturated hydrocarbons; alcohol phenols, thiols and others; aldehydes and ketones; carboxylic acids and their derivatives; amines and amides; biological chemistry.

Required Reading Chang, R., Essential Chemistry ( A Core Text for General Chemistry), 2nd edn, McGraw-Hill. Laboratory manuals as directed.

Recommended Reading Denniston, Topping, Caret, General, Organic and Biochemistry, 3rd edn, McGraw-Hill.

Class Contact Three hours per week comprising one hour of tutorial and three hours of practical classes per week.

Assessment Practical work, 30%; tutorial assessments, 15%; examination, 55%.

SCS1603 MEDICAL, FORENSIC AND ANALYTICAL CHEMISTRY IA

Campus Werribee

Prerequisite(s) Nil.

Content An introduction to the principles and methodology of forensic chemistry. Areas of study include volatile physical evidence, fire investigation, the examination of firearm projectiles and chemical trace evidence such as fibres. The role of the forensic chemist will also be addressed. Students will also be introduced to analytical chemistry. Areas of study here include measurements in the analytical laboratory and solutions and concentrations.


Class Contact Two hours of lectures per week for one semester.

Assessment Examination, 100%.

SCS1604 MEDICAL, FORENSIC AND ANALYTICAL CHEMISTRY IB

Campus Werribee

Prerequisite(s) Nil.

Content . Students will be introduced to classical analytical chemistry including volumetric analysis and methods based on analytical separations. The evaluation of analytical results will also be addressed. Analytical instrumentation will also be introduced. Topics here include atomic absorption spectrometry, ultraviolet/visible spectrophotometry, mass spectrometry, gas and liquid chromatography. An introduction to medical chemistry via the basic concepts relevant to the topic of chemical homeostasis and the medical conditions associated with the disturbance of chemical homeostasis.


Recommended Reading Students will be directed towards relevant sections of various analytical and physiological literature.

Class Contact Two hours of lectures per week for one semester.

Assessment Examination, 100%.

SCS2000 INDUSTRIAL EXPERIENCE 2

Campus Footscray Park

Prerequisite(s) Nil.

Credit Points 15 per semester for two semesters.

Content No formal content, but student will be required to provide evidence of appropriate industrial experience, acceptable to the Head of School. Students should consult with appropriate staff prior to commencing the subject to ensure this situation is acceptable to the School.

Class Contact No set contact hours.

Assessment Evidence of appropriate industrial experience in the form of a letter from the employer detailing the experience is required.
SCS2001 MINOR PROJECT

Campus Footscray Park

Prerequisite(s) Nil.

Content The subject aims to develop understanding and skills related to setting up, conducting and successfully completing, an occupational health and safety project. Methodologies; ergonomics, incident investigation, occupational hygiene, risk analysis, system safety. Problem formulation and problem definition, project management, publication of project outcomes, case studies.


Class Contact Three hours of lectures/tutorials per week for one semester.

Assessment Practical assignments (2 x 40%), 80%; oral class presentation, 20%.

SCS2071 BIOLOGICAL CHEMISTRY

Campus Footscray Park

Prerequisite(s) Nil

Content The aim of this unit is to cover chemical, biological and biochemical topics that have relevance to occupational health professionals. Initially this unit will review basic chemical concepts and aspects of physical and organic chemistry that relate to biological and health science studies. Where possible particular emphasis is placed on the functional characteristics of biological molecules. The later topics deal with the interaction of xenobiotics with biological molecules. This entails the description of hypotheses on the actions of volatiles on the neuron membrane, enzyme inhibition and drug-receptor theory. Aspects of pharmacogenetics, drug tolerance, substance abuse and allergies are also covered.


Class Contact Two hour lecture or tutorial per week for one semester. Delivered through Web-CT.

Assessment Assignment, 40%; tutorials, 20%; case studies, 40%.

SCS2101 TASK ANALYSIS AND JOB DESIGN

Campus Footscray Park

Prerequisite(s) Nil

Content Descriptive task analysis techniques, inferential task analysis techniques, the benefits of task analysis, the task analysis statement, history of job design, techniques of job design, measures of job design, the benefits of improved job design, who wants to know about job design?


Class Contact Two hours of lectures/tutorials per week for one semester.

Assessment Work based written assignments (2 x 50%), 100%.

SCS2290 PROCESS ENGINEERING 1

Campus Werribee

Prerequisite(s) Students would normally be expected to have successfully completed SPH1210 Physics IF and SMA1110 Mathematics 1.

Content The subject aims to introduce students to basic engineering principles and to unit operations involved in food processing. Topics covered include: dimensions and units; material and energy balances; process flow diagrams; fluid flow theory and applications; heat transfer theory; applications and equipment; mechanical separation processes; instrumentation and control.

Required Reading To be advised by lecturer.

Class Contact Four hours per week comprising lectures and tutorials for one semester.

SCS2270 ENVIRONMENTAL SCIENCE A

Campus Footscray Park

Prerequisite(s) SCS1500 Chemistry and Biology (for Environmental Engineering students only)

Co-requisite(s) EZW2110 Principles of Material Science (for Civil Engineering students only)

Content Semester One: Overview of man made and natural environmental problems. Materials and energy balances. Introduction to climate, meteorology, atmospheric phenomena and a hydrologic cycle. Measurement of precipitation, evaporation and stream flow. Basic principles of ecology; ecosystem structure and biomes, trophic level and productivity; chemical cycling, ecological niches, changes in ecosystems, land carry capacity, urban systems vs natural ecosystems.

Semester two: Review of important concepts from general chemistry. Introduction to organic chemistry and organic waste materials. Key parameters in water chemistry and review of solubility considerations and precipitation. Basic concepts on colloids, Fundamentals of soil chemistry, soil solutions, importance and availability of key elements, soil pH. The major gases and introduction to air chemistry Microbiology major microbial groups conditions for growth and population dynamics, effects of microbes on the environment, role in disease transmission and epidemiology.


Class Contact Three hours per week for two semesters based on two hours lectures and one hour laboratory/ tutorial sessions.

Assessment Assignments and laboratory work, 30%; end of semester examinations, 70%. A satisfactory level of assessment for each component is required for a subject pass.

SCS2301 STUDY DESIGN

Campus Footscray Park

Prerequisite(s) Nil

Content Asking a question - what information do you need?, designing a study, testing hypotheses, designing forms and questionnaires for studies, setting up the data file, summarising data, testing hypotheses about independence, testing hypotheses about dependence, measuring association.

Required Reading To be advised by lecturer.

Class Contact Two hours of lectures/tutorials per week for one semester.

Assessment Assignments, 100%.

SCS2372 TOXICOLOGY 1B

Campus Werribee

Prerequisite(s) SCS1110/ SCS1120 Chemistry for Bioscience and SBM1518/ 1528 Human Physiology or equivalent units.

Content The dose determines if a chemical produces a toxic or no toxic response and this is the basic tenet of this unit. Topics will introduce students to principles applied to studying dose and toxic responses attributable to substances. This unit can be sectioned into four modules. These are toxicology and society; thresholds and the dose response effects; toxicokinetics and biotransformation; and mechanisms of toxicity. The unit also covers sources of chemical and toxicological information and how to approach the assessment of a problem involving a chemical hazard that will cause toxic injury. On completion of the unit, students are expected to be familiar with mechanisms of toxicity and the way that sensitive cells can be affected by specific substances as well as recognising the ways that the body process xenobiotics.

Assessment Assignments, 30%; final examination, 70%.
SCS2373 TOXICOLOGY 1A

Campus: St Albans

Prerequisites: SCS1110/SCS1120 Chemistry for Bioscience and SBM1518/1528 Human Physiology or equivalent units.

Content: This unit covers the possible adverse effects from exposure to hazardous chemicals in work environments. Topics include the description of adverse outcomes such as neurotoxicity, hepatotoxicity, and carcinogenicity that follow exposure to specific substances. In covering these and other toxic outcomes the student will recognise various substances that have documented effects on the nervous, reproductive, cardiovascular, renal and hepatic systems, or are listed as genotoxins, mutagens or carcinogens. On completion of the unit, students are expected to be familiar with substances that show specific toxicological effects and recognise the mechanism of toxicity for specific drugs, solvents, metals and pesticides. Additional topics discussed in this subject are biological monitoring, health surveillance, ecotoxicology, effects of food toxins, and ionising radiation and electromagnetic field effects. Part of the unit assessment involves reviewing toxicology and occupational medicine journal articles.

Required Reading: Cassandra, J. D., 2001, Toxicology: The Basis of Poisonology, 6th edn, Mosby, or relevant literature.

Class Contact: Two hour lectures or tutorials for one semester delivered through Web-CT.

Assessment: Assignment (50%) and a case study (50%)

SCS2381 BIOCHEMISTRY 1

Campus: Footscray Park

Prerequisite(s): SCS1501 Medical Forensic and Analytical Chemistry 1, SCS1006 Chemistry 1.

Content: This subject aims to give an overview of the bases of biochemistry. Topics covered include enzymes; bioenergetics; metabolism; hormone action and hormonal regulation of blood glucose. The practical component of this subject emphasises the application of analytical techniques in biochemistry.

Required Reading: To be advised by the lecturer.

Class Contact: Two hours of lectures and three hours of practical work per week for one semester.

Assessment: Based upon practical reports, a practical examination, short tests and an end-of-semester examination.

SCS2431 ENVIRONMENTAL MEASUREMENT & ANALYSIS 1

Campus: Footscray Park

Prerequisite(s): SCS1006 Chemistry 1, SBM1518 Human Physiology 1.

Co-requisite(s): Nil.

Content: To familiarise students with the fundamental concepts and methods of environmental measurement and analysis (EMA) and to provide practical experience in some of the more widely used methods. Overview of the environmental and environmental sampling procedures. Transport of pollutants in the environment. Techniques and equipment used in environmental sampling and measurement. Experimental designs in EMA including: controls and blanks, introductory random sampling, field data manipulation, optimal sample size, introduction to factorial designs and Latin squares. Selected experimental methods used in EMA. [Note: This subject is a revised version of the existing subject SCS2421 Environmental Measurement and Analysis, and is deemed to be equivalent in content to the latter.]


Class Contact: Two hour lectures or tutorials for one semester delivered through Web-CT.

Assessment: Assignments (65%) and a case studies (35%)
SCS2521 APPLIED CHEMISTRY 2 - ORGANIC

Campus Werribee
Prerequisite(s) SCS1006 Chemistry 1
Co-requisite(s) Nil

Content The aims of this subject are to introduce students to fundamental aspects of synthetic organic chemistry, organic reaction mechanisms along with applications of spectroscopy to organic chemistry. Aromaticity. Electrophilic and nucleophilic aromatic substitution - use in synthesis. Physical, organic chemistry, spectroscopy, including UV, IR, NMR and mass spectroscopy. Chemistry of carbon-bond - applications in synthesis. The chemistry of free radicals. The chemistry of carbocations. Organic synthesis, particular emphasis will be placed on the relationship of this chemistry to industrial chemistry. Practical exercises providing substantial hands-on experience with chromatographic and spectroscopic instrumentation will complement the lecture material.


Class Contact Five hours per week for two semesters, comprising two hours of lectures and three hours of practical work.
Assessment End-of-semester examination, 60%; practical work 20% and two assignments 20%.

SCS2562 ENVIRONMENTAL CHEMISTRY

Campus St Albans
Prerequisite(s) SCS131/1542 Chemistry 1B/2B or SCS11/1522, Chemistry 1A/2A.

Content Basic principles of environmental chemistry. The chemistry of the air, water and land, and the relationship between them. Sources of pollution including industry and agriculture.

Required Reading Manahan, S.E., Environmental Chemistry, Lewis Publishers.

Class Contact Four hours of lectures per week for one semester.
Assessment Assignments, 40%; final examination, 60%.

SCS2580 CHEMISTRY 4F

Campus Werribee
Prerequisite(s) SCS1003 Chemistry 1E

Content The mathematical basis of physical chemistry. Aspects of thermodynamics, kinetics, electrochemistry and surface chemistry which are applicable to the food industry, and are of environmental, biological and industrial importance. Bonding theories as they apply to inorganic and organometallic systems. Spectroscopy in inorganic chemistry. Inorganic and organometallic reaction mechanisms. Inorganic and organometallic chemistry in industry. Bioinorganic chemistry including the essential trace elements, chemical speciation, trace element toxicity, metalloproteins and metalloenzymes, the biochemistry of iron and other metals, biological electron transfer, trace element toxicity, metalloproteins and metalloenzymes, the biochemistry of iron and other metals, biological electron transfer, metal complexes as chemotherapeutic agents.


Class Contact Three hours per week for one semester, comprising three hours of lectures tutorials. Plus twelve hours of laboratory comprising four laboratories of three hours.
Assessment Study guides, 10%; assignments and practical work, 30%; final examination, 60%.

SCS2601 ANALYTICAL CHEMISTRY 2A

Campus Werribee
Prerequisite(s) SCSSxx Chemistry 1A, SCSSxxx Chemistry 1B or equivalent

Content Statistics of errors and treatment of analytical data. Sampling of complex materials. Analytical methods based on emission and absorption of radiation including UV visible and fluorescence spectroscopy. Introduction to NMR and mass spectrometry. Practical exercises will provide substantial hands-on experience with modern analytical instruments and will illustrate important analytical and physicochemical techniques.


Recommended Reading To be advised by lecturer and will be based on the most current texts and journal articles that are relevant to the subject.

Class Contact Two hours per week of lectures and three hours of laboratory classes per week for one semester.
Assessment Students will be assessed on the basis of an examination, 70%; and practical work, 30%. Students must pass the practical component in order to pass this subject.

SCS2602 ANALYTICAL CHEMISTRY 2B

Campus Werribee
Prerequisite(s) SCSSxx Chemistry 1A, SCSSxxx Chemistry 1B or equivalent

Content Principles of instrumentation. Chromatographic methods including gas chromatography and liquid chromatography. Introduction to electrochemical methods. Analytical separation techniques and processes. Practical exercises will provide substantial hands-on experience with modern analytical instruments and will illustrate important analytical and physicochemical techniques.


Recommended Reading To be advised by lecturer and will be based on the most current texts and journal articles that are relevant to the subject.

Class Contact Two hours per week of lectures and three hours of laboratory classes per week for one semester.
Assessment Students will be assessed on the basis of an examination, 70%; and practical work, 30%. Students must pass the practical component in order to pass this subject.

SCS2610 PLASTICS IN THE ENVIRONMENT

Campus Werribee
Prerequisite(s) Nil
Co-requisite(s) Nil

Content The aim of this subject is to identify the common synthetic polymers that are used by our society and to consider how the mechanical properties, and hence the service lives, of these are influenced by the environmental factors of heat, light and biological activity.
Topics to be covered include: the identities and chemical structures of the commercially important synthetic polymers; an introduction to the principles of thermal and photochemical degradation and stabilisation of synthetic polymers; biological degradation of some synthetic polymers such as polyethylene: the benefits and disadvantages to the environment of polymer degradation and stabilisation; techniques for measuring rates of degradation; accelerated degradation.


**Class Contact** Six hours per week for one semester comprising one two-hour lecture, one one-hour tutorial and one three-hour laboratory session.

**Assessment** Practical work 40%, final examination 60.

**SCS260 INDOOR AIR QUALITY**

**Campus** Footscray Park

**Prerequisite(s)** SCS1003 Chemistry 1E

**Co-requisite(s)** Nil.

**Content** To provide an understanding of the concepts and important techniques used in the assessment and control of indoor air quality.

Topics covered in the course will include: the importance of indoor air quality (IAQ) in modern society; types of volatile organic compounds (VOCs) in indoor air; sources and sinks of VOCs; techniques for measuring VOCs; sick building syndrome; other considerations in IAQ analysis – microbiological organisms and dust particulates; methods of reducing VOCs in indoor air.


**Class Contact** Two hours of lectures per week for one semester.

**Assessment** Final examination 80%; assignments and written work 20%.

**SCS3000 INDUSTRIAL EXPERIENCE 3**

**Campus** Footscray Park

**Prerequisite(s)** Nil.

**Content** No formal content, students will be required to provide evidence of appropriate industrial experience, acceptable to the Head of Department. Students should consult with the appropriate staff prior to commencing the subject to ensure this situation is acceptable to the School.

**Class Contact** No set contact hours.

**Assessment** Evidence of appropriate industrial experience in the form of a letter from the employer detailing the experience is required.

**SCS3061 SAFETY 3**

**Campus** Footscray Park

**Prerequisite(s)** Nil.

**Content** The subject aims to provide an understanding of the benefits of safety science and the difficulties which may be involved in obtaining these: Topics to be covered include: Safety science – The quantitative level of operation, How is safety science different, Examples and reviews of case studies, the safety science study, Costs and benefits, difficulties in the conduct of safety science studies and how to avoid, overcome these.

**Required Reading** To be advised by lecturer.

**Class Contact** Two hours per week comprising one one-hour lecture and one one-hour tutorial for one semester.

**Assessment** Assignment, 100%.

**SCS3101 REHABILITATION**

**Campus** Footscray Park

**Prerequisite(s)** Nil.

**Content** Disability management; how far does it go?, the team and the tools; what may be possible?, assessment and planning; the administrative approach, rehabilitation strategies; the qualitative approach, case closure, case cost; the quantitative approach, preventive measures; rehabilitation as learning experience, getting corporate commitment to rehabilitation.


**Class Contact** Two hours of lectures/tutorials per week for one semester.

**Assessment** Case studies; a journal and a case review (2 x 50%), 100%.

**SCS3161 SAFETY AND SOCIETY**

**Campus** Footscray Park

**Prerequisite(s)** Nil.

**Content** The subject aims to provide an understanding of the impact of the wider community on the field of occupational health and safety. Topics include: The wider community and the management of occupational health; a historical overview, the origins, management and regulation of occupational illness, community processes, a paradigm shift in occupational health and safety, disputes in relation to occupational health and safety, the need for legal change, approaches to safeguarding the worker; a critical review of income maintenance.


**Class Contact** Two hours per week comprising one one-hour lecture and one one-hour tutorial for one semester.

**Assessment** Two assignments (40% and 60%), 100%.

**SCS3301 PUBLIC HEALTH**

**Campus** Footscray Park

**Prerequisite(s)** Nil.

**Content** Topics covered in this unit include the historical origins and development of public health, initiatives and policies in public health, common risk factors associated with the development of disease, ongoing programs to improve health outcomes in specific high-risk socio economic groups, health promotion in the workplace, and the effect of a persons health status on work and employment.

**Required Reading** Articles from *Australian Journal of Public Health* and from other journals. Lecture notes.


**Class Contact** One hour lecture or tutorial for one semester delivered through Web-CT.

**Assessment** Assignment, 60%; and case study, 40%.

**SCS3361 ENVIRONMENTAL HEALTH**

**Campus** Footscray Park

**Prerequisite(s)** Nil.

**Content** This unit discusses the nature of the ‘environmental idea’. The unit examines aspects of environmental economics, cost utility and social and political theories on responsible management of the environment. In the context of health and the environment the unit describes the roles of the environmental health officer, control vectors borne disease and the reduction of exposure to hazards that
affect health. Some hazards discussed include food, water, air contamination and management of waste. Quality of the environment and environmental protection are also covered in this unit.


Recommended Reading http://www.ea.gov.au/soe/

Class Contact Two hour lectures per week for one semester delivered through Web-CT.

Assessment Assignment (60%) and assignment (40%)

SCS3401 OCCUPATIONAL HEALTH AND SAFETY BEST PRACTICE

Campus Footscray Park

Prerequisite(s) Nil.

Content The subject will provide an understanding of occupational health and safety practices which are effective in corporate settings; the occupational health and safety practices which are effective in governmental settings; and the occupational health and safety practices which are effective in governmental settings. The content will also cover the evaluation of the setting and selection of occupational health and safety practices which will be appropriate, including the selection of occupational health and safety practices which will be comfortable.

Required Reading Kehr, M. 1993, How to Select and Use Consultants, ILO, Geneva. (No.51 in the Management Development series.)

Class Contact Two hours of lecture/tutorials per week for one semester.

Assessment The assessment will be two take home assignments. One of these involves evaluation of a consultant’s proposal (1500 words - 30%) and the other is a practical exercise, a final report on a safety case study (3000 words - 70%).

SCS3411 ENVIRONMENTAL LEGISLATION

Campus St Albans

Prerequisite(s) Nil.


Required Reading To be advised by lecturer.

Class Contact Four hours of lectures per week for one semester.

Assessment Fieldwork and assignments, 40%; examinations, 60%.

SCS3431 ENVIRONMENTAL MEASUREMENT & ANALYSIS 2

Campus Werribee

Prerequisite(s) SCS1003 Chemistry 1E, SBF1310 Biology 1

Co-requisite(s) Nil.

Content To provide an understanding of important techniques and instrumental methods used in environmental measurement and analysis (EMA) and to provide practical experience in some of the more widely used methods. A detailed discussion of selected instrumental methods commonly used in modern EMA programs will be presented and illustrated by accompanying laboratory exercises. The methods will be drawn from a list which includes: fluorimetry, UV-visible spectrophotometry, chromatography, conductivity, electrochemical analysis and atomic absorption spectrophotometry. Emphasis will be placed on the analytical protocols and the use of modern instrumentation as analytical tools in the subject. [This subject is considered to be a separate subject.]


Class Contact Six hours per week for one semester comprising two hours of lectures, one-hour tutorial and one three-hour laboratory session.

Assessment Practical work 40%, final examination 60%.

SCS3481 LIQUID AND SOLID WASTES

Campus St Albans

Prerequisite(s) SCS2413 Introduction to the Environment; SCS2432 Environmental Science.

Content Liquid Waste: Nature and treatment; domestic and industrial; preliminary and non-biological treatments; biological treatment processes; disposal; water reclamation and use; legal considerations. Solid Wastes: Nature and treatment; collection strategies; disposal methods; recycling; waste minimisation; the handling and disposal of hazardous and toxic wastes; legislative aspects.

Required Reading To be advised by lecturer.

Class Contact Three hours per week for two semesters.

Assessment Practical work and assignments, 30%; examination, 70%.

SCS3492 AIR QUALITY MANAGEMENT

Campus St Albans

Prerequisite(s) SCS2413 Introduction to the Environment; SCS2432 Environmental Science.

Content Nature, measurement and control; monitoring, sampling and analytical techniques of air pollutants; engineering aspects; design and optimisation of air pollution monitoring and control equipment; pollution considerations.

Required Reading To be advised by lecturer.

Class Contact Three hours per week for one semester.

Assessment Assignments, practical work, 30%; final examination, 70%.

SCS3521 APPLIED CHEMISTRY 3 - ORGANIC

Campus Footscray Park

Prerequisite(s) SCS2521 Applied Chemistry 2 - Organic

Co-requisite(s) Nil.

Content The aims of this subject are to introduce students to advanced analytical and organic chemistry including synthesis, natural product chemistry, the application of sophisticated
spectroscopic techniques and the role of chemistry in an industrial environment. Applications of advanced spectroscopy to organic analysis and structure elucidation. Study of carbohydrates, lipids, terpenes, steroids, heterocycles and proteins. Toxicology. Reaction mechanisms in photochemistry and molecular reactions. Practical work providing substantial 'hands-on' experience will complement the lecture material.


**Recommended Reading** Students will be referred to various texts and journals during the subject and will be expected to read widely from them.

**Class Contact** Six hours per week for two semesters, comprising three hours of lectures and three hours of practical work.

**Assessment** End-of-semester examination 60%; practical work 20% and assignments (2), 20%.

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**SCS3601 ANALYTICAL CHEMISTRY 3A**

**Campus** Werribee

**Prerequisite(s)** SCSxxxx Analytical Chemistry 2A and SCSxxxx Analytical Chemistry 2B or equivalent.

**Content** Chemical literature and use of library resources; modern trends in chemical analysis; review of analytical methodologies; an operational model for analytical chemistry; evaluation and criticism of analytical results; development of new analytical methods and trends in analytical research; project planning; selection and purchase of analytical equipment and apparatus; optimisation of analysis. Applications of advanced spectroscopy to organic analysis and structure elucidation. Analysis of carbohydrates, lipids, terpenes, steroids, heterocyclic compounds and proteins.

**Required Reading** Students are advised to buy one of the following as a reference of enduring value: Christian, C.D.E. and O’Reilly, J.E., Principles of Instrumental Analysis, Saunders, Willard, H.W., Merritt, H.G., Deean, J. A. and Settle, F.A. Instrumental Methods of Analysis, Wadsworth.

**Recommended Reading** Students will be referred to various texts and journals during the subject and will be expected to read widely from them.

**Class Contact** Two hours of lectures per week and four hours of laboratory classes per week for one semester.

**Assessment** Students will be assessed on the basis of an examination, 70%; and practical work, 30%. Students must pass the practical component in order to pass this subject.

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**SCS3602 ANALYTICAL CHEMISTRY 3B**

**Campus** Werribee

**Prerequisite(s)** SCSxxxx Analytical Chemistry 2A and SCSxxxx Analytical Chemistry 2B or equivalent.

**Content** Principles, instrumentation, interferences and applications in chemical analysis of absorption and emission spectroscopy including vibrational, rotational, advanced UV visible and fluorescence spectroscopy, and flameless AAS. Electrochemical methods of analysis including ion-selective electrodes, and modern polarography and stripping volumetry. Flow injection analysis. Capillary electrophoresis. Specialized physical techniques of analysis including thermal methods, techniques for surface analysis and the analysis of polymer molecular weights. Practical work providing substantial 'hands on' experience will complement the lecture material.


**Recommended Reading** Students will be referred to various texts and journals during the subject and will be expected to read widely from them.

**Class Contact** Two hours of lectures per week and four hours of laboratory classes per week for one semester.

**Assessment** Students will be assessed on the basis of an examination, 70%; and practical work, 30%. Students must pass the practical component in order to pass this subject.

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**SCS3603 MEDICAL CHEMISTRY 3 (DRUG DESIGN)**

**Campus** Werribee

**Prerequisite(s)** SCS2502 Medical Chemistry 2, SCS2381 Biochemistry 1

**Content** The synthesis of new chemicals and biochemicals which mimic natural molecules. Methods used to assess the purity of synthetically generated products. Methods used for the bioassay of chemically synthesized chemical. The design of chemicals using 3D drug design.


**Class Contact** Two hours of lectures and four hours of practical classes per week.

**Assessment** Practical work, 40%; final examination, 60%.

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**SCS3604 MEDICAL CHEMISTRY 3 (MEDICAL DIAGNOSTICS)**

**Campus** Werribee

**Prerequisite(s)** SCS2502 Medical Chemistry 2, SCS2381 Biochemistry 1

**Content** Students enrolled in medical chemistry 3 will become skilled in the use of the theoretical basis of advanced physico-chemical and biochemical methods for body fluid analysis for the diagnosis of human diseases. These techniques will include ELISA assays and the analysis of human tissues using techniques such as PCR to determine the DNA profile of human tissues.

**Required Reading** A range of textbooks and journal articles will be recommended by the lecturer.

**Recommended Reading** Leach, A., 1996, Molecular Modelling: Principles and Application, Longman.

**Class Contact** Two hours of lectures and four hours of practical classes per week.

**Assessment** Practical work, 40%; examinations, 60%.

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**SCS3605 FORENSIC METHODS 3A**

**Campus** Werribee

**Prerequisite(s)** SCSxxxx Medical, Forensic & Analytical Chemistry 1A and SCS2503 Forensic Chemistry 2 or equivalent.

**Content** Forensic Methods 3A provides training in sophisticated methods of analysis as currently applied to the examination of materials that have in some way been associated with crime. Modern methods of analysis and materials identification will be studies as applied to crimes against property such as arson, burglary, vehicle accidents and theft; crimes against the person such as assault, sexual offences and murder; and crimes involving the possession, illicit manufacture and distribution of drugs of abuse.


**Recommended Reading** Students will be directed to relevant sections of Safaerstein, R., (ed), Forensic Science Handbook Vol 1, 2 and 3, Prentice Hall.

**Class Contact** Two hours of lectures and three hours of practical classes per week for one semester.

**Assessment** Practical work, 30%; and examination, 70%.
SCS3606 FORENSIC METHODS 3B

Campus Werribee
Prerequisite(s) SCSSxxx Medical, Forensic & Analytical Chemistry 1A and SCSS3603 Forensic Chemistry 2 or equivalent.

Content Forensic Methods 3B provides training in sophisticated methods of analysis as currently applied to the examination of materials that have in some way been associated with crime. Modern methods of analysis and materials identification will be studies as applied to crimes against property such as arson, burglary, vehicle accidents and theft; crimes against the person such as assault, sexual offences and murder; and crimes involving the possession, illicit manufacture and distribution of drugs of abuse. Various topics in this subject will be delivered by practicing forensic scientists. Legal studies is also included and introduces students to the legal system, courtroom practices and expert testimony.

Required Reading Students will be directed to relevant sections of Saferstein, R., (ed.), Forensic Science Handbook Vol 1, 2 and 3, Prentice Hall.

Class Contact Two hours of lectures and three hours of practical classes per week for one semester.

Assessment Practical work, 30%; and assignments/examination, 70%.

SCS4000 HONOURS RESEARCH PROJECT

Campus Footscray Park, St Albans, Werribee.
Prerequisite(s) Satisfactory completion of an undergraduate degree program with a credit average in the final year; or at the discretion of the Course Co-ordinator.

Content The aim of the project is to enable students to conduct a research project under supervision. The project will comprise a scientific investigation in an area of expertise of the project supervisor. The results of the project will be reported in an oral presentation and a written thesis, which will include an introduction, a description of methodology, results, a discussion of the results (including a critical appraisal of the results) and recommendations for further research in the area.

Required Reading To be advised by the supervisor.

Class Contact No formal contact hours, although a normal fulltime load is considered 20 hours per week. Regular meetings with the supervisor are recommended.

Assessment The research project will be assessed based on the literature review, the oral presentation and the quality of the research and its presentation in the thesis.

SCS4201 HONOURS COURSEWORK

Campus Footscray Park
Prerequisite(s) Satisfactory completion of an appropriate undergraduate degree program.

Content There are three separate items of coursework associated with this enrolment code. The three items will be chosen from a list of coursework offerings provided by the staff of the Department of Chemical Sciences. The form of each item (nature of activity, type of assessment, etc.) will vary and it will be necessary to discuss the content of items of interest with the staff members concerned. The deadline for completion of this coursework is the beginning of Semester 2.

Required Reading To be advised by supervisor.

Class Contact No formal Class Contact. However, there will be regular meetings with the students’ supervisor. As a guide, the load associated with each element of SCS4201 will be similar to that of a one-semester subject involving 1-2 hours of contact each week.

Assessment The assessment of each piece of coursework will be carried out by the staff member concerned.

SCS4600 HONOURS RESEARCH PROJECT

Campus Footscray Park
Prerequisite(s) Satisfactory completion of an appropriate undergraduate degree program.

Content This subject, the aim of which is to enable students to properly research an area of study utilising knowledge and skills gained in previous studies, consists of a project carried out by students on an individual basis. The project is expected to be a scientific investigation of an approved topic, followed by the submission of a suitably formatted thesis in which the topic is introduced and formulated; the scientific investigation described in detail; results and conclusions from the study are elaborated; and an extended discussion presented.

Required Reading To be advised by supervisor.

Class Contact No formal class contact. However, there will be regular meetings with the students’ supervisors.

Assessment The thesis will constitute 54% of the overall assessment and will be assessed by at least three academics from an appropriate area of expertise. Two oral presentations will contribute 10% of the overall assessment.

SMA110 MATHMATICS 1

Campus Werribee
Prerequisite(s) One of the Year 12 mathematics subjects.

Content Revision of pre-calculus algebra with an emphasis on the solution to polynomial equations and the study of functions and graphs of particular relevance to the chemical and biological sciences. An introduction to matrices and their use in solving equations. Methods and applications of differential calculus.

Required Reading To be advised by lecturer.

Class Contact Four hours per week for one semester consisting of a combination of lectures and tutorials.

Assessment Tests and examination with weightings to be advised by the lecturer.

SMA1120 MATHMATICS 2

Campus Werribee
Prerequisite(s) One of the Year 12 mathematics subjects.

Content Descriptive statistics for univariate and bivariate data with an emphasis on matching the right tool to the right type of data (i.e. quantitative or qualitative). Probability and probability distributions. Inferential statistics including estimation, one sample and two sample t-tests, correlation and regression.

Required Reading To be advised by lecturer.

Class Contact Four hours per week for one semester consisting of a combination of lectures and tutorials.

Assessment Tests and examination with weightings to be advised by the lecturer.

SMA120 MATHMATICS 1AP

Campus Footscray Park, Werribee
Prerequisite(s) Nil

Corequisite Nil


Class Contact Four hours per week for one semester based on two hour lectures and two hour tutorial sessions.

Assessment Tests 35%, end of semester examination: 65%.
SMA202 MATHEMATICS 1AQ
Campus: Footscray Park, Werribee
Prerequisite(s): SMA1201 Mathematics 1AP
Corequisite(s): Nil
Class Contact: Four hours per week for one semester based on two-hour lectures and two-hour tutorial sessions.
Assessment: Tests 35%; end of semester examination 65%.

SMA2201 MATHEMATICS B
Campus: Footscray Park, Werribee
Prerequisite(s): SMA1201 Mathematics 1AP, SMA1202 Mathematics 1AQ.
Required Reading: To be advised by lecturer.
Class Contact: Four hours per week for one semester based on two-hour lectures and two-hour tutorial sessions.
Assessment: End of semester examination, 100%.

SMA221 ENGINEERING MATHEMATICS
Campus: Footscray Park
Prerequisite(s): SMA1202
Content: Solution methods of second order linear (homogeneous and non-homogeneous) ordinary differential equations, introduction to partial differential equations. Probability and probability distributions, distributions of the sum and differences of distributions, confidence intervals and hypothesis testing, regression methods, introduction to two-level factorial and fractional factorial designs.
Required Reading: Current text book - Student to be advised.
Class Contact: Three hours per week for one semester comprising two hours of lectures and one hour of tutorial.
Assessment: Class tests and assignments, 25%; end of semester examination, 75%.

SMA3001 INTRODUCTION TO COMPUTER UTILISATION
Campus: Werribee
Prerequisite(s): SCM1111, SMA1110; SMA1120.
Content: This subject is designed to introduce students to software packages and applications on different operating systems, with a particular focus on numerical methods and mathematical manipulations. It is expected that this exposure will assist students in the preparation and presentation of their own materials for their coursework in other subjects.
Required Reading: To be advised by lecturer.
Class Contact: One hour lecture and two hours per week of tutorial for one semester.
Assessment: A combination of assignments and exam.

SMA3311 ENGINEERING MATHEMATICS 3P
Campus: Footscray Park
Prerequisite(s): SMA2211 Engineering Mathematics.
Class Contact: Four hours per week for one semester comprising lecture and tutorial work.
Assessment: End of semester examination, 90%; assignment, 10%.

SMSXXX BIOPROCESSING TECHNOLOGY
Campus: Werribee
Prerequisites: SBF2300 Microbiology 1; SBF2320 Biochemistry 1; or equivalents
Content: Topics include the principles of biochemical engineering, process flow charts, material and energy balances, fluid statics and dynamics, bioreactor design, production and maintenance of commercial strains, scale up, downstream processing including harvesting, concentration and purification of bioproducts, sterilization.
Required Reading: To be advised by lecturer.
Recommended Reading: To be advised by lecturer.
Class Contact: Three hours per week.
Assessment: Examination, 70%; Assignments, 30%.
SMSXXX BIOPROCESSING PRACTICE

Campus Werribee
Prerequisites SMSXXX Bioprocessing Technology
Co-requisites SMSXXX Bioprocessing Technology
Content Laboratory scale experiments will be conducted to illustrate the principles involved in heat exchange, pasteurization, fermentation and fluid flow.
Required Reading To be advised by lecturer.
Recommended Reading To be advised by lecturer.
Class Contact Three hours per week.
Assessment Practical reports, 100%.

SMSXXX APPLICATIONS IN BIOPROCESSING

Campus Werribee
Prerequisites SBF2300 Microbiology 1; SBF2520 Biochemistry 1; or equivalents
Content Topics include enzyme production and applications, algal biotechnology, bioremediation, bioleaching of metals from low grade ore, commercial and domestic wastewater treatment, biomass conversion and microbial fuel production. The ethical issues associated with these topics will be discussed.
Required Reading To be advised by lecturer.
Recommended Reading To be advised by lecturer.
Class Contact Three hours per week.
Assessment Examinations, 70%; Assignments, 30%.

SMSXXX BIOPROCESSING IN THE LABORATORY

Campus Werribee
Prerequisites SMSXXX Bioprocessing Technology
Co-requisites SMSXXX Bioprocessing Technology
Content Laboratory scale experiments will be conducted to illustrate the principles involved in microbial enzyme extraction and application, immobilized cell fermentations, microbial-based fuel production from lignocellulosic waste, bioremediation of polycyclic aromatic hydrocarbons.
Required Reading To be advised by lecturer.
Recommended Reading To be advised by lecturer.
Class Contact Three hours per week.
Assessment Practical reports, 100%.

SMSXXX MICROBIAL TECHNOLOGY AND CELL CULTURE

Campus Werribee
Prerequisites SBF2300 Microbiology 1; SBF2520 Biochemistry 1
Content Topics include batch, fed-batch and continuous culture, bioreactors and their various modes of operation, plant cell culture and animal cell culture. Topical issues related to the ethics associated with the source and use of various cell lines eg. stem cells will be discussed.
Required Reading To be advised by lecturer.
Recommended Reading To be advised by lecturer.
Class Contact Three hours per week, comprising lectures and practical work in alternating weeks.
Assessment Examination, 50%; Practical reports, 50%.

SMSXXX PRINCIPLES OF GENOMICS, PROTEOMICS AND BIOINFORMATICS

Campus Werribee
Prerequisites SBF2520 Biochemistry 1
Content An overview and definitions of terms; the logic, scope and rationale of genomics and proteomics; descriptions of approaches used in genomics and proteomics; applications of bioinformatics including accessing internet resources such as GenBank and EMBL, data mining, and using programs such as BLAST and FASTA; examples of applications in a range of settings including forensics, drug design, medical research. The theory underpinning a range of analytical techniques used in nucleic acid and protein analysis will also be covered. Ethical issues concerning the ownership of and access to information in databanks will be covered.
Required Reading To be advised by lecturer.
Recommended Reading To be advised by lecturer.
Class Contact Three hours per week comprising lectures and discussions for one semester.
Assessment Examination, 60%; Assignments, 40%.

SMSXXX APPLIED GENOMICS, PROTEOMICS & BIOINFORMATICS

Campus Werribee
Prerequisites SBF2520 Biochemistry 1; SMSXXX Principles of Genomics, Proteomics & Bioinformatics
Content The practical training in this subject will include computer-based laboratory workshops to explore applications of bioinformatics including accessing internet resources such as GenBank, PDB and EMBL, data mining and using sequence searching and analysis programs such as BLAST and Translate. There will also be a wet lab component to the unit that will cover techniques in protein analysis including electrophoretic and chromatographic techniques.
Required Reading To be advised by lecturer.
Recommended Reading To be advised by lecturer.
Class Contact Three hours per week comprising practical work in the laboratory or using computers.
Assessment Practical Workshops and Reports, 40%; Examination, 40%; Assignments, 20%.

SMSXXX PRINCIPLES OF GENETIC ENGINEERING

Campus Werribee
Prerequisites SBF2520 Biochemistry 1; SBF2390 Molecular Genetics
Content The subject will include gene cloning, PCR, restriction enzymes and their uses; site-directed mutagenesis; heterologous gene expression systems; DNA profiling and forensics; Southern and Northern Blotting; gene mapping; transgenics and gene knockouts; the Human Genome Project and gene therapy; recombinant DNA-based medical diagnostics; positional cloning; plant genetic engineering; and the ethics, risks and benefits of genetic engineering.
Required Reading To be advised by lecturer.
Recommended Reading To be advised by lecturer.
Class Contact Three hours per week comprising lectures and discussions.
Assessment Examination, 60%; Assignments, 40%.

SMSXXX GENETIC ENGINEERING IN THE LABORATORY

Campus Werribee
Prerequisites SBF2520 Biochemistry 1; SBF2390 Molecular Genetics
Content The subject will cover: how to prepare DNA for cloning and analysis; transformation and transfection techniques; screening a DNA library; how to perform PCR reactions; restriction analysis and mapping; blotting techniques; designing, making and using probes; DNA sequencing and sequence analysis; and safety in the lab when working with recombinant DNA.
Required Reading To be advised by lecturer.
Recommended Reading To be advised by lecturer.
Class Contact Three hours per week comprising practical work and workshops.
Assessment Practical Workshops and Reports, 40%; Examination, 40%; Assignments, 20%.
SPH1601 PHYSICS ISB

Campus Footscray Park

Prerequisite(s) SPH1601 Physics 1SA.

Content
The unit will focus on the molecular aspects of microbial pathogenesis and highlight the principal intervention strategies used to treat infectious diseases. The emphasis will be on the relationship between a pathogen (bacteria, viruses and protozoans) and its human host. An in-depth review of the life cycles of several organisms will inform discussion of the current research in the areas of pathogenesis, genetic and phenotypic variation in pathogens and the implications for treatment and control strategies. Consideration will be given to the ethical issues relating to eg. vaccination protocols and antimicrobial therapy.

Required Reading
Students will be asked to review a selection of papers from the current literature.

Recommended Reading
Selected readings from a range of texts will furnish the students with the recommended reading.

Class Contact
Three hours per week.

Assessment
Assignment, 40%; Examination, 60%.

SPH1111 ASTRONOMY

Campus Footscray Park

Prerequisite(s) Nil.

Content
History of astronomy, telescopes, our sun, solar system, comets, meteors, the night sky, stellar evolution and spectra, variable stars, distances of celestial objects, galaxies (pulsars, black holes and quasars).

Recommended Reading
To be advised by lecturer.

Required Reading

Class Contact
Four hours per week for one semester.

Assessment
Will be based on practical sessions, an assignment and an end of semester examination. Supplementary assessment will only be available if requested by the school/department governing the course in which the student is enrolled.

SPH1602 PHYSICS ISB

Campus Footscray Park

Prerequisite(s) SPH1601 Physics 1SA.

Content
Electricity and Magnetism. Concept of charge, electric field and electric potential; Coulomb’s law; electric field lines; electric flux; Gauss’ law; capacitance and dielectrics; force on current carrying conductors; concept of magnetic field intensity; Lorentz force; magnetic field lines; magnetic flux; Faraday’s law; induced emf; inductance.

Waves: Wave motion; frequency, period, amplitude and wavelength; waves in strings; moduli of elasticity; sound waves in media; pressure variation; intensity of a wave; sound level; dB scale; variation of intensity with distance from source; Doppler effect; superposition of waves; interference; standing waves; beats.

Thermal Physics: Concept of temperature and heat energy; thermal expansion of solids and liquids; heat transfer; heat capacity and specific heat; latent heat; ideal gases; work and heat in thermodynamic processes; isothermal and adiabatic processes; first law of thermodynamics; heat engines and the second law of thermodynamics.

Required Reading

Class Contact
39 hours over one semester comprising 2 hours lecture/tutorial demonstration and 1 hour small group tutorial per week.

Assessment
End of semester examinations, 60%; progressive assessment, 40%. Supplementary assessment will only be available if requested by the school/department governing the course in which the student is enrolled.

SPH1402 LABORATORY AUTOMATION USING THE IBM PC

Campus Footscray Park

Prerequisite(s) SCM1114 Introduction to Computing and the Internet.

Content
The unit will focus on the practical aspects of the IBM PC. Topics covered include introduction to the PC and IBM equipment; computer software and operating systems; the hardware: the CPU, RAM, ROM, disk drives; I/O devices and connectors; assembly programming: sx jr, sxe; microcomputer processing: digital counters, timing, frequency measurements; microcontroller basics: 8085 and 8086 architecture, instruction set, software development, interfacing; local area network (LAN) basics: networks, LAN protocols, network management; and project work.

Required Reading

Class Contact
Four hours per week for one semester comprising two one-hour lectures and two hours laboratory work.

Assessment
End-of-semester three-hour examination, 65%; laboratory work (including a project), 35%. Students are expected to pass both the theory and laboratory components in order to gain a pass in this subject. Supplementary assessment will be granted at the discretion of the examination board.

FACULTY OF SCIENCE, ENGINEERING AND TECHNOLOGY

164
SPH 3000 PHYSICS 3
Campus Footscray Park
Prerequisite(s) SPH2000 or its equivalent
Corequisite(s) SMA2321 or SMA3311
Content
Semester 1; SPH3011 Classical Mechanics, SPH3021 Optics, SPH3031 Fibre Optics, SPH3091 Physics Laboratory 3A. Semester 2; SPH3012 Quantum Mechanics, SPH3022 Lasers, SPH3032 Atomic Physics & Atomic Spectroscopy, SPH3092 Physics Laboratory 3B
Assessment End of semester examinations. The marks in each unit will be weighted by its credit point value and these will be summed and scaled out of 100. A final mark of at least 50 is required to pass. Supplementary assessment will be granted at the discretion of the examination board.

SPH 3011 CLASSICAL MECHANICS
Campus Footscray Park
Prerequisite(s) SPH1010 or its equivalent.
Corequisite(s) SMA2321 and/or SMA3311
Required Reading Chow, T.L., Classical Mechanics, J. Wiley and Sons.
Recommended Reading To be advised.
Class Contact 26 hours per semester, comprising 20 lectures and 6 tutorials.
Assessment End of semester examination, 100%. Supplementary assessment will be granted at the discretion of the examination board.

SPH 302 QUANTUM MECHANICS
Campus Footscray Park
Prerequisite(s) SPH2011 or its equivalent, SMA3311
Content Perturbation theory, Einstein A & B coefficients, interaction of radiation field with atoms. Introduction to Dirac Bracket notation, scattering.
Required Reading Mandl, F., 1992, Quantum Mechanics, Wiley, Chichester UK.
Class Contact 26 hours per semester, comprising 20 lectures and 6 tutorials.
Assessment End of semester examination 100%. Supplementary assessment will be granted at the discretion of the examination board.

SPH 3021 OPTICS 3
Campus Footscray Park
Prerequisite(s) At least SPH2022 or its equivalent.
Class Contact 26 hours per semester, comprising 20 lectures and 6 tutorials.
Assessment End of semester examination, 100%. Supplementary assessment will be granted at the discretion of the examination board.

SPH 3022 LASERS
Campus Footscray Park
Prerequisite(s) SPH2000 or its equivalent.
Corequisite(s) SMA2321
Required Reading To be advised.
Class Contact 26 hours per semester, comprising 20 lectures and 6 tutorials.
Assessment End of semester examination, 100%. Supplementary assessment will be granted at the discretion of the examination board.

SPH 3031 FIBRE OPTICS
Campus Footscray Park
Prerequisite(s) SPH2022 or its equivalent.
Corequisite(s) SMA2321 and/or SMA3311
Required Reading Palais, J.C. 1998, Fibre Optic Communications, 4th edn, Prentice-Hall. NJ.
Class Contact 26 hours per semester, comprising 20 lectures and 6 tutorials.
Assessment: End of semester examination, 100%. Supplementary assessment will be granted at the discretion of the examination board.

SPH 3032 ATOMIC PHYSICS AND ATOMIC SPECTROSCOPY

Campus: Footscray Park
Prerequisite(s): SPH2000 or its equivalent
Class Contact: 26 hours per semester, comprising 20 lectures and 6 tutorials.
Assessment: End of semester examination, 100%. Supplementary assessment will be granted at the discretion of the examination board.

SPH 3091 PHYSICS LABORATORY 3A

Campus: Footscray Park
Prerequisite(s): SPH2000 or at least 4 units of 2nd year physics units including SPH2091, SPH2092 and SPH2432
Content: A series of graded laboratory exercises designed to support and enhance the students’ understanding of physics through hands on experience of physical measurement and the limitations thereof.
Required Reading: Physics Laboratory 3A Manual, Victoria University.
Class Contact: 40 hours of laboratory experiences
Assessment: Based on student performance in the laboratory exercises and on a series of formal reports. Supplementary assessment will be granted at the discretion of the examination board.

SPH 3092 PHYSICS LABORATORY 3B

Campus: Footscray Park
Prerequisite(s): SPH2091, SPH2432
Content: A series of graded laboratory exercises designed to support and enhance the students’ understanding of physics through hands on experience of physical measurement and the limitations thereof.
Required Reading: Physics Laboratory 3B Manual, Victoria University.
Recommended Reading: Nil
Class Contact: 40 hours of laboratory experiences
Assessment: Based on student performance in the laboratory exercises and on a series of formal reports. Supplementary assessment will be granted at the discretion of the examination board.

SPH 3100 PHYSICS 3O

Campus: Footscray Park
Prerequisite(s): SPH2000 or its equivalent
Corequisite(s): SMA2321, SMA3311, SPH3011 Classical Mechanics, SPH2091 Optics 3, SPH3001 Fibre Optics, SPH3091 Physics Laboratory 3A. Semester 1; SPH3012 Quantum Mechanics, SPH3022 Lasers, SPH3032 Atomic Physics & Atomic Spectroscopy
Required Reading: See references under each unit
Recommended Reading: See references under each unit
Class Contact: 118 hours in semester 1, comprising lectures, tutorials and laboratory sessions. 78 hours in semester 2, comprising lectures and tutorials.
Assessment: End of semester examinations. The marks in each unit will be weighted by its credit point value and these will be summed and scaled out of 100. A final mark of at least 50 is required to pass. Supplementary assessment will be granted at the discretion of the examination board.

SPH 3200 OPTOELECTRONICS 3

Campus: Footscray Park
Prerequisite(s): SPH2000 or its equivalent
Corequisite(s): SMA2321, SMA3311, SPH3021, SPH3031
Content: Semester 1; SPH3441 Optical Properties of Materials, SPH3451 Advanced Optics & Optical Design. Semester 2; SPH3462 Optical Waveguides & Sensors.
Required Reading: See references under each unit
Recommended Reading: See references under each unit
Class Contact: 52 hours in semester 1, comprising 39 lectures and 13 laboratory sessions. 26 hours in semester 2, comprising 26 lectures.
Assessment: End of semester examinations. The marks in each unit will be weighted by its credit point value and these will be summed and scaled out of 100. A final mark of at least 50 is required to pass. Supplementary assessment will be granted at the discretion of the examination board.

SPH 3430 PHYSICS PROJECT

Campus: Footscray Park
Prerequisite(s): SPH2000 or at least 4 units of 2nd year physics units including SPH2091 and SPH2092
Content: The aim of the Physics project is to develop in students the ability to approach an investigative problem in a logical and sensible way; and to develop the ability to carry out and report on a small research or development task. Students will spend an average of three hours per week throughout the semester working independently on their allocated project under the supervision of a member of the academic staff.
Required Reading: To be advised by the lecturer.
Recommended Reading: Nil
Class Contact: No formal classes are held. Students will be required to work on their projects systematically throughout the semester at times suitable to themselves and their supervisor.
Assessment: The assessment is made on the basis of the student performance in the seminar organised by the supervisor and the quality of the written report(s).

SPH3441 OPTICAL PROPERTIES OF MATERIALS

Campus: Footscray Park
Prerequisite(s): SPH2000 Physics 2
Co-requisite(s): SPH3100 Physics 3O, SMA2321 or SMA3311
Content: The aim of this subject is to acquaint students with the principles governing the use, suitability and applications of materials for various optical applications. In each category, currently-used materials will be extensively reviewed. General Properties; Propagation of E/M waves in dielectric media; models of the refractive index; dispersion, absorption and the refractive index; frequency
SPH 3451 ADVANCED OPTICS AND OPTICAL DESIGN

Campus Footscray Park
Prerequisite(s) SPH2000 Physics 2


Class Contact Two hours per week for one semester comprising one one-hour lecture and one one-hour tutorial/laboratory class.

Assessment Assignments throughout the semester, 100%. Supplementary assessment will not normally be available in this subject.

SPH 3452 OPTICAL WAVEGUIDES AND SENSORS

Campus Footscray Park
Prerequisite(s) SPH3021 Optics 3 and SPH3031 Fibre Optics
Corequisite(s) SMA2321 or SMA3311.

Content The aim of this subject is to develop the theory of optical fibre waveguides using a rigorous wave treatment of the propagation of light, and then to use this theory in understanding the operation of optical fibre sensors and components. Optical Waveguide Theory: Maxwell's Equations for waveguides, boundary conditions and eigenvalue equations, planar dielectric waveguides and their modes, cylindrical dielectric waveguides and their modes, LP mode description, Gaussian approximation, dispersion in multimode and single mode fibres, normal mode theory of single mode fibre couplers. Optical Fibre Sensors: Introduction and basic concepts, materials interactions in optical fibre sensors, fibre optic components, special optical fibres for sensors, interferometric sensors, fibre-optic gyroscope, intensity and wavelength-based sensors, multiplexed and distributed sensors, applications of fibre sensors, e.g. smart structures.

Required Reading To be advised by lecturer.


Class Contact Two hours per week for one semester comprising two one-hour lectures.

Assessment End-of-semester examination plus assignments as advised by lecturer (up to 20%). Supplementary assessment will be granted at the discretion of the examination board.
SPH 3941 COMPUTATIONAL PHYSICS A

**Prerequisite(s)** SCM1311 Programming 1 and SCM1312 Programming 2

**Corequisite(s)** Nil.

**Content** The programming language normally used will be FORTRAN. The fundamentals of the FORTRAN language will be presented including the following features: fortran statements, data types and constants, arithmetic and character expressions, assignment and control statements, arrays, loops, formatting printed data, structured modular programming, subroutine and function calls, parameter passing, control structures, data structures, file types, file operation, file I/O formatting. Assignments will normally cover topics such as: roots of non-linear equations, solution of simultaneous linear algebraic equations, eigenvalues and eigenvectors, differentiation and integration, solution of differential equations, discrete function approximation, non-linear regression, fast Fourier transforms, digital filtering, simulation.

**Required Reading** To be advised.


**Class Contact** 39 hours of lectures/tutorials

**Assessment** End of semester examination 50%, assignments 50%. Supplementary examination will be granted at the discretion of the examination board.

SPH 3942 COMPUTATIONAL PHYSICS B

**Prerequisite(s)** Nil.

**Content** This course introduces students to advanced computational tools for solving physical problems. A modern computer algebra package (currently Maple) is used as an aid in solving a range of problems which arise in physics. Typical problems include: solution of rate equations for lasing materials; the dynamics of coupled pendula; solution of Schrödinger equation for selected potentials; least squares fitting of non linear functions to data.

**Required Reading** To be advised.


**Class Contact** 39 hours of lectures/tutorials

**Assessment** End of semester examination 50%, assignments 50%. Supplementary examination will be granted at the discretion of the examination board.

SPH 4410 PHYSICS 4 (HONOURS)

**Campus** Footscray Park

**Prerequisite(s)** Eligibility for entry to the Bachelor of Science (Honours) in Physics program.

**Content** This subject consists of advanced coursework and a research thesis.

**Coursework:** Compulsory core units of quantum mechanics, statistical mechanics and research methods, plus elective units from the following areas: optical waveguides and sensors, relativity, surface physics, ion beam techniques, optics of materials, laser physics, lasers and optoelectronics, fibre optics, solid state physics, diffraction from crystals, nuclear physics. Other electives may be approved, including those offered at other universities. All electives must be approved by the Course Co-ordinator.

**Research Thesis:** A research project will be undertaken in one of the Physics research areas, under the supervision of a member of academic staff. Subject to approval, research may be undertaken at a laboratory outside the University.


**Class Contact** Average of 20 hours per week for two semesters.

**Assessment** is based on coursework, 50%; research thesis, 50%. The research project will consist of oral presentation and a thesis of approximately 5000–10,000 words.

SPH 4531 FIBRE OPTIC TECHNOLOGY

**FUNDAMENTALS**

**Campus** Footscray Park

**Prerequisite(s)** Nil.

**Content** This subject provides a first course in the practical and theoretical aspects of optical fibre systems and devices for electrical engineering students. This subject aims to give students an understanding of the fundamentals of optical fibre communications and sensor technology, and an appreciation of the practical aspects of optical fibre communications and sensing systems. Topics covered: Review of basic optical theory. Types of optical fibres. A treatment in silica optical fibres. Modes in slab waveguides. Modes and distortion in optical fibres. Sources and detectors for fibre optic systems. Noise in detector systems. Fibre optic communications systems. Fibre optic sensors. Optical fibre fabrication. Practical program Several small demonstrations to give students practical experience in handling fibres and fibre equipment.


**Class Contact** Three hours per week for one semester comprising lectures, tutorials and laboratory work.

**Assessment** End of semester three-hour examination plus assignments as advised by lecturer (up to 20%). Supplementary assessment will only be available if requested by school/department governing the course in which the student is enrolled.
**Postgraduate Studies**

### Food Safety, Authenticity and Quality Unit

This unit has been established in recognition of existing research work in the field of food quality within the Faculty and to develop active partnerships with institutions and individuals locally, nationally and internationally in the areas of safety and authenticity. Much of the facilities and support from the former Centre for Bioprocessing and Food Technology have been transferred into the Unit providing both oversight and continuity for students and projects.

Preliminary discussions with a number of resident institutions on the Werribee Technology Precinct have promised support and collaboration in areas of mutual interest which it is expected will also provide expert teaching into appropriate courses with the Faculty. There is additional potential interaction with the Australian Government Analytical Laboratories (AGAL) given their increasing interests in the food area.

### Food Marketing Research Unit

The mission of the Food Marketing Research Unit is to provide leading-edge research, consultancy, education and training services for any part of the food chain where improved knowledge about the market will add value to the products and services. The Unit has an extensive network of research associates from within Victoria University and external to the University.

In 2003 the Unit commenced a number of multi-disciplinary projects with faculty in the School of Architectural, Civil and Mechanical Engineering, and the School of Molecular Sciences. The Unit also initiated a number of projects in a global context in collaboration with faculty in universities and R&D organisations in countries such as the USA, UK, Malaysia, Korea, Japan, China and India.

The Food Marketing Research Unit’s portfolio of current fundamental and applied research projects cover themes such as entrepreneurship and innovation; consumption, demand and supply analysis; consumer behaviour and trends; business-to-business buyer behaviour and trends; industry trends; interest group activities and trends; business-to-business relationship marketing and management including issues pertaining to organisational culture and personal culture; public policy issues pertaining to the development of industry, development of trade, investment attraction and commercialisation of research; organisational and governance structures such as business networks, strategic partnerships and strategic alliances; and issues on global food security and self sufficiency and the impact of food security - self sufficiency strategies on trade and investment flows.

The Unit also provides contract research and consultancy services and assists businesses in developing business plans, feasibility reports, marketing reports, undertaking customer surveys and in preparing proposals for R&D and commercialisation grants. The Unit is the Secretariat for the ASEAN Food Journal, a peer reviewed academic journal in food science and food business. The ASEAN Food Journal is a joint enterprise between Victoria University and Universiti Putra Malaysia. In addition, the Unit delivers education programs particularly the supervision of post-graduate research students in the area of food marketing and food trade. The Unit also manages research dissemination activities such as organising and hosting seminars, workshops and conferences.

### Centre for Environmental Safety and Risk Engineering

#### Courses Offered

The Centre for Environmental Safety and Risk Engineering offers postgraduate courses leading to the award of:

- **Doctor of Philosophy**
- **Master of Engineering (Research)**
- **Master of Engineering in Building Fire Safety and Risk Engineering (Coursework)**
- **Master of Science in Occupational Safety and Health**
- **Master of Science in Occupational Hygiene**
- **Graduate Diploma in Building Fire Safety and Risk Engineering**
- **Graduate Certificate in Performance-Based Building and Fire Codes**

#### International Programs

- **Master of Engineering in Building Fire Safety and Risk Engineering (Coursework)**
- **Graduate Diploma in Building Fire Safety and Risk Engineering**

#### Focus

The Centre for Environmental Safety and Risk Engineering was established as the inaugural University Centre in July 1991 to undertake multi-disciplinary research and graduate programs. The mission of the Centre is to provide national and international leadership for the conduct of studies which will lead to the implementation of efficient designs for hazardous infrastructure facilities and to ensure that the impact on people, property and the environment is minimised to acceptable levels.

Examples of hazards which are and will be investigated by the Centre include:

- Fire in Buildings
- Hazardous Industrial Complexes: Fire, Explosion, and Release of Hazardous Substances
- Transport of and Storage of Hazardous Goods.

The work of the Centre in building fire safety and protection systems is internationally recognised.

The Centre undertakes the following multi-disciplinary activities:

- **Applied Research**
- **Specialist Consulting**
- **Research at PhD and Masters levels**
- **Graduate Diploma course**
- **Masters by Coursework and Minor Thesis**
- **Graduate Certificate course**
- **Short Courses, Seminars and Workshops**

#### Current Research

Research by the Centre into building fire safety and protection is conducted in a number of areas:

- **System Modelling and Risk assessment (Core Research)**
- **Fire Growth and Spread/Smoke Spread**
Recent Research Grants

The Centre for Environmental Safety and Risk Engineering (CESARE), Victoria University, in conjunction with the University of Technology, Sydney, initially received a major Australian Research Grant (1991/93) to construct an Experimental Building - Fire Facility. This grant was supplemented by substantial additional ARC Infrastructure Grants to CESARE to further develop the Facility. These grants were complemented by extensive design, supervision, technical and material input from key organisations involved in the fire safety and protection industry. The value of the Facility is some $1.5m. In late 2001, the Centre received a $2,000,000 Systemic Infrastructure Initiative Grant from the Federal Government to build a large scale experimental building - fire facility over the top of the existing facility. This is a step in developing the facility into a major national and international focus for research on fire. A further $875,000 is being provided by Victoria University and collaborative partners - SSL, CSA, BHPSteel and OneSteel.

The Centre has been very successful in attracting research funds from various bodies, including competitive Australian Research Council (ARC) Grants. Grants obtained include: two ARC Large Grants, ARC Collaborative Research Grant (with BHP and the National Association of Forest Industries, NAFI), ARC Infrastructure Grant, industry grants, contracts and scholarships (for example, from BHP and NAFI), research contracts from the National Fire Laboratory, National Research Council of Canada (on behalf of the Department of National Defence, Canada, and Public Works Canada). The annual research budget for the Centre is some $1 million.

In 1999 the Centre obtained an Australian Research Council Research Equipment and Facilities Infrastructure Grant to install a new Fire Research Furnace. The furnace is used to conduct research on the performance of elements of construction under fire conditions. The furnace is located at the Centre's new laboratory and office complex at the Werribee Campus. A second, larger furnace in a new building (both donated by BHP Billiton) were installed in early 2002. A cone calorimeter has also been installed at the Werribee Campus.

Experimental Building - Fire Facility

An Experimental Building - Fire Facility is used to conduct real fire experiments in realistic prototype buildings. Extensive instrumentation is used to record the growth and spread of fires and the effects of fire in the Facility.

The results from these experiments are used to develop and validate advanced computer models for predicting fire growth and spread in buildings, the response of building subsystems to fire, and human behaviour during fire emergencies.

The $1.5m Facility contains a large versatile building based on a steel frame and composite concrete floor-slab structure, a service core containing stair, life and air handling shafts, together with associated services including sprinklers.

The open structure and high inter-floor space permits fitouts of a wide variety of prototype building occupancies and construction types.

In late 2001, the Centre received a $2 million Systemic Infrastructure Initiative Grant from the Federal Government to build a large scale experimental building-fire facility over the top of the existing facility. This is a step in developing the facility into a major national and international focus for research on fire.
Graduate Certificate in Performance-Based Building and Fire Codes
Course Code: ETOB

Course Objectives
The course aims to enable building surveyors and other allied professions to:
- make professional use of performance-based building codes;
- introduce the concepts and alternative acceptable frameworks for performance-based codes, with particular, but not exclusive, emphasis given to fire safety engineering design;
- provide appropriate knowledge and skills necessary for the assessment and application of performance-based and fire codes;
- develop a professional approach to performance-based codes and a recognition of when to assess designs which are within a persons field of expertise and when to refer designs onto a more appropriately qualified assessor;
- develop an appreciation of the legal, statutory and design integrity requirements and the need for compliance of the design assumptions throughout the operational life of the building.

Admission Requirements
To qualify for admission to the course an applicant must have successfully completed a diploma in Building Surveying or an equivalent qualification and at least two years of relevant professional experience.

Guidelines on the use of calculators and other electronic storage devices will not be permitted where the above provisions have not been met.

Electronic calculators and other electronic storage devices will not be permitted where the above provisions have not been met.

Assessment is by a combination of assignments and examination. Distribution of marks among each aspect of assessment is determined individually for each subject.

Guidelines on the use of electronic calculators and other electronic storage devices in examinations are provided in individual subject outlines distributed to students within the first two weeks of semester and included on final examination papers.

Electronic calculators and other electronic storage devices will not be permitted where the above provisions have not been met.

Graduate Diploma in Building Fire Safety and Risk Engineering
Course Code: EGQB

Course Objectives
The course aims to produce professionals who are familiar with fire science and technology fundamentals, who can apply rational engineering principles and techniques to identify cost-effective fire safety system designs for buildings, and will be familiar with the content and application of fire engineering design codes.

Admission Requirements
To qualify for admission to the course an applicant must have successfully completed a degree in engineering or a degree in science or building surveying.

A corresponding diploma having equivalent content of the relevant technical subjects will also be considered.

Even if a student does not meet the required admission standards, they may be considered for admission on a case by case basis. Applicants must either have previously studied, or demonstrated a sound basic knowledge of the following topics: fluid dynamics, heat transfer, properties of materials and structural behaviour. Bridging subjects may be required to overcome any inadequacies.

A letter of recommendation and an interview may be required.

Course Duration
The course is offered on a part-time basis and in block modules over two years. Students must complete 120 credit points. The maximum time period to complete the course is six years.

Course Structure

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<thead>
<tr>
<th>Year 1</th>
<th>Semester One</th>
<th>Credit points</th>
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<tbody>
<tr>
<td>EQB5611</td>
<td>Risk Assessment &amp; Human Behaviour</td>
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<td>Semester Two</td>
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<tr>
<td>EQB5632</td>
<td>Smoke and Fire Spread, Fire Safety System Design</td>
<td>15</td>
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<tr>
<td>EQB5642</td>
<td>Performance Codes Methodology and Structure</td>
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<td>EQB5751</td>
<td>Fire Technology Modelling</td>
<td>15</td>
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<tr>
<td>EQB5761</td>
<td>Fire Safety Systems Modelling</td>
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<tr>
<td>EQB5772</td>
<td>Fire Safety System Design</td>
<td>15</td>
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<tr>
<td>EQB5782</td>
<td>Fire Spread and Fire Safety System Design Project</td>
<td>15</td>
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Assessment
Assessment is by a combination of written projects, assignments, submissions, laboratory work and oral presentation. Distribution of marks among each aspect of assessment is determined individually for each subject.

Guidelines on the use of electronic calculators and other electronic storage devices in examinations are provided in individual subject outlines distributed to students within the first two weeks of semester and included on final examination papers.

Electronic calculators and other electronic storage devices will not be permitted where the above provisions have not been met.

Graduate Diploma in Building Fire Safety and Risk Engineering
Course Code: EGQB

Course Objectives
The course aims to produce professionals who are familiar with fire science and technology fundamentals, who can apply rational engineering principles and techniques to identify cost-effective fire safety system designs for buildings, and will be familiar with the content and application of fire engineering design codes.

Admission Requirements
To qualify for admission to the course an applicant must have successfully completed a degree in engineering or a degree in science or building surveying.

A corresponding diploma having equivalent content of the relevant technical subjects will also be considered.

Relevant industrial experience is required.

Provision will be made to enrol a limited number of students in the course who do not fully meet the required admission standards, but who have extensive relevant experience and demonstrated aptitude for high achievement. An interview will be required in this case.

Course Duration
The course is offered on a part-time basis and in block modules over two years. Students must complete 120 credit points. The maximum time period to complete the course is six years.

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<tr>
<td>EQB5782</td>
<td>Fire Spread and Fire Safety System Design Project</td>
<td>15</td>
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</table>

Assessment
Assessment is by a combination of written projects, assignments, submissions, laboratory work and oral presentation. Distribution of marks among each aspect of assessment is determined individually for each subject.

Guidelines on the use of electronic calculators and other electronic storage devices in examinations are provided in individual subject outlines distributed to students within the first two weeks of semester and included on final examination papers.

Electronic calculators and other electronic storage devices will not be permitted where the above provisions have not been met.
Master of Engineering in Building Fire Safety and Risk Engineering (Coursework)
Course Code: EMQB

The course provides opportunities for professional people to develop advanced technical skills in a specialist discipline; develop their understanding of legislation and management relevant to their employment; develop ability to plan co-ordinate and complete complex projects; apply and extend research and reporting skills and gain specialist knowledge of a topic relevant to their employment.

Admission Requirements
To qualify for admission to the course applicants are expected to have completed a Graduate Diploma in Building Fire Safety and Risk Engineering with honours average.

Course Duration
The course is offered over three years on a part-time basis or its full-time equivalent. Students must complete 180 credit points.

Course Structure
The structure of the course is as follows:

Eight approved subjects of fifteen credit points each from the Graduate Diploma in Building Fire Safety and Risk Engineering, and a minor thesis/project of sixty credit points for one semester or thirty credit points for two semesters.

Year 1
Semester One
EQB5611 Risk Assessment and Human Behaviour 15
EQB5621 Fire Growth, Detection & Extinguishment 15

Semester Two
EQB5632 Smoke and Fire Spread, Fire Safety System Design 15
EQB5642 Performance Codes Methodology and Structure 15

Year 2
Semester One
EQB5751 Fire Technology Modelling 15
EQB5761 Fire Safety Systems Modelling 15

Semester Two
EQB5772 Fire Safety System Design 15
EQB5782 Fire Spread and Fire Safety System Design Project 15

Year 3
EQT6050 Building Fire Research – full-time 60 (over one semester) or 30 (per semester for two semesters)

Assessment
Assessment is by a combination of written projects, assignments, submissions, laboratory work and oral presentations and by the satisfactory completion of a thesis. Distribution of marks for each aspect of the assessment is determined individually for each subject.

Guidelines on the use of electronic calculators and other electronic storage devices in examinations are provided in individual subject outlines distributed to students within the first two weeks of semester and included on final examination papers.

Electronic calculators and other electronic storage devices will not be permitted where the above provisions have not been made.

Master of Science in Occupational Safety and Health, and Master of Science in Occupational Hygiene
The University of Greenwich, London, UK, in conjunction with the Centre for Environmental Safety and Risk Engineering, offers a two-year program in the distance learning mode. The degree is awarded by the University of Greenwich.

Master of Science in Occupational Safety and Health
The course will necessitate completion of six taught units comprising five core units in:

- Occupational Safety Practice
- Safety and Risk Management
- The Monitoring, Analysis and Control of Toxic Substances in the Workplace
- Industrial Toxicology, Occupational Health Practice and Epidemiology
- The Thermal and Acoustic Environment.

In addition, students will take ONE unit from the following options. The optional units are:

- Lighting, Ionising and Non-Ionising Radiation
- Ergonomics and Industrial Psychology

Completion of the six units will give students the 90 credits for the award of a Postgraduate Diploma. The Master of Science will be completed via a 30 credit dissertation which will be based on an empirical investigation.

Master of Science in Occupational Hygiene
Students will be required to complete all the units offered in the Master of Science in Occupational Safety and Health, except the first unit, Occupational Safety Practice. Completion of the six units will give students the 90 credits for the award of a Postgraduate Diploma. The Master of Science will be completed via a 30 credit dissertation which will be based on an empirical investigation.

Masters (by Research)
Course Code: ERQR

Course Structure
Full-time: EQT6010
Part-time: EQT6020

Doctor of Philosophy
Course Code: EPQR

Course Structure
Full-time: EQT6030
Part-time: EQT6040
Centre for Packaging, Transportation and Storage

Courses Offered
The Centre for Packaging, Transportation and Storage offers postgraduate courses leading to the award of:

- Graduate Certificate in Intermodal Freight Systems Management
- Graduate Certificate in Bulk Freight Systems Management
- Graduate Diploma in Intermodal Freight System Management
- Doctor of Philosophy
- Master of Engineering (Research)

A wide variety of research projects are available. Most programs offer participation in industry projects.

The Centre also offers these undergraduate subjects in Packaging Technology, available within the School of Architectural, Civil and Mechanical Engineering:

EMU4401 Transportation Dynamics
EMU4402 Design and Testing of Containers

Focus
The Centre for Packaging, Transportation and Storage (CPTS) at Victoria University is a multi-disciplinary centre supported by scientists and engineers from departments across the University. Established in 1994, its purpose is to complement the University's educational courses in packaging technology with research programs in areas concerned with the packaging, handling, transportation and storage of goods. In addition, the Centre undertakes technical studies and testing for industry clients and runs seminars, workshops and training programs related to packaging technology. Almost $2 million has been invested in the laboratory facilities.

The University is unique in Australia in having dedicated considerable resources toward high quality research in packaging. Current and future research programs include the Major Research Area of Food Science, Packaging and Marketing in its Research Management Plan.

Mission
The mission of the Centre is to be a leading, internationally recognised provider of education, research and related services in packaging, transportation and storage.

The Centre is particularly mindful of its role in the development of close links with industry, commerce and government through collaborative research, consultancy, educational and training programs and dissemination of technical information. It receives cooperation from several departments, schools and faculties.

Research Activities
Research projects currently being conducted include investigations on packaging materials properties under extreme environmental conditions, measurement, analysis and laboratory simulation of distribution environments, numerical modelling of storage of respiring produce, pesticide-free storage of grains, development of new techniques for packaging design and evaluation, odour characterisation and oxidative stability of packaging trims, fuzzy neural clustering techniques for grading and packaging produce, life cycle assessment of product packaging systems, among others.

Graduate Certificate in Intermodal Freight Systems Management
Course Code: ETIF

Course Objectives
The course seeks to provide transport specialists and managers with the background, analytical skills and techniques useful and necessary to manage intermodal freight - and elements in the systems - efficiently and effectively. Among other things it seeks to provide an understanding of: The nature and operational dynamics of integrated freight systems. Competition, competitive forces and competitive efficiency in markets and the way in which modal and intermodal markets operate. The economics of segmented transport systems and the cost efficient linehaul and interface operations. The institutional, operational and legal issues that impact on or affect intermodal systems and strategic development issues for intermodal systems capable of delivering significant competitive advantage to shippers, both nationally and internationally.

Admission Requirements
To qualify for admission to the course an applicant must have successfully completed a degree and a minimum of three years relevant work experience.

For applicants without a degree, a minimum of five years relevant work experience supported by evidence of professional attainment.

Course Duration
The course is taught in three, five day blocks. Each block is separated by about 10 to 12 weeks of term time, allowing the completion of research reports.

Course Structure

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Points</th>
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<tbody>
<tr>
<td>EPM5000</td>
<td>Intermodal Freight Markets - Dynamics and Structure</td>
<td>20</td>
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<tr>
<td>EPM5001</td>
<td>Intergrating Intermodal Freight Systems</td>
<td>20</td>
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<tr>
<td>EPM5002</td>
<td>Defining Strategies for Intermodal Freight Systems</td>
<td>20</td>
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Assessment
As part of the assessment students are required to prepare written case studies, research reports and seminar papers. The students as part of their assessment are expected to present their reports via seminar. Group syndicate work is, in addition, an important part of activities and assessment. This part of the program focuses not only on problem solving and on the development of analytical skills but on group interaction, team work and joint research - all requiring and/or developing effective oral and written communication skills.

Graduate Certificate in Bulk Freight Systems Management
Course Code: (Subject to approval)

Course Objectives
The Graduate Certificate in Bulk Freight Systems Management focuses on understanding, managing and operating efficiently and effectively in complex bulk freight systems and supply chains. The focus is on modal integration and to develop skills for operators and third party service providers and to traditional transport providers which aims at delivering business success.
Course Outcomes
Provide an understanding of:

- The dynamics and structure of bulk freight systems;
- Competition, competitive forces and competitive efficiency in bulk freight systems;
- The dynamics of integrated freight systems, integrated bulk freight systems, integrated logistics networks and supply chains;
- The economics of bulk freight systems; of bulk transport systems including bulk shipping, bulk ports, rail and road operations - and of the cost penalties of inefficient segmented networks and interface congestion;
- Policy constraints in bulk freight systems;
- Strategies for the development of bulk freight and integrated freight systems;
- How to deal with conflicting requirements of key players in bulk freight systems;
- The need for matching capacity in bulk freight systems and in integrated transport and supply chain systems;
- The development of insights into the principles of strategic positioning of firms in bulk freight systems and supply chains.

Course Content
Unit 1
Bulk Freight Markets & Supply Chains: Dynamics & Structure
This unit focuses on managing firms in bulk freight systems and supply chains to achieve fully integrated, rather than highly segmented and atomistic chains. It is concerned with ways and means of trading off system efficiency and costs in such a way as to deliver maximum customer value under varying economic and policy scenarios. It provides a framework and concepts and techniques for understanding how firms capture competitive advantage and value in bulk freight markets - whether those firms are production-oriented firms or whether they are third party service providers - railroads, ports, shipping lines, trucking companies and agencies of various types.

Unit 2
Managing Bulk Supply Chains
This unit focuses on the managing of bulk systems and export chains to ensure best practice efficiency on a sustainable basis. It provides an understanding of the levels and structure and incidence of costs, and the nature of costs and the transfer of inefficiency costs in supply chains which is crucial for properly managing of efficient chains. It investigates how service providers set prices; are prices efficient; what impact do inefficient prices have on chain system efficiency. It also includes amount and timing of investment, policy and regulatory constraints and at the management of issues related to these.

Unit 3
Defining Strategies for Bulk Freight Systems
This unit focuses on how to operate efficiently in inherently unstable markets and under these circumstances how production firms and third party service providers define forward strategies for growth. We examine the problem of defining how firms position themselves for the future - how they understand where they are at now and where they want to be in one or three or ten years and how they might get there. Important issues included are technological change; investment planning; e-Business; of alliance formation; of chain smoothing; and of sustainable and triple bottom-line positioning - including economic, social and environmental aspects.

Course Duration
Each unit is taught in a five day block at approximately 12/13 weeks intervals

Required Reading
Current available text book - students to be advised

Class Contact
Teaching for each unit is over a five day block

Course Structure

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<tr>
<td>EPM5006</td>
<td>Bulk Freight Markets and Supply Chains Dynamics</td>
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<tr>
<td>EPM5007</td>
<td>Managing Bulk Supply Chains</td>
<td>20</td>
</tr>
<tr>
<td>EPM5008</td>
<td>Defining Strategies for Bulk Freight Systems</td>
<td>20</td>
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</tbody>
</table>

Assessment
Seminar paper, 10%; Group syndicate work, 40%; Research report, 50% of total marks

Graduate Diploma in Intermodal Freight Systems Management
Course Code: EGIF

Course Objectives
The course seeks to provide transport specialists and third party service providers with the background, analytical skills and techniques necessary to manage complex intermodal and chain systems efficiently and effectively. It provides, among other things: An understanding of trade-offs in system efficiency and costs in order to deliver customer value under varying economic and policy scenarios; An understanding of process mapping; Design of static and dynamic KPIs and dynamic modelling solutions for efficient chains; An understanding of relationships between costs of investment and use of capital and the benefits of investment; Timing of investments, cost/price relationships and investment risks, financial modelling and techniques for developing investment scenarios; Strategic options for third-party service providers and stakeholder firms: The basis of traditional 'transport provider' firms sustained business success, and business success and the notions of market and supply chain power.

Admission Requirements
Successful completion of the Graduate Certificate in Intermodal Freight Systems Management with relevant exemptions being granted. A relevant degree (ie logistics or supply chain management) and a minimum of three years relevant industry experience.

Course Duration
The course is taught in six teaching units each of five days scheduled at twelve week intervals.

Course Structure

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<td>Defining Strategies for Intermodal Freight Systems</td>
<td>20</td>
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<tr>
<td>EPM5003</td>
<td>Advanced Chain Systems Management</td>
<td>20</td>
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<tr>
<td>EPM5004</td>
<td>Financial and Investment Planning In Chain Systems Management</td>
<td>20</td>
</tr>
<tr>
<td>EPM5005</td>
<td>Strategy, Strategic Options and Business Success in Chain Systems Management</td>
<td>20</td>
</tr>
</tbody>
</table>

174
Assessment
The program is taught in an open and interactive context and encourages students to question, debate and assimilate concepts and ideas. Evaluation is by way of seminar presentation and reporting, extensive syndicate group work and presentation of findings, and a lengthy research paper in each unit. Seminar work requires careful evaluation of given material and presentation exposes it to argument and debate. The syndicate work, five days each unit, requires research from texts, papers, the internet and industry files. It provides an excellent, interactive and group-work environment. The research paper is an individual piece of work and requires considerable effort to locate and analyse data and information sources. Invariably, competence accumulates over the three related subjects to deliver excellent learning outcomes.

Centre for Telecommunication and Micro-Electronics
Centre for Telecommunications and Micro-Electronics was established within the Faculty of Science, Engineering and Technology (FoSET) at Victoria University in late 2001. The Centre aims to provide excellence in research and development in telecommunication and micro-electronic technologies, particularly through the strong partnerships it has established with Government, industry and research centres both nationally and internationally. The major objective of the Centre is to create technologies that are required for future wireless telecommunication services and micro-electronic systems. The Centre pride itself in selecting research projects that benefit industry as well as being academically challenging.

Affiliations
Australian Telecommunications Research Centre: www.telecommunications.crc.org.au
Australian Microelectronics Network AMN: www.amn.org.au

Areas of Research
Mobile Communication and Signal Processing
System Consideration
- Capacity Enhancement Adaptive (Smart)Antennas
- Air Interface
Propogation measurement and modeling
- Widebank and ultra wide bank channel sounding
- Multiple Input Multiple Output (MIMO)
Algorithm development for high capacity modulation schemes
- OFDM networks and W-CDMA networks
- MIMO and Space-Time Coding
- Synchronisation, Channel Estimation

Wireless Technology
- Software Radio
- Radio terminal design issues
- Base station design issues
- Linearisation

Microelectronic Circuits, Systems and Implementation
- Mixed Signal/ RF
- AD and D/A
- DSP/ FPGA/ ASIC
- Algorithms for wireless systems
- Low Power
- Reconfigurable systems
- Training: Chipskills

Collaborative Links
Australian Telecommunications Cooperative Research Centre (ATCRC)
The ATCRC is a cooperative research centre supported by Commonwealth Government of Australia. It is a research partnership between industry, universities and governments. The ATCRC is focused on developing solutions that deliver ‘anywhere, anytime, anything’ enhanced mobile service access with defined Quality of Service (QoS) across packet networks to support multimedia applications. The research carried out by ATCRC partners are in the following areas:
- Applications: Multimedia over wireless networks, 1px6 handover.
- Networking: AAL type 2 traffic management and switching, routing algorithms for IP.
- Wireless: W-CDMA scanner, Multi-element antenna systems,
- Media-Cell, coding and modulation and multi-user detection.
- Enabling Technologies: Electromagnetic compatibility, signal in electronic and communication systems.

National Networked Tele Test Facility (NNTTF)
The NNTTF is a research facility established through funding through the Australian Government’s Major National Research Facilities Program (MNRF). The NNTTF provides the state of the art research, education and training services using HP3000 System-on-a-Chip (SoC) platform to satisfy the test demands for integrated circuit designs.

Chipskills Programme
Chipskills programme is a partnership of universities, industries and Victorian Government that provides postgraduate and professional development courses in microelectronic engineering. This is the only course in Australia developed and delivered in cooperation with industry, (like Ericsson, NEC, Fujitsu, Robert Bosch, Agilent Technologies, Motorola, Semiconductor Technologies Australia), and is based on leading edge design tools such as Cadence and Synopsys.

Australian Microelectronics Network (AMN)
The AMN is a national industry development network with the objective of expanding the microelectronics industry in Australia. The vision of this network is to encourage a vibrant microelectronics design community with companies, governments and universities collaborating as part of a technology development cluster.

International Collaboration
The Centre is a member of the Heterogeneous Signal Processing Research project, a collaboration with three Swedish Universities. The Centre has informal links with a number of other Universities and Research Centres:
- Bristol University (UK)
- ACREO and Socware, Sweden
- British Telecom Research Labs
- University of California, Berkeley
- National Microelectronics Research Centre, Ireland
- York University, UK
Training Programmes

Education
An important aspect of the Centre is to provide training in core activity areas. This is done through industrially focused and sponsored ChipSkills programmes, Australian Telecommunications CRC, National Networked Tele Test Facility and Australian Microelectronics Network.

The School of Electrical Engineering (formerly Communications and Informatics) also provides a number of postgraduate courses to complement Telecommunications and Microelectronics Strategic Research Areas.

These courses are:
- M.Eng Microelectronic Engineering
- M.Eng.Sc. in Telecommunications Engineering
- M.Eng research degree in all the areas of the Centre activity
- PhD research degree in all the areas of the Centre activity

Scholarships
Centre for Telecommunication and Micro-Electronics often receives funds from Industry and Government sources for applied research. Applications for most Government Scholarship close in October every year. Industry Scholarships are generally available throughout the year, depending on the availability of funds.

Research Students are wanted in the following areas:
- Signal Processing. Application of DSP to radio systems, e.g. Adaptive antenna systems, Equalisation, Modulation etc.
- Microelectronics, VLSI, System-on-Chip.

Applicants are required to have a good honours degree in Electronic or Communications Engineering (or equivalent in qualifications or experience eg Applied Maths), good analytical and communications skills, and enthusiasm for radio and signal processing. Applications, Australian Postgraduate Awards (APAs), International Postgraduate Research Scholarships (IPRS) and V / C's Scholarships are due at the discretion of the Head of School. Scholarships are worth approx. $16,000.

A top-up bonus of $5,000 pa is offered to successful candidates undertaking approved research projects with the Centre for Telecommunications and Micro-Electronics. Scholarship duration is 3 years for PhD and 2 years for ME. Application forms can be obtained from Victoria University's Postgraduate Research Unit.

Facilities

Hardware
Radio Frequency RF
The Centre has two RF laboratories and built in screened room facilities. The laboratories are equipped with modern RF and microwave test equipment (RF sources, IQ generator, arbitrary waveform generator; FFT analyser; spectrum analysers; radio test set and network analysers etc.) providing continuous coverage of all frequencies up to 6 GHz. A recently acquired scalar network analyzer extends this range to 50 GHz. The Centre has its own fabrication facilities for microwave circuits using PCB and other microwave substrate materials.

Microelectronics, ASIC, VLSI
Microelectronics Activities are supported by dedicated laboratory with online access to the HP93000 System on a chip platform hosted at the National Teletesting Facility in Perth. Victoria University is the access node for the State of Victoria. The facility is available for use by SME, Industry and other Universities.

Software
The majority of the Centre's work is performed on dedicated Workstations and PCs while the University computer is used for large simulations. High level software packages include OPNET for protocol and network performance analysis, SPW for signal processing and communication applications, MATLAB (with the DSP, control, simulink and other toolboxes) for maths and digital signal processing applications, and a number of other statistical and DSP packages. Packages for neural and fuzzy research are also available.

Microelectronics and implementation level software includes the full suite of SYNOPSIS, CADENCE for advanced hardware design, system level simulation, gate level simulation, Analog, ASIC and PCB layouts. SUMMIT Visual HDL is used for FPGA and ASIC design.

SUPERCOMPACT and ADS for RF and microwave circuit design, simulation, and layout. GAS Station for microwave circuit layout, HSPICE for analog simulation.

For further information and facility booking please visit the website http://sci.vu.edu.au/nnttf-vic.

School of Computer Science and Mathematics

The School embraces the disciplines of Computer Science, Mathematics, Statistics and Operations Research. This research group consists of mathematicians, statisticians and computer scientists focusing on industrial problems. Areas of interests include experimental design, process control, component and system reliability modelling and performance, aspects of industrial optimisation, and statistical problems in applied economics.

Exploding technology ensures that research in computing and computer science is constantly changing and developing. The computing research emphasis includes visual information systems, database systems, computer networking and communications. The mathematicians have a broad spectrum of interests, with major research outputs in information theory and coding, theory of inequalities applied in numerical and Fourier analysis, image processing, and differential and integral equations. Image processing is fast developing with the potential for the application of the Theory of Inequalities to approximation and numerical quadrature in Hankel, Fourier and other integral transforms useful in applied sciences.

The research group in mathematical inequalities and applications (RGMIA) is the focus of an international collaboration of leading mathematicians in the area. Additional areas of research focus include visual information and multimedia information systems, industrial automation and power systems, reliability, experimental design, statistical process control, database systems, parallel and image processing, computer networking, modelling and simulation and the theory and application of object-oriented languages. There is also interest in optimal pricing policies.

School staff members are active in a number of research projects supported through the co-operation of industrial bodies and national research organisations.

The School has a number of specific research areas such as:
- Internet Technologies
- Visual Information Systems
- Network Multimedia and Databases
- Analysis of Inequalities, Information Theory
- Coding & Cryptography
• Financial and Risk modelling
• Image Processing
• Industrial Process Modelling
• Education within the Discipline areas

Postgraduate Programs by Research
The School offers the following research degrees:
• Doctor of Philosophy
• Master of Science

Research topics compatible with the School's experimental facilities and staff expertise are negotiated between student and supervisors. A number of research programs are available in the above areas. In addition, applicants with interests in similar areas are encouraged to discuss them with the School, telephone (03) 9688 4492.

A booklet with more specific research details for the benefit of prospective students is available on request.

Minimum Standards of Entry
Applicants should have formal qualifications and experience at least equivalent to an Australian four year Bachelor's degree with Honours in an appropriate discipline. Applicants wishing to undertake a PhD who do not already possess a Master's degree will normally be expected to enrol initially for a Master's degree and will be considered for transfer to PhD candidature after one year of study.

All overseas applicants must provide evidence of proficiency in the English language:

IELTS - an overall band score of 6.5, subject to individual profile; or

TOEFL - a score of 550+, and a Test of Written English (TWE) score of 5+.

Program Duration
Candidates will undertake research in one of the above areas and will be examined by dissertation (thesis). Candidates may be required to undertake some theory courses as part of the overall higher degree program. Any such courses will be specified at the time of commencement.

A full-time research Masters degree will normally take up to two years and a PhD degree is likely to take a minimum of three years.

Doctor of Philosophy
Course Code: SPNL, EPER, SPSC

Course Structure
ECI8000 Research (Full Time)
ECI8010 Research (Part Time)

Master of Science (Research)
Course Code: SRNL

Course Structure
ECI8000 Research (Full Time)
ECI8010 Research (Part Time)

Coursework Programs
The School offers a range of coursework programs at postgraduate level:

1. Graduate Diplomas in:
   • Computer Science
   • Computer and Mathematical Sciences
   • Multimedia Information Networking
   • Software Engineering

2. Master of Science in:
   • Computer Science
   • Computer and Mathematical Sciences
   • Software Engineering

Graduate Diploma in Computer Science
Course Code: SGCS

Graduate Diploma in Computer and Mathematical Sciences
Course Code: SGCM

Course Objectives
The Graduate Diploma programs are designed for graduates who want to acquire professional competence in Computer Science and/or the Mathematical Sciences. Each Graduate Diploma develops graduates who have a sound conceptual foundation, including practical understanding of recent developments in computer technology and how these may be applied to solve a wide range of problems in business and industry.

Graduate Diploma in Computer and Mathematical Sciences offers a strong mathematical sciences component.

Admission Requirements
Entry to each course is open to applicants with a first degree. Preference will be given to applicants whose degree contains major studies in a quantitative discipline. Other applicants whose occupation or experience indicates that they have the capacity to succeed may be accepted into the course.

Course Duration
Each course is offered on both a full-time and a part-time basis. Part-time students will normally take two years to complete the course. Lectures will normally be offered in the evenings, however, some of the subjects are available during the day.

Course Structure
Two streams of subjects are available:

Computer Science:
• Computer Programming
• Information Systems & Software Engineering
• Multimedia & Networking

Mathematical Sciences:
• Production and Distribution Management
• Finance and Marketing Statistics
The courses provide maximum flexibility allowing specialisation in either one or a combination of the two streams.

To complete a Graduate Diploma, students are required to pass the equivalent of eight semester subjects. All subjects are three hours per week.

For the award of Graduate Diploma in:

**Computer Science Stream**
- SCM5800 Object Oriented Programming GD1
- SCM5802 Information Systems
- SCM5803 Data Structures and Programming
- SCM6804 Software Engineering
- SCM5805 Communication and Networks
- SCM5807 Advanced Information Systems
- SCM5811 Operating Systems
- SCM5813 Artificial Intelligence
- SCM5819 Cobol Programming
- SCM5821 Introduction to Multimedia Systems
- SCM5824 Object Oriented Programming GD2

**Mathematical Sciences Stream**
- SCM5404 Financial Decision Support Systems
- SCM5601 Statistical Forecasting
- SCM5822 Quality Management and Statistics
- SCM5901 Introduction to Decision Support Systems
- SCM5902 Optimisation Techniques
- SCM5903 Systems and Simulation Studies
- SCM5904 Production and Distribution Management

Students study eight subjects, each worth 15 credit points.

**Progression Regulations**

The School's Academic Committees (Examiners' Meetings) will, at the end of each semester, consider the results and progress of all students enrolled in the course.

Progression is based on the following guidelines:

(i) Where any subject must be repeated, enrolment in that subject must be at the first opportunity following the initial failure.

(ii) Students will not normally be allowed to enrol in any subject for which at least a P grade has not been attained in any of the pre-requisite subjects.

**Unsatisfactory Progress**

These regulations should be read in conjunction with Victoria University's Statute 6.4.1 - Unsatisfactory Progress. The following regulations apply to both full-time and part-time students.

(i) The following shall constitute unsatisfactory progress:
   (a) failure in at least 50% of the assessed subjects for which a student has enrolled in a semester of study,
   (b) failure in any subject twice,
   (c) transgression of a conditional enrolment stipulation and agreement.

(ii) Where a student's progress is unsatisfactory, the Departmental Academic Progress Committee may recommend the following:
   (a) a restricted and conditional enrolment only be approved,
   (b) exclusion from the course.

(iii) A student who wishes to appeal against the Department's written recommendation is required to do so in accordance with the University's Statutes. The procedures to be followed in lodging a submission, hearing of submissions and communicating the results of hearings are set out in the University's Statutes.

(iv) Excluded students have no right of re-admission to the course from which they were excluded. Students who have been excluded may apply for re-admission not less than one calendar year from the date of exclusion. The student must provide, with his or her application, evidence of changed circumstances which significantly improve the applicant's likelihood of academic success.

**Graduate Diploma in Multimedia Information Networking**

*Course Code: SGMN*

**Course Objectives**

The aim of this course is to impart fundamental knowledge and training to people with non-computing backgrounds in the application and development of Multimedia Information Networks.

The fundamental knowledge provides students with the ability to adapt to different computing platforms, application environments and rapid technological advancements encountered in the workplace.

Students will be able to gain employment in the Network Management area, as well as in the areas of Multimedia systems development, and Multimedia applications.

**Admission Requirements**

To qualify for admission to the course an applicant must have successfully completed an undergraduate degree in a non-computing discipline. Equivalent academic standing based on successful completion of recognised courses and industrial experience may also be considered sufficient for admission to the course.

**Course Duration**

Graduate Diploma in Multimedia Information Networking will require one year of full-time study, or equivalent part-time study. Classes will be scheduled to cater for part-time students.

**Course Structure**

The course will cover the following four areas, each comprising two subjects:
- Computer Systems and Programming
- Information Systems
- Data Communication and Networks
- Multimedia Systems

The subjects offered in the course are:
- SCM5800 Object Oriented Programming GD1
- SCM5802 Information Systems
- SCM5805 Communication and Networks
- SCM5807 Advanced Information Systems
- SCM5824 Object Oriented Programming GD2
- SCM5820 Network Systems Administration
- SCM5821 Introduction to Multimedia Systems
- SCM5822 Networked Multimedia Systems

Students study eight subjects, each worth 15 credit points.

**Progression Regulations**

The School's Academic Committees (Examiners' Meetings) will, at the end of each semester, consider the results and progress of all students enrolled in the course.

Progression is based on the following guidelines:

(i) Where any subject must be repeated, enrolment in that subject must be at the first opportunity following the initial failure.

(ii) Students will not normally be allowed to enrol in any subject for which at least a P grade has not been attained in any of the pre-requisite subjects.

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These regulations should be read in conjunction with Victoria University's Statute 6.4.1 - Unsatisfactory Progress. The following regulations apply to both full-time and part-time students.

(i) The following shall constitute unsatisfactory progress:
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(ii) Where a student's progress is unsatisfactory, the School Academic Progress Committee may recommend the following:
(a) a restricted and conditional enrolment only be approved;
(b) exclusion from the course.

(iii) A student who wishes to appeal against the School's written recommendation is required to do so in accordance with the University's Statutes. The procedures to be followed in lodging a submission, hearing of submissions and communicating the results of hearings are set out in the University's Statutes.

(iv) Excluded students have no right of re-admission to the course from which they were excluded. Students who have been excluded may apply for re-admission not less than one calendar year from the date of exclusion. The student must provide, with his or her application, evidence of changed circumstances which significantly improve the applicant's likelihood of academic success.

Graduate Diploma in Software Engineering
Course Code: SG SE

Course Objectives
The Graduate Diploma program is designed for graduates who want to acquire professional competence in software engineering. The Graduate Diploma program develops graduates to have a sound knowledge and technical skills in the areas of software specification, design, implementation and management. This program has strong programming and software engineering components.

Successful students can articulate with full credit into the Master of Science in Software Engineering program.

Admission Requirements
Entry to this course is open to applicants with a first degree in computing. Preference will be given to applicants whose degree contains major studies in a quantitative discipline. Other applicants whose occupation or experience indicates that they have the capacity to succeed may be accepted into the course.

Course Duration
The course is offered on both a full-time and a part-time basis. Part-time students will normally take two years to complete the course. Lectures will normally be offered in the evenings; however, some of the subjects are available during the day.

Current Course Structure
To complete the Graduate Diploma in Software Engineering requires the successful completion of six (4) core subjects and two (4) elective subjects.

Proposed Course Structure
To complete the Graduate Diploma in Software Engineering requires the successful completion of four (4) core subjects and four (4) elective subjects.

<table>
<thead>
<tr>
<th>Core Subjects</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCM5824</td>
<td>Object Oriented Programming GD2 15</td>
</tr>
<tr>
<td>SCM6822</td>
<td>Internet Programming 15</td>
</tr>
<tr>
<td>SCM6840</td>
<td>Software Engineering 1 15</td>
</tr>
<tr>
<td>SCM6841</td>
<td>Software Engineering 2 15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Elective Subjects</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCM5800</td>
<td>Object Oriented Programming GD1 15</td>
</tr>
<tr>
<td>SCM5802</td>
<td>Information Systems 15</td>
</tr>
<tr>
<td>SCM5803</td>
<td>Data Structures and Programming 15</td>
</tr>
<tr>
<td>SCM5805</td>
<td>Communication and Networks 15</td>
</tr>
<tr>
<td>SCM5813</td>
<td>Artificial Intelligence 15</td>
</tr>
<tr>
<td>SCM5820</td>
<td>Network Operating Systems Admin 15</td>
</tr>
<tr>
<td>SCM5821</td>
<td>Introduction to Multimedia Systems 15</td>
</tr>
</tbody>
</table>

Or appropriate electives from other computer science graduate programs.

Progression Regulations
The School's Academic Committees (Examiners' Meetings) will, at the end of each semester, consider the results and progress of all students enrolled in the course.

Progression is based on the following guidelines:
(i) Where any subject must be repeated, enrolment in that subject must be at the first opportunity following the initial failure.
(ii) Students will not normally be allowed to enrol in any subject for which at least a P grade has not been attained in any of the pre-requisite subjects.

Unsatisfactory Progress
These regulations should be read in conjunction with Victoria University's Statute 6.4.1. - Unsatisfactory Progress. The following regulations apply to both full-time and part-time students.

(i) The following shall constitute unsatisfactory progress:
(a) failure in at least 50% of the assessed subjects for which a student has enrolled in a semester of study,
(b) failure in any subject twice,
(c) transgression of a conditional enrolment stipulation and agreement.

(ii) Where a student's progress is unsatisfactory, the Departmental Academic Progress Committee may recommend the following:
(a) a restricted and conditional enrolment only be approved,
(b) exclusion from the course.

(iii) A student who wishes to appeal against the Department's written recommendation is required to do so in accordance with the University's Statutes. The procedures to be followed in lodging a submission, hearing of submissions and communicating the results of hearings are set out in the University's Statutes.

(iv) Excluded students have no right of re-admission to the course from which they were excluded. Students who have been excluded may apply for re-admission not less than one calendar year from the date of exclusion. The student must provide, with his or her application, evidence of changed circumstances which significantly improve the applicant's likelihood of academic success.
Master of Science in Computer Science
Course Code: SMCS

Master of Science in Computer and Mathematical Sciences
Course Code: SMCM

Course Objectives
The Masters programs develop a sound theoretical knowledge of contemporary Computer Science techniques and/or the techniques in one specified field of study from the Mathematical Sciences. Emphasis is also placed on the application of these techniques in areas of business and industry.

Admission Requirements
To qualify for admission to the course an applicant must have successfully completed an appropriate degree or an equivalent combination of qualifications and experience.
Applicants must be competent in tertiary level mathematics and computing (which may have to be demonstrated in special tests).
Applicants with any of the following qualifications may apply for credits against specific coursework subjects up to the indicated maximum:

(a) A degree in computer science (4)
(b) A four year honours degree in computer science (12)
(c) A pass degree (without a major in computer science) followed by an appropriate graduate diploma (8)
(d) A combination of qualifications and experience equivalent to (a), (b), or (c) above.

Course Duration
The course is offered on a full-time basis over two years or on an equivalent part-time basis.
For candidates given credit, the minimum duration must be at least the equivalent of one and a half years of full-time study following a three year degree.

Course Structure

Computer Science
SCM6845 Object Oriented Technology 1M
SCM6846 Object Oriented Technology 2M
SCM6840 Software Engineering 1M
SCM6841 Software Engineering 1M
SCM6842 Software Engineering 2M
SCM6811 Information Network Design and Development
SCM6819 User Interface Design
SCM6820 Distributed Systems
SCM6821 Decision Support Technology
SCM6822 Internet Programming
SCM6823 Database Design, Management and Administration Minor Thesis
SCM6824 Advanced Database Paradigms
SCM6825 Multimedia Systems Design and Development
SCM6826 Intelligent Agents
SCM6827 Research Perspectives in Computer Science

Mathematical Sciences
SCM6502 Image Processing Algorithms
SCM6601 Reliability and Maintenance
SCM6603 Statistical Control of Continuous Processes
SCM6604 Experimental Design
SCM6605 Regression Analysis
SCM6606 Time Series Analysis
SCM6608 Multivariate Analysis
SCM6602 Mathematical Programming 1
SCM6603 Mathematical Programming 2
SCM6604 Simulation
SCM6605 Sequencing and Scheduling
SCM6606 Optimisation Techniques
Minor Thesis

Each subject is worth 15 credit points.

Students must obtain a pass in:
14 semester units and a thesis equivalent to two semester units; or
12 semester units and a thesis equivalent to four semester units.

For the award of MSc in Computer Science, at least 8 units must be selected from the Computer Science stream. For the award of MSc in Computer and Mathematical Sciences, at least 6 units must be selected from the Mathematical Sciences stream.

Thesis
Where possible the candidate will be encouraged to choose a topic related to his/her own work situation or with consulting projects being carried out by the School.
SCM6102 – 30 credit points
SCM6103 – 60 credit points

Progression Regulations
The School's Academic Committees (Examiners' Meetings) will, at the end of each semester, consider the results and progress of all students enrolled in the course.
Progression is based on the following guidelines:

(i) Where any subject must be repeated, enrolment in that subject must be at the first opportunity following the initial failure.
(ii) Students will not normally be allowed to enrol in any subject for which at least a P grade has not been attained in any of the prerequisite subjects.

Unsatisfactory Progress
These regulations should be read in conjunction with Victoria University's Statute 6.4.1. - Unsatisfactory Progress. The following regulations apply to both full-time and part-time students.

(i) The following shall constitute unsatisfactory progress:
(a) failure in at least 50% of the assessed subjects for which a student has enrolled in a semester of study;
(b) failure in any subject twice;
(c) transgression of a conditional enrolment stipulation and agreement.

(ii) Where a student's progress is unsatisfactory, the School's Academic Progress Committee may recommend the following:
(a) a restricted and conditional enrolment only be approved,
(b) exclusion from the course.

(iii) A student who wishes to appeal against the School's written recommendation is required to do so in accordance with the University's Statutes. The procedures to be followed in lodging a submission, hearing of submissions and communicating the results of hearings are set out in the University's Statutes.
(iv) Excluded students have no right of re-admission to the course from which they were excluded. Students who have been excluded may apply for re-admission not less than one calendar year from the date of exclusion. The student must provide, with his or her application, evidence of changed circumstances which significantly improve the applicant's likelihood of academic success.

Supplementary Assessment
(i) Supplementary assessment is not normally available in any subject or course of the School, other than for reasons of Special Consideration of illness or other cause.
(ii) In special circumstances the Head of School may authorise supplementary assessment in one or more subjects, for example:
- for major discipline subjects taken for the first time, and where the student's normal assessment was unsatisfactory in a small minority of subjects studied in a year, but had aggregate results significantly above pass level, and
- where a satisfactory supplementary result is a reasonable expectation of the student.

(iii) Supplementary assessment may be initiated by a subject Examination Board or the School, where appropriate special grounds are seen to exist.

(iv) Supplementary assessment will require application, authorisation, and the payment of fees as defined by the School from time to time.

Master of Science in Software Engineering
Course Code: SMSE

Course Objectives
The Master of Science in Software Engineering provides students with the basic knowledge and technical skills in the areas of software specification, design and implementation. Specific skills pertinent to the development and management of large software projects. Human communication skills including the professional presentation of ideas, designs and solutions, and the documentation associated with software development projects. Human communication skills including the professional presentation of ideas, designs and solutions, and the documentation associated with software development projects. Management skills, in relation to: a software project from concept to delivery; the units derived during software development; people, as part of a team and as a leader. The ability to deal with constantly changing technology by using knowledge and understanding of concepts and applying them to real problems in a variety of contexts. Professional awareness, including social and legal responsibility and ethics.

Admission Requirements
To qualify for admission to the course an applicant must have successfully completed an appropriate degree or an equivalent combination of qualifications and experience.
Applicants must be competent in tertiary level mathematics and computing (which may have to be demonstrated in special tests).

Applicants with any of the following qualifications may apply for credits against specific coursework subjects up to the indicated maximum:
(a) A degree in with major studies in software engineering(4)
(b) A four year honours degree in (12)
(c) A pass degree (without a major in software engineering) followed by software engineering graduate diploma (8)
(d) A combination of qualifications and experience equivalent to (a), (b), or (c) above.

Course Duration
The course is offered on a full-time basis over two years or on an equivalent part-time basis.
For candidates given credit, the minimum duration must be at least the equivalent of one and a half years of full-time study following a three year degree.

Current Course Structure
To complete the Master of Science in Software Engineering requires the successful completion of six(6) cores subjects, eight (8) elective subjects and a minor thesis, (2 subject equivalence), or six (6) core subjects, six(6) elective subjects and a major thesis, (4 subject equivalence).

Core Subjects

<table>
<thead>
<tr>
<th>Credit</th>
<th>Course Code</th>
<th>Course Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>SCM6840</td>
<td>Software Engineering 1</td>
</tr>
<tr>
<td>15</td>
<td>SCM6841</td>
<td>Software Engineering 2</td>
</tr>
<tr>
<td>15</td>
<td>SCM6842</td>
<td>Advanced Topics in Software Engineering</td>
</tr>
<tr>
<td>15</td>
<td>SCM6843</td>
<td>Software Engineering Project</td>
</tr>
<tr>
<td>15</td>
<td>SCM6845</td>
<td>Object Oriented Technology</td>
</tr>
<tr>
<td>15</td>
<td>SCM6846</td>
<td>Object Oriented Design</td>
</tr>
<tr>
<td>15</td>
<td>SCM6701</td>
<td>Internet Data Management 1</td>
</tr>
<tr>
<td>15</td>
<td>SCM6702</td>
<td>Internet Data Representation 1</td>
</tr>
</tbody>
</table>

Elective Subjects

<table>
<thead>
<tr>
<th>Credit</th>
<th>Course Code</th>
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</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>SCM6819</td>
<td>User Interface Design</td>
</tr>
<tr>
<td>15</td>
<td>SCM6820</td>
<td>Distributed Systems</td>
</tr>
<tr>
<td>15</td>
<td>SCM6821</td>
<td>Decision Support Technology</td>
</tr>
<tr>
<td>15</td>
<td>SCM6822</td>
<td>Internet Programming</td>
</tr>
<tr>
<td>15</td>
<td>SCM6823</td>
<td>Database Design, Management and Administration</td>
</tr>
<tr>
<td>15</td>
<td>SCM6824</td>
<td>Advanced Database Paradigms</td>
</tr>
<tr>
<td>15</td>
<td>SCM6825</td>
<td>Multimedia Systems Design and Development</td>
</tr>
<tr>
<td>15</td>
<td>SCM6826</td>
<td>Intelligent Agents</td>
</tr>
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<td>15</td>
<td>SCM6827</td>
<td>Research Perspectives in Computer Science</td>
</tr>
</tbody>
</table>

Proposed Course Structure
To complete the Master of Science in Software Engineering requires the successful completion of eight (8) cores subjects, six (6) elective subjects and a minor thesis, (2 subject equivalence), or eight (8) core subjects, four (4) elective subjects and a major thesis, (4 subject equivalence).

Core Subjects

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<td>15</td>
<td>SCM6826</td>
<td>Intelligent Agents</td>
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<tr>
<td>15</td>
<td>SCM6827</td>
<td>Research Perspectives in Computer Science</td>
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Progression Regulations
The School's Academic Committees (Examiners' Meetings) will, at the end of each semester, consider the results and progress of all students enrolled in the course.
Progression is based on the following guidelines:

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(ii) Students will not normally be allowed to enrol in any subject for which at least a P grade has not been attained in any of the pre-requisite subjects.

Unsatisfactory Progress

These regulations should be read in conjunction with Victoria University’s Statute 6.4.1. – Unsatisfactory Progress. The following regulations apply to both full-time and part-time students.

(i) The following shall constitute unsatisfactory progress:
(a) failure in at least 50% of the assessed subjects for which a student has enrolled in a semester of study;
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(a) a restricted and conditional enrolment only be approved,
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Supplementary Assessment

(i) Supplementary assessment is not normally available in any subject or course of the School, other than for reasons of Special Consideration of Illness or other cause.

(ii) In special circumstances the Head of School may authorise supplementary assessment in one or more subjects. For example: for major discipline subjects taken for the first time; and where the student’s normal assessment was unsatisfactory in a small minority of subjects studied in a year, but had aggregate results significantly above pass level; and where a satisfactory supplementary result is a reasonable expectation of the student.

(iii) Supplementary assessment may be initiated by a subject Examination Board or the course School, where appropriate special grounds are seen to exist.

(iv) Supplementary assessment will require application, authorisation, and the payment of fees as defined by the School from time to time.

School of Electrical Engineering

The School of Electrical Engineering is the amalgamation of the former Department of Electrical and Electronic Engineering and the Department of Applied Physics.

The School currently enrol some 42 PhD and Masters research Students and more than 280 coursework Masters students. A major proportion of the School’s postgraduate students are from overseas.

The School has world class research laboratories and facilities, especially in the Telecommunications, Microelectronics and Optical technology areas. The School’s Centre for Mobile and Microelectronics is part of the Australian Telecommunication Collaborative Research Centre program.

The staff and students in the School of Electrical Engineering are active in the following research areas:

• Mobile Communications
• Optical Technology
• Microelectronics
• Robotics
• Telecommunications

Postgraduate Programs by Research

The School offers the following research degrees:

• Doctor of Philosophy
• Master of Engineering
• Master of Science

Research topics compatible with the School’s experimental facilities and staff expertise are negotiated between student and supervisors. A number of research programs are available in the above areas. In addition, applicants with interests in similar areas are encouraged to discuss them with the School, telephone (03) 9688 4492.

A booklet with more specific research details for the benefit of prospective students is available on request.

Minimum Standards of Entry

Applicants should have formal qualifications and experience at least equivalent to an Australian four year Bachelor’s degree with Honours in an appropriate discipline. Applicants wishing to undertake a PhD who do not already possess a Master’s degree will normally be expected to enrol initially for a Master’s degree and will be considered for transfer to PhD candidature after one year of study.

All overseas applicants must provide evidence of proficiency in the English language:

IELTS - an overall band score of 6.5, subject to individual profile; or
TOEFL - a score of 550+, and a Test of Written English (TWE) score of 5+.

Program Duration

A full-time research Masters degree will normally take up to two years and a PhD degree is likely to take a minimum of three years.

Doctor of Philosophy

Course Code: EPER, SPSC

Course Structure

EEE8000 Research (Full Time)
EEE8010 Research (Part Time)
Master of Engineering (Research)
Course Code: EERER

Master of Science (Research)
Course Code: SRNL

Course Structure
ECI8000 Research (Full Time)
ECI8010 Research (Part Time)

Postgraduate Programs by Coursework
The School offers a range of coursework programs at postgraduate level:
1. Graduate Certificate in:
   - Microelectronic Engineering
2. Graduate Diplomas in:
   - Microelectronic Engineering
   - Telecommunications Engineering
3. Master of Engineering in:
   - Microelectronic Engineering
4. Master of Engineering Science in:
   - Computer and Microelectronic Engineering
   - Telecommunication Engineering
   - Systems and Control Engineering

Progression Regulations
These regulations should be read in conjunction with Victoria University's Statute 6.4.1. - Unsatisfactory Progress.
(i) The following shall constitute unsatisfactory progress:
   (a) failure in at least 50% of the assessed subjects for which a student has enrolled in a semester of study,
   (b) failure in any subject twice,
   (c) transgression of a conditional enrolment stipulation and agreement.
(ii) Where a student's progress is unsatisfactory, the Departmental Academic Progress Committee may recommend the following:
   (a) a restricted and conditional enrolment only be approved,
   (b) exclusion from the course.
(iii) A student who wishes to appeal against the Department's written recommendation is required to do so in accordance with the University's Statutes. The procedures to be followed in lodging a submission, hearing of submissions and communicating the results of hearings are set out in the University's Statutes.
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Supplementary Assessment
(i) Supplementary assessment is not normally available in any subject or course of the School, other than for reasons of Special Consideration of illness or other cause.
(ii) In special circumstances the Head of School may authorise supplementary assessment in one or more subjects.
(iii) Supplementary assessment may be initiated by a subject Examination Board or the School, where appropriate special grounds are seen to exist.
(iv) Supplementary assessment will require application, authorisation, and the payment of fees as defined by the School from time to time.

Graduate Diploma in Telecommunications Engineering
Course Code: EGTE

Course Objectives
This postgraduate program, first offered in 1979 and reaccredited in 1985 and 1989 is designed to extend the education of practising engineers.

The main objective of the course is to provide practising engineers with advanced training in modern communication systems and associated technologies. Specifically, the course is designed to assist engineers in acquiring specialist knowledge not normally available in undergraduate courses and keep abreast with new developments in communication technology.

The course also helps communication engineers to broaden their technical horizon and develop new skills in other areas of communication engineering which are outside their immediate expertise.

Admission Requirements
To qualify for admission to the course an applicant must have successfully completed a degree in electrical, electronic or communication engineering, or have successfully completed other appropriate qualifications and relevant professional experience.

Full fee paying international students must have qualifications which are equivalent to those listed above. In addition they must provide evidence of proficiency in the English language:
IELTS - an overall band score of 6.0, subject to individual profile;
or
TOEFL - a score of 550+, and a Test of Written English (TWE) score of 5+.

Course Duration
The course is offered on a full-time basis over one year or on a part-time basis over an equivalent period of time. Completion of the course requires the accumulation of 120 credit points.

Course Structure
The program is made up of two core subjects and a set of elective subjects. The core subjects are designed to provide the necessary theoretical basis and the exposure to independent study, while the elective subjects offer a high degree of specialization.

The completion of the course requires the completion of the two core subjects and eight elective subjects.

<table>
<thead>
<tr>
<th>Semester One</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>EET5510</td>
<td>Communication Theory Principles</td>
</tr>
<tr>
<td>EET5500</td>
<td>Communication Systems Case Study</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
</tr>
<tr>
<td>EET6511</td>
<td>Data Network Analysis and Design</td>
</tr>
<tr>
<td>EET6521</td>
<td>Digital Switching and Signalling Systems</td>
</tr>
<tr>
<td>EET6531</td>
<td>Wireless Communication Subsystems</td>
</tr>
<tr>
<td>EET6541</td>
<td>Multimedia and Internet Technology</td>
</tr>
<tr>
<td>EET6551</td>
<td>Microwave Electronic Circuit Design</td>
</tr>
<tr>
<td>EET6561</td>
<td>Local Area and Broadband Networks</td>
</tr>
<tr>
<td>EET6512</td>
<td>Intelligent Networks and Network Management</td>
</tr>
</tbody>
</table>
The partner universities.

Development and delivery of this course is shared between each of Victorian State Government. The project involves Victoria University, RMIT University, Industry and programs in areas relevant to the semiconductor industry. The course seeks to develop a range of professional and vocational training skills and practical experience to satisfy the requirements of the microelectronic industry. An important feature of the course is the opportunity it provides for the students to design their own integrated circuits. The course aims to produce engineers with the necessary knowledge of issues pertinent to integrated circuit design; (c) develop the advanced technical and algorithmic skills necessary to master state of the art microelectronic technology; (d) develop research skills necessary to obtain specialist knowledge; (e) cultivate logical and lateral thinking that leads to creation and innovation in the pursuit of solutions to engineering problems.

The specific aims of the course are to:
(a) develop integrated circuit design expertise in embedded systems, digital, mixed signal and system-on-chip systems design and verification; (b) develop a basic understanding of the device physics, the fabrication process and the testing to the level needed by IC designers; (c) develop the advanced technical and algorithmic skills necessary to master state of the art microelectronic technology; (d) develop research skills necessary to obtain specialist knowledge; (e) cultivate logical and lateral thinking that leads to creation and innovation in the pursuit of solutions to engineering problems.

Assessment
Assessment will be a combination of written assignments, test, laboratory work, project work and examinations. Except in special circumstances, supplementary assessment will not be available.

Guidelines on the use of electronic calculators and other electronic storage devices in examinations are provided in individual subject outlines distributed to students within the first two weeks of semester and included on final examination papers. Electronic calculators and other electronic storage devices will not be permitted where the above provisions have not been made.

Graduate Certificate in Microelectronic Engineering
Course Code: ETMI

Graduate Diploma in Microelectronic Engineering
Course Code: EGMI

Master of Engineering in Microelectronic Engineering
Course Code: EMMI

The major role of professional engineers in the Australian workforce is to act as agents for change through the development of technically sound, economically viable and socially acceptable solution to complex and new technical problems. In this context, the microelectronics engineer today is faced with many challenges brought about by the rapid advances in computer, multimedia and telecommunication technology. The Master of Engineering course in Microelectronic Engineering addresses all aspects of this technology, from high level specification of microelectronic systems, through implementation alternatives, and the effective use of design tools, to realisation of integrated circuits. The course aims to produce engineers with the necessary skills and practical experience to satisfy the requirements of the microelectronics industry. An important feature of the course is the opportunity it provides for the students to design their own integrated circuits.

The Chipskills program is a Victorian Government initiative that seeks to develop a range of professional and vocational training programs in areas relevant to the semiconductor industry. The project involves Victoria University, RMIT University, Industry and Victorian State Government. Development and delivery of this course is shared between each of the partner universities.

Course Objectives
The general aims of the course are to provide graduates with:
(a) high levels of both logical and lateral thinking development so that the graduates can lead constructive change through innovation; (b) the ability to use a multi-disciplinary engineering philosophy towards the synthesis, design and integration of solutions; and (c) a level of professional development in confidence, judgement and experience such that the implementation of proposed solutions proceeds successfully.

The specific aims of the course are to:
(a) develop integrated circuit design expertise in embedded systems, digital, mixed signal and system-on-chip systems design and verification; (b) develop a basic understanding of the device physics, the fabrication process and the testing to the level needed by IC designers; (c) develop the advanced technical and algorithmic skills necessary to master state of the art microelectronic technology; (d) develop research skills necessary to obtain specialist knowledge; (e) cultivate logical and lateral thinking that leads to creation and innovation in the pursuit of solutions to engineering problems.

Admission Requirements
Admission to the course normally requires a four year Bachelor of Engineering degree in Electronic Engineering or Computer Engineering or Communication/Telecommunication Engineering or a four year Bachelor of Science (Honours) degree in an appropriate field, or an equivalent qualification. Applicants with a three year Bachelor of Science degree (in appropriate field) or a Bachelor of Engineering degree in another field may also be considered for admission on the condition that they may be required to take additional (preliminary) subjects that will strengthen their knowledge and skills in digital systems, analog electronics and microprocessor systems.

Full fee paying international students must have qualifications which are equivalent to those listed above. In addition they must provide evidence of proficiency in the English language as assessed by:
IELTS - an overall band score of 6+, subject to individual profile; or TOEFL - a score of 550+, and a Test of Written English (TWE) score of 5+
A panel comprising of academics from each of the partner universities will carry out student selection into this course.

Course Duration
The duration of the course, in normal mode of delivery, is one and a half years full-time or part-time equivalent for Masters course.

Course Structure
The Master of Engineering course is structured to allow students to exit at different academic levels with either, Graduate Certificate, Graduate Diploma or Master of Engineering qualifications. The completion of the Graduate Certificate in Microelectronic Engineering requires successful completion of four units, Graduate Diploma in Microelectronic Engineering requires successful completion of either eight units or six units and minor project, and Master of Engineering in Microelectronic Engineering requires successful completion of either eight units and major project or ten units and minor project.
and innovation in the pursuit of solutions to engineering problems.

Aims of study; cultivate logical and lateral thinking that leads to creation to obtain specialist knowledge of subjects pertinent to a given field. Is the opportunity it provides for the students to design their own.

Digital and Analog Circuit Design, and Computer System Design. The course aims to produce engineers with the necessary skills and practical experience to satisfy the requirements and Implementation. The course is designed to develop the advanced technical skills necessary to master state of the art microelectronic technology; develop research skills necessary to obtain specialist knowledge of subjects pertinent to a given field of study; cultivate logical and lateral thinking that leads to creation and innovation in the pursuit of solutions to engineering problems.

Assessment
Assessment will be a combination of written assignments, tests, laboratory work, project work and examinations. Supplementary assessment is not normally available in any unit except at the discretion of the Head of School/Department of the University offering the unit and under exceptional circumstances.

Master of Engineering Science in Computer & Microelectronic Engineering (Coursework)

Course Code: EEMC

Course Objectives
The computer systems engineer today is faced with many challenges brought about by the rapid advances in computer multimedia and telecommunication technology. The recent development of computer systems engineering has already established a firm foundation for a need of qualified engineers in this high technology industry.

The Master of Engineering Science course in Computer Systems Engineering addresses all aspects of this technology. From high level specification of computer and microelectronic systems, through implementation alternatives, to realisation of chips and also introduces students to the anticipated demands of Information Technology in the twenty first century. Course material is drawn from a variety of backgrounds and includes: Integrated Circuit Design Methodologies, Digital and Analog Circuit Design, and Computer System Design and Implementation. The course aims to produce engineers with the necessary skills and practical experience to satisfy the requirements of the microelectronics industry. An important feature of the course is the opportunity it provides for the students to design their own integrated circuits. The specific aims of the course are to: provide an integrated foundation for electrical disciplinary studies and course specialisation into the area of Computer Systems Engineering; develop the advanced technical skills necessary to master state of the art microelectronic technology; develop research skills necessary to obtain specialist knowledge of subjects pertinent to a given field of study; cultivate logical and lateral thinking that leads to creation and innovation in the pursuit of solutions to engineering problems.

Admission Requirements
Admission to the course requires a four year Bachelor of Engineering degree in Electrical & Electronic Engineering or a four year Bachelor of Applied Science (Honours) degree in an appropriate field, or an equivalent.

Applicants with a three year Bachelor of Applied Science degree (in an appropriate field) or a Bachelor of Engineering degree in another field may also be considered for admission on the condition that they may be required to complete some preliminary subjects that will strengthen their knowledge and skills in Computer Systems Engineering.

Full-fee paying international students are required to have qualifications equivalent to those above, and in addition, they must provide evidence of proficiency in English Language, as assessed by: (a) International English Language Testing System – an overall band score of 6+ subject to individual profile, or, (b) Test of English as a Foreign Language - a score of 550+, and a Test of Written English score of 54+.

Course Duration
The course is of one year duration for full-time students and a part-time equivalent for part-time students.

Course Structure
The course is unit based and consists of research projects (2 units), a core unit and elective subjects. The completion of the course requires successful completion of two units of research project, the core unit and at least seven units of elective subjects of which at least four must be from Computer Systems Engineering disciplines.

Credit points

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject Name</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEH6001</td>
<td>HDL and High Level Synthesis</td>
<td>15</td>
</tr>
<tr>
<td>EEH6002</td>
<td>Integrated Circuit Design</td>
<td>15</td>
</tr>
<tr>
<td>EEH6003</td>
<td>EDA tools and Design Methodology</td>
<td>15</td>
</tr>
<tr>
<td>EEH6004</td>
<td>Digital System Design</td>
<td>15</td>
</tr>
<tr>
<td>EEH6005</td>
<td>Embedded Systems Design</td>
<td>15</td>
</tr>
<tr>
<td>EEH6006</td>
<td>Emerging Topics in IC Design</td>
<td>15</td>
</tr>
<tr>
<td>EEH6007</td>
<td>Advanced VLSI Design</td>
<td>15</td>
</tr>
<tr>
<td>EEH6008</td>
<td>VLSI Digital Signal Processing Systems</td>
<td>15</td>
</tr>
<tr>
<td>EEH6009</td>
<td>Reliability and Testability in IC Design</td>
<td>15</td>
</tr>
<tr>
<td>EEH6010</td>
<td>Introduction to Microsystems Technology</td>
<td>15</td>
</tr>
<tr>
<td>EEH6011</td>
<td>Introduction to Semiconductor Device Fabrication</td>
<td>15</td>
</tr>
<tr>
<td>EEH6012</td>
<td>Semiconductor Device Physics</td>
<td>15</td>
</tr>
<tr>
<td>EEH6013</td>
<td>Project Management &amp; Entrepreneurship</td>
<td>15</td>
</tr>
<tr>
<td>EEH6014</td>
<td>RF and Mixed Signal Design</td>
<td>15</td>
</tr>
<tr>
<td>EEEH6015</td>
<td>Special Electives</td>
<td>15</td>
</tr>
<tr>
<td>EEH6020</td>
<td>Minor Project</td>
<td>30</td>
</tr>
<tr>
<td>EEH6030</td>
<td>Major Project</td>
<td>60</td>
</tr>
</tbody>
</table>

*Note: All Special Electives for Chipskills program are to be approved by the Course Directors (RMIT & VU).

Assessment
Assessment will be based on a combination of written assignments, laboratory exercises, project works, tests, and examinations.

Master of Engineering Science in Telecommunication Engineering (Coursework)

Course Code: EMTE

The Master of Engineering Science in Telecommunication Engineering was introduced in 1998. It is intended for those who seek entry or are currently involved in the telecommunication industry who would require expertise in a range of fields in the telecommunication engineering discipline.

Credit points

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject Name</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEH6102</td>
<td>ASIC Design</td>
<td>12</td>
</tr>
<tr>
<td>EEH6103</td>
<td>Custom IC Design B</td>
<td>12</td>
</tr>
<tr>
<td>EEH6104</td>
<td>Digital Circuit Design</td>
<td>12</td>
</tr>
<tr>
<td>EEH6121</td>
<td>Basic IC Design/Devices</td>
<td>12</td>
</tr>
<tr>
<td>EEH6122</td>
<td>Custom IC Design A</td>
<td>12</td>
</tr>
<tr>
<td>EEH6132</td>
<td>Integrated Circuit Testability</td>
<td>12</td>
</tr>
<tr>
<td>EEH6142</td>
<td>Emerging Technologies</td>
<td>12</td>
</tr>
<tr>
<td>EEH6151</td>
<td>VHDL and High Level Synthesis</td>
<td>12</td>
</tr>
<tr>
<td>EEH6152</td>
<td>Advanced Microprocessors</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>Plus other discipline electives</td>
<td></td>
</tr>
</tbody>
</table>

Assessment
Assessment will be based on a combination of written assignments, laboratory exercises, project works, tests, and examinations.
Course Objectives
The objective of the course is to provide opportunities for suitably qualified persons to (a) acquire expertise, (b) develop research skills, and (c) enhance communication skills, necessary to elucidate complex technical problems and perceived solutions in the field of telecommunication engineering.

Admission Requirements
Admission to the course requires a four year Bachelor of Engineering degree in Electrical & Electronic Engineering or a four year Bachelor of Applied Science. (Honours) degree in an appropriate field, or an equivalent. Applicants with a three year Bachelor of Applied Science degree (in an appropriate field) or a Bachelor of Engineering degree in another field may also be considered for admission on the condition that they may be required to complete some preliminary studies.

Full-fee paying international students are required to have qualifications equivalent to those above, and in addition, they must provide evidence of proficiency in English Language, as assessed by; (a) International English Language Testing System – an overall band score of 6+ subject to individual profile, or; (b) Test of English as a Foreign Language - a score of 550+, and a Test of Written English score of 6+.

Course Duration
The course is of one year duration for full-time students and a part-time equivalent for part-time students.

Course Structure
The course is unit based and consists of a core subject and a set of elective subjects each of 1 unit. The completion of the course requires the completion of the core subject and 8 other subjects of which at least 5 must be from the Telecommunication Engineering discipline.

<table>
<thead>
<tr>
<th>Semester One</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>EET6501 Communication System Modeling And Simulation 1</td>
<td>12</td>
</tr>
<tr>
<td>4 electives</td>
<td>48</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester Two</th>
</tr>
</thead>
<tbody>
<tr>
<td>EET6502 Communication System Modeling And Simulation 2</td>
</tr>
<tr>
<td>4 electives</td>
</tr>
</tbody>
</table>

Elective Subjects
EET6511 Data Network Analysis and Design 12
EET6512 Intelligent Networks and Network Management 12
EET6521 Digital Switching and Signalling Systems 12
EET6522 Telecommunication Tariff Structures and Teletraffic Engineering 12
EET6531 Wireless Communication Subsystems 12
EET6532 Microwave and Satellite Communication Systems 12
EET6541 Multimedia and Internet Technology 12
EET6542 Mobile and Personal Communication Systems 12
EET6551 Microwave Electronic Circuit Design 12
EET6552 Computer Networks and Networking Software 12
EET6561 Local Area and Broadband Networks 12
EET6562 Digital Signal Processing 12

Assessment
Assessment will be based on a combination of written assignments, laboratory exercises, project work, tests and examinations.

Master of Engineering Science in Systems and Control Engineering (Coursework)
Course Code: EMSC

The Master of Engineering Science in Systems and Control was introduced in 1998. It is intended for those who aspire to senior engineering positions in the control and automation industry who would require expertise in a wide area of subjects in the systems and computer control discipline.

Course Objectives
The objective of the course is to provide opportunities for suitably qualified persons to (a) acquire expertise, (b) develop research skills, and (c) enhance communication skills, necessary to elucidate complex technical problems and perceived solutions in the fields of automation and control engineering.

Admission Requirements
Admission to the course requires a four year Bachelor of Engineering degree in Electrical & Electronic Engineering or a four year Bachelor of Applied Science. (Honours) degree in an appropriate field, or an equivalent. Applicants with a three year Bachelor of Applied Science degree (in an appropriate field) or a Bachelor of Engineering degree in another field may also be considered for admission on the condition that they may be required to complete some preliminary studies.

Full-fee paying international students are required to have qualifications equivalent to those above, and in addition, they must provide evidence of proficiency in English Language, as assessed by; (a) International English Language Testing System – an overall band score of 6+ subject to individual profile, or; (b) Test of English as a Foreign Language - a score of 550+, and a Test of Written English score of 6+.

Course Duration
The course is of one year duration for full-time students and a part-time equivalent for part-time students.

Course Structure
The course is unit based and consists of a research project of 2 units and a set of elective subjects each of 1 unit. The completion of the course requires the completion of the project and 8 other subjects of which at least 5 must be from the Systems and Control discipline.

<table>
<thead>
<tr>
<th>Semester One</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEA6300 Research Project</td>
<td>12</td>
</tr>
<tr>
<td>Plus 4 electives</td>
<td>48</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester Two</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEA6300 Research Project</td>
</tr>
<tr>
<td>Plus 4 electives</td>
</tr>
</tbody>
</table>

Elective Subjects
EEA6311 Modelling and Computer Control 12
EEA5321 Fuzzy and Neural Control 12
EEA6331 Robotics and Programmed Control 12
EEA6341 Measurement Technology 12
EEC6012 Applied Knowledge Systems 12
EEH6131 Hardware Description Based Design 12
**Semester Two**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEA6312</td>
<td>Model Based Process Control</td>
<td>12</td>
</tr>
<tr>
<td>EEA6322</td>
<td>Process Instrumentation and Control</td>
<td>12</td>
</tr>
<tr>
<td>EEA6332</td>
<td>Electronic Control of Motors</td>
<td>12</td>
</tr>
<tr>
<td>EEH6112</td>
<td>Dedicated Integrated Circuit Design</td>
<td>12</td>
</tr>
<tr>
<td>EHE6141</td>
<td>Real Time Embedded Systems</td>
<td>12</td>
</tr>
<tr>
<td>EEP6212</td>
<td>Distribution Systems</td>
<td>12</td>
</tr>
</tbody>
</table>

**Assessment**

Assessment will be based on a combination of written assignments, laboratory exercises, project work, tests and examinations.

**School of Molecular Sciences**

**Postgraduate Programs by Research**

The School offers the following research degrees:

- Doctor of Philosophy
- Master of Science

The research activities in the School of Molecular Sciences (SMS) can be broadly classified into the three areas in which it conducts its undergraduate Bachelor of Science programs, namely:

- Biotechnology
- Medical, Forensic and Analytical Chemistry
- Nutrition, Food and Health Science

Indeed, the SMS continuously strives to incorporate the latest research findings in its undergraduate teaching programs. In the School of Molecular Sciences, research is performed within the following specific research groups:

- Biotechnology
- Food Science
- Synthetic Chemical and Analytical Science

These group interact strongly with each other as well as engaging with a wide range of local and international universities, government and private research groups, centres and organisations. Examples of external collaborators include:

- Agrifood Technology
- Australian Government Analytical Laboratory (AGAL)
- Australian Wine Research Institute
- Carlton and United Breweries Ltd
- Centre for Packaging, Transportation and Storage (Victoria University)
- CSIRO
- Deakin University
- Department of Primary Industries
- Flinders University of South Australia
- Food Sciences Australia
- Monash University
- Polychip Pharmaceuticals Pty Ltd
- State Chemistry Laboratory (SCL)
- The Royal Women’s Hospital
- The University of Auckland, New Zealand
- The University of Melbourne
- Victoria Institute of Biotechnology (VIB)
- Victoria Forensic Science Centre
- Vital Health Sciences Pty Ltd

The School of Molecular Sciences research activities are supported by world-class facilities and are conducted by highly qualified and experienced research staff. The SMS has a wide range of research projects in the above areas and has attracted both private and government financial support for its programs. Much of the research attracts industry funding on a collaborative or contractual basis, however, there is much scope to develop projects of a fundamental nature as well.

**Biochemistry Research Group**

Research within the Biochemistry Research Group (BRG) involves a broad range of biotechnology disciplines, including microbiology, cell culture, biochemistry, reproductive biology and molecular biology. Specific expertise within the BRG includes protein chemistry, enzymology, gene expression, genetic engineering, gene discovery, fermentation technology, food and anaerobic microbiology. Research topics include:

- Forensic investigations using genetic polymorphisms.
- Probing the molecular basis of cancer.
- Improving antibody yields from a hybridoma cell line.
- Molecular characterisation and utilisation of genes and proteins associated with tolerance to cell stressors such as metal ions, ethanol and heat.
- Using recombinant DNA and molecular techniques to improve ethanol yield and productivity during fermentations for beer, wine and industrial ethanol production.
- Applications of halophiles and their enzymes in biotechnology.
- Improving the efficiency and adaptability of microbial processes used for environmental sustainability, including bioethanol from lignocellulosic wastes and bioremediation.
- Premature rupture of fetal membranes and the initiation of birth in women.

**Chemical Synthesis and Analytical Science Research Unit**

The Chemical Synthesis and Analytical Science (CSAS) research group encompasses research activity in the general area of synthetic organic chemistry and applied analytical chemistry. The group has major research interests in the following areas:

- analysis of environmental pollutants
- environmental chemistry
- separation and analysis of trace constituents of commercial materials, metallic ores and biological substances
- development of novel instrumentation for atomic analysis and wine science
- polymer stabilisation and degradation
- polymer packaging science
- landfill technology
- waste minimisation
- applied analytical and inorganic chemistry and separation technology
- biocatalysis in the synthesis of materials of commercial importance
- occupational and environmental health and safety
• preparation of vitamins and nutraceuticals with increased bioavailability
• chemical education

Food Science Research Group
The Food Science Research Group (FSRG) is a recognised key research unit within the Faculty of Science, Engineering and Technology. The unit facilitates an integrated, multidisciplinary approach to research and brings together much of the Faculty’s resident expertise in the broad areas of microbiology, biochemistry, biotechnology and food science and technology, as well as incorporating the expertise of the analytical biochemistry and chemistry, sensory analysis, rheology and nutrition.

The current areas of research interest in the FSRG include:

Grain Science and Processing Technology
Physical properties, chemical composition, enzymology and quality attributes including: pigments in wheat; analysis of flour milling streams for quality attributes; biochemical characteristics of starch; functional properties and food applications of wheat and legumes and their components; baking and other processing technologies.

Microbiology, Dairy and Fermentation Technology
Probiotics and functional foods; food and industrial applications of lactic acid bacteria; isolation and characterisation of natural antimicrobials; bacteriocins; Mozzarella cheese using exopolysaccharide producing starter cultures; fat replacers, modified starches. Development of cheddar cheese, yoghurt and soy yoghurt incorporating probiotic culture.

Food Biochemistry and Biochemical Analysis
Enzymatic and non-enzymatic deteriorative changes with respect to fruit and vegetable processing; enzyme analysis; immobilised enzyme and cell technologies; enzyme catalysis in supercritical and organic solvents; extractive and fractionation technologies, including membrane processing and supercritical fluid extraction of agricultural and food produce; NIR analysis of foods.

Fruit and Vegetable Science and Technology
Physical and chemical properties, enzymes in fruits and vegetables, other processing and storage technologies including modified atmosphere packaging, coatings, and processed products. Energy analysis of fresh fruit and vegetable processing to enhance storage life with an aim to minimize energy use.

Fats and Oils
Frying as a unit operation, optimisation of processing parameters. Analysis of nutritional parameters in a range of vegetable oil based products.

Herbs and Spices
Chemical analysis of groups of herbs and spices to determine if they contain common components known to cause allergic reactions in certain individuals.

Wine analysis
Study of the chemical composition of both red and white wines for quality attributes and authenticity by a range of chemical techniques. All of the above research activities are supported by world class facilities and highly qualified research staff.

The School has a wide range of research projects in the above areas and has attracted good financial support for its programs. Much of the research attracts industry funding on a collaborative or contractual basis, however there is broad scope to develop projects of a fundamental nature as well. The School works closely with the University’s Centre for Bioprocessing and Food Technology and with external organisations including Food Science Australia and Agrifood Technology.

Coursework Program
Master of Science in Food Science and Technology

Master of Science - Food Science and Technology
Course Code: SMFS

Course Objectives
The course is designed to provide professional training in food science and technology for graduates in science, applied science, engineering, agricultural and other related disciplines who may or may not have had previous formal training in this area.

The course seeks to equip graduates with the necessary knowledge and skills required to operate effectively in the food industry at various management levels. The course is designed not only to train recent graduates as food technologists, but also to enable those already employed in the food and associated industries to enhance their professional status.

Admission Requirements
To qualify for admission to the course an applicant must have satisfactorily completed a four year science based undergraduate degree, or a science based honours degree, or a three year science based undergraduate degree plus relevant employment experience.

Applicants who do not meet these qualifications may be admitted after the completion of an approved course of pre-study, or on submission of such other evidence of academic, professional or vocational attainment to indicate that the applicant possesses the educational preparation and capacity to pursue the course.

Course Duration
The course requires the successful completion of a program of compulsory and elective subjects, totalling a minimum of 120 credit points.

Subject to demand, the course is offered on a full time basis over one year or on a part time basis over two years.

Course Structure
The course structure is as follows:

Compulsory Subjects

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBF6720</td>
<td>Food Microbiology</td>
<td>20</td>
</tr>
<tr>
<td>SBF6730</td>
<td>Preservation and Processing Technology</td>
<td>20</td>
</tr>
<tr>
<td>SBF6750</td>
<td>Food Safety and Quality Assurance</td>
<td>20</td>
</tr>
</tbody>
</table>

Elective Subjects

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBF6710</td>
<td>Food Analysis</td>
<td>10</td>
</tr>
<tr>
<td>SBF6721</td>
<td>Fruit and Vegetable Science &amp; Technology</td>
<td>20</td>
</tr>
<tr>
<td>SBF6722</td>
<td>Grain Science and Technology</td>
<td>20</td>
</tr>
<tr>
<td>SBF6723</td>
<td>Muscle Food Science and Technology</td>
<td>20</td>
</tr>
<tr>
<td>SBF6724</td>
<td>Dairy Science and Technology</td>
<td>20</td>
</tr>
<tr>
<td>SBF6740</td>
<td>Special Topics in Food Technology</td>
<td>10</td>
</tr>
<tr>
<td>SBF6745</td>
<td>Food Product Development</td>
<td>10</td>
</tr>
<tr>
<td>SBF6910</td>
<td>Minor Project</td>
<td>20</td>
</tr>
<tr>
<td>SBF6920</td>
<td>Major Project</td>
<td>40</td>
</tr>
<tr>
<td>SCM3614</td>
<td>Experimental Design</td>
<td>10</td>
</tr>
</tbody>
</table>

Appropriate elective subjects may be selected from those offered by the Faculty of Science, Engineering and Technology or by other Faculties in the University subject to approval by the Head of the School of Life Sciences and Technology.
The Biomedical Sciences group (encompassing the four major research areas: Muscle Physiology, Nutrition, Health & Lifestyle, and Reproductive Physiology) has active research within two strategic research areas of strength within the University: Medical Biotechnology, and Rehabilitation, Exercise and Sport Science. These areas have a major focus on the use of state-of-the-art medical research techniques to investigate the functioning of the human body in both health and disease. Specific expertise includes reproductive physiology, molecular biology, cancer, genetics exercise, muscle metabolism and physiology, nutrition, lifestyle management and rehabilitation. This expertise provides the opportunity to learn a wide variety of valuable skills within a project tailored to satisfy students' interests.

**Muscle Physiology**

Exercise is one of the most common human pursuits. From the weekend jogger to the professional athlete, the way in which our muscles produce and utilise energy is of the utmost importance. In addition, optimising skeletal muscle function and recovery from injury is also essential. The Exercise Metabolism Unit (EMU) is part of the Centre for Rehabilitation Exercise and Sports Sciences (CRESS) within Victoria University. The major focus of their work includes: muscle metabolism and fatigue in normal and hot conditions; muscle metabolism in endurance and sprint training; regulation of calcium and force production in skeletal muscle; metabolic control and adaptations to exercise; recovery from muscle; and exercise and muscle function in cardiac, respiratory and muscle disease, and ageing associated changes in skeletal muscle DNA damage and repair.

The Muscle Cell Biochemistry Laboratory is funded by the National Health and Medical Research Council (NH&MRC) and the Australian Research Council (ARC), Australia's two top funding bodies. The major focus of their work includes: Biochemistry of single muscle fibres, and physiological and pathophysiological conditions associated with glycogen depletion or sugar excess in muscle fatigue, ageing and diabetes.

**Nutrition**

We are what we eat is a simple statement. However, it is of extreme importance to our general health. Whether it is the intake for growing bodies in children or adolescents, or maintaining a healthy lifestyle in the elderly, nutrition is important to everyone in their day-to-day lives. The major focus of this area is: nutritional intakes in pre-school children, the role of antioxidants in protecting DNA from age associated damage, and analysis of n-3 PUFA and the health benefits of consumption of seafood, especially shellfish.

**Health & Lifestyle**

Wellness is a new area of research that examines individuals well-being and levels of health. Particular interests are community awareness of and attitudes towards, as well as the effects of, issues relating to the general health of the population, such as genetic engineering of food and immunisation. This research area encompasses the health of infants and children as they mature through puberty to adolescents; of adults as they reproduce and mature to mid-life, and of older people. Health concerns are highlighted in each of these life cycle/ reproductive stages. Studies in the area of family health include: parenting transition; the aetiology and consequences of perinatal depression; the nature of neurotransmitters in heroine addicts; the clinical management of drug dependence; the aetiology of schizophrenia; the use of proteins in saliva as markers to assess stress, pain and inflammation; and the assessment of gas pollutants in indoor environments. The major focus of this area is: biological markers, psychosocial factors, stress, coping style and the immune system, and the effect of hormone replacement therapy and exercise on bone and cardiovascular parameters.

**Reproductive Physiology**

The Biomedical Sciences group has a very strong background in research into all facets of reproduction and perinatal development. This research unit links projects on women's health, implantation and embryo development, foetal development and parturition, and family health. The current areas of research include:

**Women's Health:** From puberty to late post-menopause, has become an important and popular area of reproductive research. Studies in this area include: the role of steroid and peptide hormones in the regulation and function of menstrual and reproductive cycles and the interrelationships between physiological and psychological parameters in response to stressors on the regulation of the menstrual and reproductive cycles.

**Implantation and Embryo Development:** Studies into implantation and embryo development include: the role of steroid hormones and other factors in the successful establishment of pregnancy; the development of the neural tube of the embryo; and the growth and differentiation of the placenta.

**Foetal Development and Parturition:** By the time of birth, the foetus must have developed sufficiently to adapt to its extraterine environment. Often, infants who are delivered prematurely have numerous medical problems which require very expensive intensive care. Studies into foetal development and parturition include: growth and development of the foetal and neonatal lung; diabetes during pregnancy; rupture of foetal membranes during term and pre-term labour, the initiation of parturition; and parenting of premature infants, and.

**Foetal Programming of Adult Disease:** An exciting area of research investigating the factors and mechanisms during foetal development which pre-determine what adult diseases the foetus will develop in adult life. Research has shown strong relationships between small size at birth and the development of high blood pressure, cardiovascular disease and diabetes as an adult.

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### Sustainability Group

The Sustainability group has broad research interests, encompassing topics of interest to students with a focus on the conservation of species, their habitats, and the biological impacts of pollution and other aspects of global change such as the greenhouse effect. Research in this group also includes the ecology of aquatic (marine, estuarine and fresh water) and terrestrial (grasslands and wet forests) ecosystems, in some cases with an emphasis on practical implications for improved management practices. Primary areas of specialisation are: ecotoxicology of marine systems, ecology and management of exotic marine pests, environmental leadership, ecology of freshwater wetlands, palaeoecology and evolution of the Australian flora, invertebrate systematics and biogeography, and microbial ecology of aquatic systems.

Staff in the Sustainability group are recognised internationally in their areas of specialisation, and publish in international and Australian refereed scientific journals. In recent years, staff in this group have had considerable success obtaining externally reviewed research grants, totalling in excess of $400,000.

Well-equipped laboratories are available for research activity with marine biology projects enjoying access to the Queenscliffe Marine Station and the Aquatic Laboratory at VU St Albans Campus. A 4WD vehicle is available for field-based research projects, and modern field equipment such as GPS, various meters (O2, light, etc.) are also available.

### Coursework Programs

The School offers the following postgraduate coursework programs:

1. Graduate Diploma in Environmental Management
2. Master of Science in Environmental Management
Graduate Diploma in Environmental Management  
**Course Code:** SGEM

**Course Objectives**  
The course is aimed at producing graduates with a good understanding of contemporary environmental problems and solutions. A mixture of coursework will be provided including solid waste management, water pollution control, environmental law, and occupational health and safety.

**Course Duration**  
The course will be offered in full-time (one year) and part-time (two years) modes.

**Admission Requirements**  
The normal entry requirement is a relevant degree or diploma, but special admission may be granted for applicants without the required qualifications but with a number of years of relevant industrial experience.

**Course Structure**  
The structure of the course is as follows:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCS5100</td>
<td>Research Methodology</td>
<td>12</td>
</tr>
<tr>
<td>SCS5101</td>
<td>Principles of Environmental Science</td>
<td>12</td>
</tr>
<tr>
<td>SCS5112</td>
<td>Principles of Environmental Management</td>
<td>12</td>
</tr>
<tr>
<td>SCS5121</td>
<td>Environmental Law and Standards 1</td>
<td>6</td>
</tr>
<tr>
<td>SCS5132</td>
<td>Environmental Law and Standards 2</td>
<td>6</td>
</tr>
<tr>
<td>SCS5141</td>
<td>Air Quality Management</td>
<td>12</td>
</tr>
<tr>
<td>SCS5152</td>
<td>Liquid Waste Management</td>
<td>12</td>
</tr>
<tr>
<td>SCS5161</td>
<td>Occupational and Public Health</td>
<td>12</td>
</tr>
<tr>
<td>SCS5172</td>
<td>Solid Waste Management</td>
<td>12</td>
</tr>
<tr>
<td>SCS5181</td>
<td>Water Pollution Monitoring</td>
<td>12</td>
</tr>
<tr>
<td>SCS5192</td>
<td>Clean Production Technology and Waste Minimisation</td>
<td>12</td>
</tr>
</tbody>
</table>

**Assessment**  
Assessment will consist of assignments, field reports, class presentations and end-of-semester examinations. The use of electronic calculators and electronic storage devices is not permitted in any examination unless specified in the subject guide for that subject and/or in the examination paper for that subject.

Master of Science in Environmental Management  
**Course Code:** SMEM

**Course Objectives**  
The Masters program is designed to enhance the students' range of knowledge in environmental waste management, to provide additional skills in research and development and to enable a focusing of practical skills into a specific research area which may be related to the candidates' current employment.

**Course Duration and Structure**  
The Masters program consists of a coursework component which is equivalent to the Graduate Diploma (12 months full-time) and a research project component (6 months full-time). Both components are available on a part-time basis.

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<tr>
<th>Course Code</th>
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<th>Credit Points</th>
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</thead>
<tbody>
<tr>
<td>SCS6000</td>
<td>Thesis</td>
<td>120</td>
</tr>
<tr>
<td>SCS6010</td>
<td>Thesis part-time (60 per semester)</td>
<td>120</td>
</tr>
<tr>
<td>SCS6020</td>
<td>Thesis part-time (30 per semester)</td>
<td>120</td>
</tr>
</tbody>
</table>

**Admission Requirements**  
The normal entry requirement is a four year Bachelor of Science Degree or a 3 year Bachelor of Science Degree with relevant experience. Candidates who possess the Graduate Diploma in Environmental Management may be eligible for direct entry into the research component of the Masters program.

**Assessment**  
Assessment will consist of a research project report.

School of Architectural, Civil and Mechanical Engineering

**Courses Offered**  
The School of Architectural, Civil and Mechanical Engineering offers postgraduate courses leading to the award of:

- Graduate Certificate in Project Management
- Graduate Diploma in Project Management
- Master of Engineering (Project Management) (coursework program, based on the above graduate diplomas)
- Master of Engineering (Research)
- Doctor of Philosophy

**Research Activities**  
Master of Engineering (Research) and Doctor of Philosophy degrees are currently being awarded in the areas of Civil and Building Engineering and Mechanical Engineering. A brief description of the research activities follows. The School has a collaboration with a number of industrial and government organisations in these activities.

The area of Civil and Building Engineering carries out a wide range of research and development activities in the general areas of the built and natural environments. Some of the specific areas include:

**Building Services**  
Work is being undertaken to help engineers design more efficient water supply distribution systems in commercial and residential buildings.

Research is also under way aimed at helping designers and owners of buildings to select the most energy efficient air conditioning systems.

A new air conditioner has been developed that uses solar energy to cool stored grain in silos. This device enables grains to be stored for prolonged periods of time without the use of toxic chemical pesticides.

**Environmental Management**  
Research work is being carried out aimed at reducing the erosion of river banks and improving water quality from road construction sites. The area has a strong interest in wastewater treatment and recycling. Research is being undertaken with the aim of controlling the pollution of groundwater. Practical ways of reducing the use of materials in a wide range of manufactured artifacts are also being developed.
Fire Modelling
Researchers in the area of Civil and Building Engineering work closely with those in the Centre for Environmental Safety and Risk Engineering on modelling the spread of fires and the effects of fires on building structures.

Project Management
Research is being carried out on the new area of Project Risk Management and Life Cycle Cost Optimisation. A group of researchers work on the following areas:

- Risk Analysis for Construction Projects
- Quality Management for Construction
- A case study of a Project Dispute
- Client/Project Manager Agreement
- Constructability Comparisons
- Development of Feasibility Model
- Quality Performance Measurement
- Evaluation of BOOT/BOT Project Delivery Systems
- Computer Simulation of Construction Site Management

Structural Engineering
Research is being carried out on new and efficient methods of optimising the design of structures that range from bicycles to large buildings. A group of researchers works on the design of tall buildings, and specifically those subject to earthquake forces. The area of Mechanical Engineering focuses its research activities on the areas of research classified in the University's Research Management Plan as either Major Research Areas, Strategic Research Areas or Complementary Research Activities. With each of these areas the specific topics currently being pursued by postgraduate students are many and varied. Typical research topics include:

- an experiment study of convective heat and mass transfer in bulk storage of respiring fruit and vegetables;
- analysis of vibration reduction via structural modification;
- prediction of vibrations from road profile in transportation of packages;
- dynamic characteristics of aerial optical fibre cables subjected to wind loading;
- diagnosis of local damage in structures using measured vibration data;
- numerical modeling and experimental study of fire spread through external windows in buildings;
- water storage using ocean wave energy;
- modelling of scavenging process in a two stroke I.C. engine;
- a heat transfer model of the refuelling process for natural gas vehicles;
- chatter control in turning;
- CFD studies and turbulence modelling;
- utilisation of banana fibres in composite materials;
- evaluation of the performance of corrugated shipping containers: virgin versus recycled liners;
- evaluation of a reusable engine packaging system;
- optimal dynamic design of gear trains using modal analysis approach;
- bruise/モデリング of agricultural products.

Admission Requirements
As indicated above, a wide range of challenging research projects are available leading to Master of Engineering by Research and Doctor of Philosophy degrees. For admission, high honours results in a recognised undergraduate course, or an equivalent qualification, is required. Initial enquiries regarding eligibility for admission and research projects should be directed to the Postgraduate Coordinator at (03) 9688 4227.

Academic Progression Guidelines and Unsatisfactory Progress
Normal progress through a course requires a student to complete any defined course year within one year of equivalent full-time enrolment. When all subjects in a course year are passed, a stage grading of ‘year completed’ may be given.
Any of the following may be considered to constitute unsatisfactory progress by a student:

- failure in any subject or unit for the second time;
- failure to complete the course within any maximum period defined by University Statute;
- failure to meet a conditional enrolment agreement.
As otherwise defined by University Statute, and subject to being invited to show cause, a student making unsatisfactory progress will normally be recommended for exclusion from the course.

Graduate Certificate in Project Management

Course Code: ETPM
The School of Architectural, Civil and Mechanical Engineering conducts the Graduate Diploma in Project Management and the Masters of Engineering in Project Management. Currently, major initiatives are in progress which will require professionals to practice only in certain areas based on their qualifications and experience. This is particularly the case in the field of project management.

Course Objectives
The course provides opportunities for professional people to:
(a) develop advanced technical skills in a specialist discipline;
(b) develop their understanding of legislation and management relevant to their employment;
(c) develop ability to plan, co-ordinate and complete complex projects;
(d) apply and extend research and reporting skills and gain specialist knowledge of a topic relevant to their employment.
The course will be directed at registered building surveyors and other building practitioners such as architects, engineers, quantity surveyors, etc., with at least one year of relevant professional experience. Other professions directly affected by performance regulations will be encouraged to participate.
The aims of the course are to:

- introduce the concepts and alternative acceptable frameworks for performance based codes, with particular, but not exclusive, emphasis given to project management practices;
- provide building engineering and allied professions with the appropriate knowledge and skills necessary for the assessment and application of performance-based project management practices;
• develop an appreciation of the legal, statutory and design integrity requirements and the need for compliance of the design assumptions throughout the operational life of the building or facility; and
• develop a recognition of the desirability of undertaking additional courses to further upgrade skills and expertise.

**Admission Requirements**

Qualifications accepted are a degree or diploma or associate diploma in Engineering or Building or Quantity Surveying or Architecture or Construction from a University or College of Advanced Education or Technical and Further Education in Australia.

Applicants with other qualifications deemed to be equivalent to the degree, diploma or associate diploma may be admitted.

Applicants must have at least one year of relevant experience in the design, construction and/or management of building and engineering projects before being admitted to the course.

The formal qualification requirements may be waived in exceptional circumstances.

**Course Duration**

The course will be delivered as follows:

- Each subject will be presented as a three-hour workshop session one evening per week for one semester.
- Two subjects will be presented each semester.

The course will be presented over two semesters during a 12 month period.

**Course Structure**

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Project Management subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Core Subjects</td>
</tr>
<tr>
<td></td>
<td>ECP5600 Project Management Fundamentals 15</td>
</tr>
<tr>
<td></td>
<td>ECP5610 Project Management Planning and Control - 15</td>
</tr>
<tr>
<td></td>
<td>Elective Subjects</td>
</tr>
<tr>
<td></td>
<td>ECP5620 Project Management &amp; Contracts - 15</td>
</tr>
<tr>
<td></td>
<td>ECP5705 Project Management and Information Technology - 15</td>
</tr>
<tr>
<td></td>
<td>ECP5715 Property Development Analysis - 15</td>
</tr>
<tr>
<td></td>
<td>ECP5725 Project Cnstrction Management 15</td>
</tr>
<tr>
<td></td>
<td>ECP5735 Building Life Cycle Costing - 15</td>
</tr>
<tr>
<td></td>
<td>ECP5745 BuildingRegulatory Management 15</td>
</tr>
</tbody>
</table>

**Industrial Relations**

BAO5544 Human Resource Economics 15
BMO5545 Comparative Industrial Relations Systems 15
BMO5537 Topics in Employee Relations Management 15
BMO5589 Industrial Relations & the Building Industry 15

The availability of electives from other areas/schools depends on staff resources and enrolments.

**Graduate Diploma in Project Management**

Course Code: EGPM

The Graduate Diploma in Project Management at Victoria University was the first such course set up in Victoria, and only the second in Australia. Throughout its first decade it has been an industry leader. When the first Graduate Diploma in Project Management began in 1984, the focus was on the narrowly technical. Now, the course is concerned with the human and social perspective, with building teams that work well together and with placing the management of the project firmly within the wider environment.

**Course Objectives**

The course is designed specifically to meet the needs of current or potential managers in the building construction and related industries. It will equip the professionals already in the industry with advanced principles and techniques of project management to enable them to assume the role of project manager and/or become effective members of project management teams.

**Admission Requirements**

Applicants should have a degree or diploma in architecture, building, construction, engineering, quantity surveying, or other relevant discipline and at least two years of experience or current employment at professional level in the relevant field. Suitable proof of these will be required prior to enrolment.

Other qualifications may be considered acceptable and the formal qualification requirements may be waived in exceptional circumstances.

In addition, all applicants applying as full-fee paying international students must provide evidence of proficiency in the English language:

IELTS - an overall band score of 6+, subject to individual profile; or TOEFL - a score of 550+, and a Test of Written English score of 5+.

**Course Duration**

The course is offered on a full-time basis over one year for full-fee paying international students or on a part-time basis over a minimum of two years.

**Course Structure**

The course consists of eight subjects as follows: four ‘core’ subjects to develop a basic knowledge in fundamentals of project management, project planning and control, contract law and industrial relations in the building and construction industry; four ‘electives’ are selected to achieve a better understanding and working knowledge of all disciplines involved in management of a project. Students must complete 120 credit points.
Two of the main coursework streams are based on the Building Project Management and Building Services Engineering Graduate Diplomas.

**Admission Requirements**

An honours degree in a relevant discipline and relevant work experience will normally be required to enter the course. Advanced entry may be approved for students who have completed at least four subjects of a relevant Graduate Diploma with an upper second class honours average.

In addition, all applicants applying as full-fee paying international students must provide evidence of proficiency in the English language:

IELTS – an overall band score of 6+, subject to individual profile; or

TOEFL – a score of 550+, and a Test of Written English (TWE) score of 5+.

**Course Duration**

The course is offered over one-and-a-half years on a full-time basis or over three years on a part-time basis. Students must complete 180 credit points.

**Course Structure**

Candidates must complete to a satisfactory standard eight approved subjects of three hours per week Class Contact selected from approved Graduate Diplomas of Engineering, or any other postgraduate subject deemed equivalent by the Course Co-ordinator, plus a minor thesis of 12 hours per week for one semester or six hours per week for two semesters, or ten subjects of three hours per week Class Contact selected from approved Graduate Diplomas of Engineering plus a thesis/project of six hours per week for one semester or three hours per week for two semesters.

The Masters Degree structure is:

<table>
<thead>
<tr>
<th>Credit points</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>Two</td>
</tr>
</tbody>
</table>

**Year 1**

<table>
<thead>
<tr>
<th>Compulsory core subjects</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMO5389 Industrial Relations and the Building Industry</td>
<td>15</td>
</tr>
<tr>
<td>ECP5600 Project Management Fundamentals</td>
<td>15</td>
</tr>
<tr>
<td>ECP5610 Project Management Planning and Control</td>
<td>15</td>
</tr>
<tr>
<td>ECP5620 Project Management &amp; Contracts</td>
<td>15</td>
</tr>
</tbody>
</table>

**Elective subjects**

In total, four electives are selected from the following:

<table>
<thead>
<tr>
<th>Subject</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECP5715 Project Management and Information Technology</td>
<td>15</td>
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<td>ECP5715 Property Development Analysis</td>
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<td>15</td>
</tr>
<tr>
<td>ECP5745 Building Regulatory Management</td>
<td>15</td>
</tr>
</tbody>
</table>

**Credit points (semesters to be advised)**

**Computer Science**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCM5404 Financial Decision Support Systems</td>
<td>15</td>
</tr>
<tr>
<td>SCM5801 Introduction to Computer Science</td>
<td>15</td>
</tr>
<tr>
<td>SCM5802 Information Systems</td>
<td>15</td>
</tr>
</tbody>
</table>

**Decision Support Science**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCM5602 Quality Management and Statistics</td>
<td>15</td>
</tr>
<tr>
<td>SCM5901 Introduction to Decision Support Systems</td>
<td>15</td>
</tr>
</tbody>
</table>

The availability of electives from other departments depends on staff resources and enrolments.

**Assessment**

Assessment will be by projects, submission and examination.

Guidelines on the use of electronic calculators and other electronic storage devices in examinations are provided in individual subject outlines distributed to students within the first two weeks of semester and included on final examination papers.

Electronic calculators and other electronic storage devices will not be permitted where the above provisions have not been made.

**Master of Engineering (Project Management) (Coursework)**

**Course Code:** EEMP

**Course Objectives**

In the 1990s, government, industry and individuals increasingly recognise the Masters degree as an important benchmark measure of vocational and professional training. The Master of Engineering (Project Management) provides opportunities for professional engineers and managers to achieve high level training in contemporary engineering methods. The course gives students a large choice of both technical and managerial subjects, and it enables professional people to:

- develop advanced technical skills in a specialist discipline;
- develop their understanding of legislation and management relevant to their employment;
- develop ability to plan, co-ordinate and complete complex projects;
- apply and extend research and reporting skills and gain specialist knowledge of a topic relevant to their employment.

Students may choose from the following Graduate Diploma subjects:

- BLO 5537 Business Law
- BLO 5513 Law of Employment
- BAO 5735 Advanced Forecasting, Planning and Control
- BAO 5544 Human Resource Economics
- BLO 6502 Law for Management
- BMO 5545 Comparative Industrial Relations Systems
- BMO 5537 Topics in Employee Relations Management
- BMO 5589 Industrial Relations and the Building Industry
- ECP5600 Project Management Fundamentals
- ECP5610 Project Management Planning and Control
- ECP5620 Project Management and Contracts
- ECP5705 Project Management and Information Technology
- ECP5715 Property Development Analysis

In total, four electives are selected from the following.

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**ECP5753 Building Life Cycle Costing**

- 15

**ECP5754 Building Regulatory Management**

- approved subjects currently available at Victoria University, Footscray Park Campus. These approved subjects may include:

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**ECP5753 Building Life Cycle Costing**

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**ECP5754 Building Regulatory Management**

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<tr>
<th>Subject</th>
<th>Credit points</th>
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<tbody>
<tr>
<td>SCM5404 Financial Decision Support Systems</td>
<td>15</td>
</tr>
<tr>
<td>SCM5801 Introduction to Computer Science</td>
<td>15</td>
</tr>
<tr>
<td>SCM5802 Information Systems</td>
<td>15</td>
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</tbody>
</table>

**Decision Support Science**

<table>
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<tr>
<th>Subject</th>
<th>Credit points</th>
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<tbody>
<tr>
<td>SCM5602 Quality Management and Statistics</td>
<td>15</td>
</tr>
<tr>
<td>SCM5901 Introduction to Decision Support Systems</td>
<td>15</td>
</tr>
</tbody>
</table>

The availability of electives from other departments depends on staff resources and enrolments.

**Assessment**

Assessment will be by projects, submission and examination.

Guidelines on the use of electronic calculators and other electronic storage devices in examinations are provided in individual subject outlines distributed to students within the first two weeks of semester and included on final examination papers.

Electronic calculators and other electronic storage devices will not be permitted where the above provisions have not been made.
ECP5725  Project Construction Management
ECP5735  Building Life Cycle Costing
ECP5745  Building Regulatory Management
SCM5404  Financial Decisions Support Systems
SCM5602  Quality Management and Statistics
SCM5801  Introduction to Computer Science
SCM5802  Information Systems
SCM5901  Introduction to Decision Support Systems

Assessment
Assessment will be by a combination of written assignments, oral presentations, case studies, written examination and by the satisfactory completion of a thesis. Except in special circumstances supplementary assessment for subjects taught by the School of Architectural, Civil and Mechanical Engineering will not be offered.

Guidelines on the use of electronic calculators and other electronic storage devices in examinations are provided in individual subject outlines distributed to students within the first two weeks of semester and included on final examination papers.

Electronic calculators and other electronic storage devices will not be permitted where the above provisions have not been made.
Postgraduate Subject Details

BAO5735 ADVANCED FORECASTING, PLANNING AND CONTROL

Campus City Flinders

Prerequisite(s) Nil.

Content The subject aims to develop studies’ ability to analyse and present solutions to financial planning and management problems using a range of methods including spreadsheet and modelling, data analysis and forecasting techniques, information and decision support systems and executive information systems. Hands on use of appropriate software will be an essential feature of the subject and assessment tasks.

Required Reading To be advised by lecturer.

Class Contact Equivalent to 36 hours per semester normally to be delivered as a combination of lecture, seminar, tutorial and/or workshop or a delivery mode as approved by the Faculty of Business and Law. Subject equal to 15 credit points.

Assessment Internal assessment, 100%. Students are expected to satisfactorily complete each component of the assessment to gain a pass in the subject. Supplementary assessment will not be available.

BEQ5544 HUMAN RESOURCE ECONOMICS

Campus City Flinders

Prerequisite(s) Nil.

Content This subject introduces students to the economic principles of the allocation of human resources within organisations and the wider economy. It will equip them with skills necessary to analyse the likely outcomes of specific human resource decisions. Topics include: supply and demand for labour and labour markets; disadvantaged labour market groups; the impact of unions on wages; payment systems and productivity; and the impact of wage fixing systems on the broader economy.

Required Reading To be advised by lecturer.


Class Contact Equivalent to 36 hours per semester normally to be delivered as a combination of lecture, seminar, tutorial and/or workshop or a delivery mode as approved by the Faculty of Business and Law. Subject equal to 15 credit points.

Assessment Class paper, 30%; research paper, 30%; test, 40%. Students are expected to satisfactorily complete each component of the assessment to gain a pass in the subject. Supplementary assessment will not be available.

BEQ5600 RETAIL MANAGEMENT STRATEGIES (ENGINEERING AND SCIENCE SERVICE SUBJECT)

Campus Werribee

Prerequisite(s) Nil.

Content This subject provides an analysis of the retail exchange process and the critical concepts and issues involved in retail management. Areas studied include the retail exchange process and retail competition; retailers in the marketing channels; product life cycles, packaging design and manufacture, and the interrelationship with consumer, industrial and retail strategies; the changing retail environment; and the design of retail marketing and financial strategies.

Required Reading To be advised by lecturer.


Class Contact Equivalent to 36 hours per semester normally to be delivered as a combination of lecture, seminar, tutorial and/or workshop or a delivery mode as approved by the Faculty of Business and Law. Subject equal to 15 credit points.

Assessment Assignment 1 (1500 words), 40%; Assignment 2 (2500 words), 60%. Students must satisfactorily complete each component of the assessment to gain a pass in the subject. Supplementary assessment will not be available.

BHO5605 MARKETING MANAGEMENT

Campus City Flinders, Kuala Lumpur, Singapore, China, Bangladesh.

Prerequisite(s) Nil.

Content Upon completion of the subject, students would be able to understand the Marketing Management Process, develop essential skills necessary in a Marketing Manager's job, appraise an organisation's performance in a competitive marketing environment (foreign and domestic), formulate and implement marketing mix strategies in consumer, industrial and service markets, solve problems and improve their abilities in making sound decisions based upon available market information and appreciate the applications of marketing principles to Service Sector and International business decision making.

Required Reading To be advised by lecturer.

Class Contact Equivalent to 36 hours per semester normally to be delivered as a combination of lecture, seminar, tutorial and/or workshop or a delivery mode as approved by the Faculty of Business and Law. Subject equal to 15 credit points.

Assessment Assignment, 25%; research project of a student's own choice, 25%; examination, 50%. In order to be awarded a pass in this subject, students must satisfactorily complete each component of the assessment. Supplementary assessment will not be made available.

BLO5513 LAW OF EMPLOYMENT

Campus City Flinders

Prerequisite(s) Nil.

Content The aims of the subject are: to assist students to become familiar with aspects of employment law relevant to human resource management and industrial relations; to provide students with an understanding of the skills necessary to deal with legal problems which may arise in the world of work. The subject includes contract of employment; termination of employment; health and safety; and equal opportunity law.

Required Reading To be advised by the lecturer.

Class Contact Equivalent to 36 hours per semester normally to be delivered as a combination of lecture, seminar, tutorial and/or workshop or a delivery mode as approved by the Faculty of Business and Law. Subject equal to 15 credit points.

Assessment Two case studies, 50% each. Students must satisfactorily complete each part of the assessment to gain a pass in the subject. Supplementary assessment will not be available.

BLO5537 BUSINESS LAW

Campus City Flinders.

Prerequisite(s) Nil.

Content This subject aims to provide students with a working knowledge and overview of the Australian legal system and to provide students with an appreciation of contract and tort law issues - students in their working life should be able to avoid problem situations, and be more aware of the need for reform in particular areas. The subject includes: an introduction to the law; an examination of the litigation process; onus of proof; the sources of law in Australia; precedent, the court system and tribunals in...
Victoria; criminal law and the law of tort as it relates to business; a study of the law of negligence with a particular emphasis on professional liability for negligent statements and advice; the definition and nature of a contract including examination of the rules of offer and acceptance, termination of offers, rules of consideration, revocation of offer and acceptance, intention to be legally bound, certainty and terms; a study of breach of contract an examination of the different remedies available under the law; the interaction of tort law with contract; statutory schemes relating to contract with particular reference to the Trades Practices Act 1974 (Cth) and to the Goods (Sales and Leases) Act 1981 (Vic); discharge of contract by different occurrences such as frustration, mutual agreement, illegality and mistake.


**Class Contact** Equivalent to 36 hours per semester normally to be delivered as a combination of lecture, seminar, tutorial and/or workshop or a delivery mode as approved by the Faculty of Business and Law. Subject equal to 15 credit points.  
**Assessment** Midsemester test, 20%; essay, 20%; final examination, 60%. Students must satisfactorily complete each part of the assessment to gain a pass in the subject. Supplementary assessment will not be available.

**BLO502 LAW FOR MANAGEMENT**

**Campus** City Flinders, Kuala Lumpur, Singapore, China, Bangladesh.  
**Prerequisite(s)** Nil.  
**Content** An introduction to law, including historical origins of our legal system, the sources of law, the doctrine of precedent and the court hierarchy, the adversary system. Also examination of types of precedent, history of tort of negligence and the rules of statutory interpretation and the identification of the essential elements in the formation of a contract. Examination of the elements of contract including the distinction between a condition, a warranty and an innominate term. Examination of Misrepresentation, Duress, Undue influence, Unconscionability. Consideration of the concept of a tort and the difference between the types of tort. Different types of business structures; sole traders; partnerships; joint ventures; incorporated and unincorporated associations and company law; a survey of the legal rules regulating administrative action.  
**Required Reading** Latimer, P., *Australian Business Law* (latest edn), CCH.  
**Class Contact** Equivalent to 36 hours per semester normally to be delivered as a combination of lecture, seminar, tutorial and/or workshop or a delivery mode as approved by the Faculty of Business and Law. Subject equal to 15 credit points.  
**Assessment** Assignment, 40%; class participation, 10%; examination, 50%. In order to be awarded a pass in this subject, students must satisfactorily complete each component of the assessment. Supplementary assessment will not be available.

**BMO5588 INDUSTRIAL RELATIONS FOR MUNICIPAL ENGINEERS (ENGINEERING SERVICE SUBJECT)**

**Campus** City Flinders  
**Prerequisite(s)** Nil.  
**Content** An introduction to industrial relations and a study of policy questions and techniques associated with the practice of industrial relations, specifically in the area of local government. Topics covered include the industrial relations framework, the parties to industrial relations, negotiation principals, conflict resolution, industrial awards, legal aspects of employment and contemporary industrial relations issues.  
**Required Reading** To be advised by lecturer.  
**Class Contact** Equivalent to 36 hours per semester normally to be delivered as a combination of lecture, seminar, tutorial and/or workshop or a delivery mode as approved by the Faculty of Business and Law. Subject equal to 15 credit points.  
**Assessment** Essay, 30%; class assignments, 70%. Students must satisfactorily complete each component of the assessment to gain a pass in the subject. Supplementary assessment will not be available.

**BMO5589 INDUSTRIAL RELATIONS AND THE BUILDING INDUSTRY (ENGINEERING SERVICE SUBJECT)**

**Campus** City Flinders.  
**Prerequisite(s)** Nil.  
**Content** An introduction to industrial relations and a study of policy questions and techniques associated with the practice of industrial relations, specifically in the building industry. Topics covered include the industrial relations framework, the parties to industrial relations, negotiation principals, conflict resolution, industrial awards, legal aspects of employment and contemporary industrial relations issues.  
**Class Contact** Equivalent to 36 hours per semester normally to be delivered as a combination of lecture, seminar, tutorial and/or workshop or a delivery mode as approved by the Faculty of Business and Law. Subject equal to 15 credit points.  
**Assessment** Essay, 30%; class assignment and test 70%. Students must satisfactorily complete each component of the assessment to gain a pass in the subject. Supplementary assessment will not be available.

**ECC8000 RESEARCH THESIS (FULL-TIME)**

**Campus** Footscray Park  
**Prerequisite(s)** Nil.  
**Content** The subject will enable students to: identify a research problem and critically review the relevant literature; determine appropriate methods to study the problem; collect, and analyse data, and generate results using suitable statistical and analytical techniques; draw conclusions, critically evaluate the process undertaken and make recommendations for future research and for practice; present the results of the research undertaken, both clearly and accurately in a written thesis. The research topic chosen will allow the candidate to develop a methodology and to apply it to an appropriate problem or situation. The thesis will normally be from 15,000 to 25,000 words. It will report on independently conducted research which demonstrates the student's ability to clearly define a
problem, to undertake a detailed literature search and review the literature on the topic area. The student shall also demonstrate both the ability to develop and/or apply models to study the problem and good data selection, collection and analysis skills. Students will normally be supervised by an academic member of the Department of Civil and Building Engineering and by a joint supervisor external to the Department. The external supervisor will be an academic from another Department of Victoria University or from another institution or an industry practitioner.

**Required Reading** To be advised by lecturer.

**Class Contact** Six hours per week for two semesters.

**Assessment** Before commencing actual research, students must complete, to the satisfaction of the research supervisor, a paper critically reviewing the literature and providing a clear outline of the proposed research methodology to complete the thesis. The final thesis will be assessed by two examiners with expertise in the area of the research. These examiners may be internal or external to the Department or the institution and will not include the supervisors. Students may be asked to present themselves for oral or written examination by these examiners, at the examiners' discretion. Each examiner will independently recommend one of the following outcomes to his/her assessment of the thesis: (a) pass without further examination; (b) pass, subject to corrections to the satisfaction of the Department's Research and Graduate Studies Committee; (c) candidate to pass a written or oral examination to pass thesis; (d) deferred for resubmission after major revision; (e) fail. In the event that there is disagreement between the examiners, a third examiner will be appointed.

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**ECC8040 PROJECT WORK (FULL-TIME)**

**Campus** Footscray Park

**Prerequisite(s)** Nil.

**Content** The subject enables students to: identify a research problem and critically review relevant literature; determine appropriate methods to study the problem; collect, and analyse data, and generate results using suitable statistical and analytical techniques; draw conclusions, critically evaluate the research undertaken and make recommendations for future research and for practice; present the results of the project undertaken, both clearly and accurately in a written report. The report topic chosen will allow the candidate to develop a methodology and to apply it to an appropriate problem or situation. The report will normally be from 8000 to 15,000 words. It will detail the problem, relevant literature, analysis conducted, conclusions and recommendations. Students will be supervised by an academic member of staff and where appropriate by a supervisor from another institution or from industry.

**Required Reading** To be advised by lecturer.

**Class Contact** Six hours per week for one semester.

**Assessment** Assessment will be by project work and report.

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**ECC8050 PROJECT WORK (PART-TIME)**

**Campus** Footscray Park

**Prerequisite(s)** Nil.

**Content** The subject enables students to: identify a research problem and critically review relevant literature; determine appropriate methods to study the problem; collect, and analyse data, and generate results using suitable statistical and analytical techniques; draw conclusions, critically evaluate the research undertaken and make recommendations for future research and for practice; present the results of the project undertaken, both clearly and accurately in a written report. The report topic chosen will allow the candidate to develop a methodology and to apply it to an appropriate problem or situation. The report will normally be from 8000 to 15,000 words. It will detail the problem, relevant literature, analysis conducted, conclusions and recommendations. Students will be supervised by an academic member of staff and where appropriate by a supervisor from another institution or from industry.

**Required Reading** To be advised by lecturer.

**Class Contact** Three hours per week for two semesters.

**Assessment** Assessment will be by project work and report.

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**ECP5600 PROJECT MANAGEMENT FUNDAMENTALS**

**Campus** Footscray Park

**Prerequisite(s)** Nil.

**Content** The subject introduces and defines project management as applicable to the concept, development design and documentation, construction and maintenance, of buildings and to introduce participants to Project Management - the emerging profession. The subject examines the following topics. Introduction to Project Management: PM in building industry; definitions of the Management and Project Management. Construction industry in economy and the building industry; the building process in private sector: Structure of building industry - historically and the current trends; managerial perspective; trends towards construction/project management. Analytical model of building industry, operational model of building industry, urban geography and Australia - bird's eye view. Building process in public sector; past history and current trends in management of public projects. Comparison of performance public/private sectors; overview of future developments. The interrelationship between owner, developer, financial sources, designers and contractors. Government body as owner/developer; invest financiers as owner/users. Government

**Recommended Reading**

**Assignment**
One major group project, 40%; two individual assignments, 20%; examination, 40%. Students must attain a mark of 50% in each assessable component to pass this subject. Supplementary assessment will not be available.

**ECP5620 PROJECT MANAGEMENT AND CONTRACTS**

**Campus Footscray Park**

**Prerequisite(s)**
ECP5600 Project Management Fundamentals (normally).

**Content**

**Recommended Reading**

**Class Contact**
Three hours per week for one semester.

**Assessment**
Assignments, 20%; group project, 40%; examination, 40%. Students must attain a mark of 50% in each assessable component to pass this subject. Supplementary assessment will not be available.

**ECP5600 PROJECT MANAGEMENT PLANNING AND CONTROL**

**Campus Footscray Park**

**Prerequisite(s)**
ECP5600 Project Management Fundamentals (normally).

**Content**
The subject will review the development process of a project from its inception through to feasibility and go-ahead decision; detail design documentation, construction commissioning and life cycle planning; evaluate the role and function of Project Management in this process; explain the purpose and to detail the theoretical basis of various techniques used for planning and managing the building process. The subject content includes: Systems approach to project planning: basic principles and theory of systems analysis; current trends in community project planning. Overview of subject and introduction to project. Management of a ‘Public Interest Project’. Preparation of financial feasibility of a building project: factors involved, issues to be considered at concept stage; introduction of a case study. Capital decision making for project managers; cost concepts and cost factors. Project control and cost planning at feasibility and design stage. Cost versus quality assurance. Project control during construction phase: breakdown of the project for estimating, budgeting and financial control; project term planning; networks and other scheduling techniques; resource levelling; line of balance concepts. Project cost planning and control in public sector; pre-construction cost control, construction cost control; N.P.W.C. cost control method: data support system to cover - contingency, indexation and methods of monitoring and reporting. Project team planning: duties and responsibilities of the project team; techniques for high rise building construction, multi-activity chart; principles of production engineering applied to repetitive processes in building construction; special problems of high-rise design and construction. Principles of decision analysis; review of mathematical theory; application to decision process under uncertainty. Value engineering concepts and its application to building design and construction; application of value analysis in project management. Role and responsibilities of client’s member on P.M. team; risk sharing at various stages of project between the parties involved in the process; role of P.M. in client awareness of risks and rewards.

**Recommended Reading**

**Assessment**
Assignment One major group project, 40%; two individual assignments, 20%; examination, 40%. Students must attain a mark of 50% in each assessable component to pass this subject. Supplementary assessment will not be available.

**Class Contact** Three hours per week for one semester.

Assessment By assignments and projects and class participation.

Assignments 1, 30%; exercises and assignments, 60%; class participation, 10%. Students must attain a mark of 50% in each assessable component to pass this subject. Supplementary assessment will not be available.

**ECP5705 PROJECT MANAGEMENT AND INFORMATION TECHNOLOGY**

**Campus** Footscray Park

**Prerequisite(s)** Nil

**Content** This subject will develop students’ skills in the use of a number of software packages in the areas of General Project Management Information Systems and Specialised Project Management Information Systems. Students will gain appreciation of where computer packages can aid the project management process for feasibility and sensitivity analysis, planning and monitoring and information processing and decision support functions. The subject content includes the decision to computerise, hardware and software, current computer trends; overview of Project Management Information Systems (spreadsheets, financial modelling, planning and resource control, Data Base Management Systems (DBMS), and 4th Generation Languages (4GLs)); detailed investigation of at least two software packages from item above; managing change and introduction of computers, the machine-human interface, training and installation problems and opportunities simulation modelling as an alternative to traditional, activity based management systems; trends in CAD and its impact on Project Management; quality control and Project Management Information Systems.

**Required Reading** To be advised by lecturer.


**Class Contact** Three hours per week for one semester.

**Assessment** Individual assignment, 15%; group assignment presentation, 5%; report, 40%; examination, 40%. Students must attain a mark of 50% in each assessable component to pass this subject. Supplementary assessment will not be available.

**ECP5715 PROPERTY DEVELOPMENT ANALYSIS**

**Campus** Footscray Park

**Prerequisite(s)** Nil

**Content** The subject will develop skills and techniques to assess and manage building property and to appreciate the role and objectives of developers and property managers. Subject content examines Management of property in the economy: An overview; typology of property relationship between project management and Property Management. Feasibility and economic issues in development of property: Elements of a property development feasibility study. Parameters of property investment. Decisions including market analysis and financial evaluation techniques. Property investment criteria and considerations. Management of the development process (a client perspective); client briefing; formation of project team; design management, construction and financial management; project marketing. Financial feasibility – Case study and methods of evaluation. Law and property management – Strata titles; standard mortgage clauses; standard lease agreements. Land valuation and techniques for valuing property. Market survey and predictions – impact of macro-economic conditions on decisions to develop; marketing of space. Sources of finance, taxation, cash flow and forms of ownership. Management of leasehold, rental and home unit properties. Shopping centre development and management. Computer applications on financial feasibility analysis. Insurance, obsolescence, maintenance and replacement considerations.

**Required Reading** To be advised by lecturer.


**Class Contact** Three hours per week for one semester.

**Assessment** Assignments, 15%; group project, 45%; examination, 40%. Students must attain a mark of 50% in each assessable component to pass this subject. Supplementary assessment will not be available.

**ECP5725 PROJECT CONSTRUCTION MANAGEMENT**

**Campus** Footscray Park

**Prerequisite(s)** Nil

**Content** The subject will develop an understanding of modern building technology with respect to building and user-ability, by examining both construction material interaction and the effect of design criteria on the final quality of the building. The subject content provides an overview of modern technology and the problems that have arisen from it, the lessons to be learned from them and how to try and avoid similar pitfalls in the future. Examine the sources of literature and research material relating to building construction. Examine modern building materials and the problems that are being encountered in their use, including concrete, cement sheet, brickwork, etc. Modern design – current considerations and modern technology including the use of computer based design methods. Building materials and their modern usage, including aluminium, steel and plastics; looking at usage and cost considerations. Low energy buildings, solar energy. Earth covered construction, membrane structures. Modern formwork systems. Fire protection approach to building. On-site considerations. Material handling – crane, hoists, concrete control, concrete pumping and mix design criteria, safety factors and cost implications. Modern construction techniques.

**Required Reading** To be advised by lecturer.


**Class Contact** Three hours per week for one semester.

**Assessment** Individual assignment, 15%; group project, 45%; examination, 40%. Students must attain a mark of 50% in each assessable component to pass this subject. Supplementary assessment will not be available.

**ECP5735 BUILDING LIFE CYCLE COSTING**

**Campus** Footscray Park

**Prerequisite(s)** Nil

**Content** A description of and the need for consideration of lifecycle costing; maintainability and efficiency. Terotechnology: why we need to use terotechnology in building industry; economic and technical factors – measures of performance; present state of knowledge. An integrated treatment of design, specification, construction use, maintenance and re-use phases for building and the effect on the life-cycle costs of the building D-consulting theory. Time value of money; discounting formulae; inflation; depreciation,
taxation; before and after-tax project return; evaluation methods for economy studies. Theory of life-cycle cost optimisation. Basis of theoretical analysis of costs; total life-cost concepts; maintenance costs and capital costs; energy costs and capital costs; taxation and other factors; constraints; technical and others. Practice of life-cycle cost optimisation. Case study; practical issues; introduction; outline of factors to be considered in building obsolescence and refurbishment; market aspects; physical aspects and limitations; authorities and regulatory constraints; economic constraints. Measurement and the assessment of utilisation of resources during each phase of the building process. Design phase (including brief documentation; construction phase; functional (occupational) life; re-evaluation as to refurbish or demolish phase. Asset management using an integrated planning and budgeting approach. Need for an integrated system; provision of funds at regular intervals and/or in emergency situations; fabric of building and other services; total assets management; case-studies - Latrobe system, others. Operational control. Control systems; identification of effective, preventive and remedial measures. Establishment of a maintenance policy. Preventive maintenance; corrective maintenance; records and register for maintenance as a control tool; accounting and costs records and audits. Degradation of buildings. Identification of maintaining cohesive approaches for building structure, fabric, equipment and plant; nature and causes of degradation. Information and management systems. Building services supervisory system; description Local Monitoring and Control Systems (LMCS); Central Supervisory Systems (CSS). Building engineering services information and management systems; functions; commercially available packages; selection, evaluation of benefits. Case study presentation and review.

Required Reading To be advised by lecturer.


Class Contact Three hours per week for one semester.

Assessment Assignment, 20%; group project, 40%; examination, 40%. Students must attain a mark of 50% in each assessable component to pass this subject. Supplementary assessment will not be available.

ECP5755 TELECOMMUNICATIONS PROJECT MANAGEMENT

Campus Footscray Park

Prerequisite(s) ECP5600 Project Management Fundamentals (normally).


Required Reading To be advised by lecturer.


Class Contact Three hours per week for one semester.

Assessment Assignments, 20%; group project, 40%; examination, 40%. Students must attain a mark of at least 50% in each assessable component to pass this subject.

EEA5310 CONTROL PRINCIPLES

Campus Footscray Park

Prerequisite(s) Nil.

Content This subject is intended to provide a review of classical control system design methods and an introduction to modern methods used in the analysis and design of control systems. The subject covers the following topics: review of continuous linear systems theory and its analytical techniques, e.g. mathematical models, transfer function, root locus, frequency response and state space techniques. Compensation of simple linear systems. Nyquist stability criterion. The design of continuous-time control systems in the s-plane.

Required Reading Ogata, K., Modern Control Engineering, Prentice Hall, Englewood Cliffs, NJ.
EEA6311 MODELLING AND COMPUTER CONTROL

Campus: Footscray Park
Prerequisite(s): EEA5310 or equivalent subjects.

Co-requisite: Nil


Class Contact: Three hours per week for one semester. This includes two hours of lecture per week, one hour of tutorial and one hour of laboratory for every two weeks.

Assessment: Tests, 20%; Examination, 80%. A pass in each component of assessment is required for a subject pass.

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EEA6312 MODEL BASED PROCESS CONTROL

Campus: Footscray Park
Prerequisite(s): EEA5310 or equivalent subjects.

Co-requisite: Nil

Content: Overview of model based control design. Model complexity and the model building process. Design of robust control systems by the internal model control method; performance and robustness trade-off. Difficulty in the realisation of continuous-time Smith Predictors; design of the unified predictive controller (UPC). Analysis of design parameters and tuning of the UPC.

Required Reading: To be advised by the lecturer.


Class Contact: Three hours per week for one semester. This includes two hours of lecture per week, one hour of tutorial and one hour of laboratory for every two weeks.

Assessment: Tests, 20%; Examination, 80%. A pass in each component of assessment is required for a subject pass.

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EEA6321 FUZZY AND NEURAL CONTROL

Campus: Footscray Park
Prerequisite(s): Nil

Co-requisite: Nil


Class Contact: Three hours per week for one semester. This includes two hours of lecture per week, one hour of tutorial and one hour of laboratory for every two weeks.

Assessment: To be advised by the lecturer.

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EEA6331 ROBOTICS AND PROGRAMMED CONTROL

Campus: Footscray Park
Prerequisite(s): Completed an undergraduate degree in Engineering or Science

Co-requisite: Nil


Class Contact: Three hours per week for one semester. This includes two hours of lecture per week, one hour of tutorial and one hour of laboratory for every two weeks.

Assessment: Assignments and laboratory exercises: 60%; Examination: 40%. A pass in each component of assessment is required for a subject pass.

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EEA6332 ELECTRONIC CONTROL OF MOTORS

Campus: Footscray Park
Prerequisite(s): Nil

Co-requisite: Nil


Required Reading: To be advised by the lecturer.

Class Contact Three hours per week for one semester. This includes two hours of lecture per week, one hour of tutorial and one hour of laboratory for every two weeks.  
Assessment Tests/Assignments, 20%; Examination, 80%. A pass in each component of assessment is required for a subject pass.

**EEA341 MEASUREMENT TECHNOLOGY**

Campus Footscray Park  
Prerequisite(s) Nil  
Co-requisite Nil  
Required Reading To be advised by the lecturer.  
Class Contact Three hours per week for one semester. This includes two hours of lecture per week, one hour of tutorial and one hour of laboratory for every two weeks.  
Assessment Tests/Assignments: 40%; Examination: 60%. A pass in each component of assessment is required for a subject pass.

**EEG6012 APPLIED KNOWLEDGE SYSTEMS**

Campus Footscray Park  
Prerequisite(s) Nil  
Co-requisite Nil  
Content The subject provides an introduction to Knowledge Based Systems. It gives an overview of expert systems, neural networks, knowledge programming and natural language systems and examines software associated with these. The subject will familiarise the students with a number of techniques for applying knowledge-based systems to real world problems in the control, monitoring and planning domains, including how to select appropriate tools to analyse problems.  
Required Reading To be advised by the lecturer.  
Class Contact Three hours per week for one semester. This includes two hours of lecture per week, one hour of tutorial and one hour of laboratory for every two weeks.  
Assessment Tests/Assignments: 35%; Examination: 65%. A pass in each component of assessment is required for a subject pass.

**EEG5012 MANAGING SOFTWARE PROJECTS**

Campus Footscray Park  
Prerequisite(s) EEG 5011 Software Engineering.  
Content The subject will develop and improve the skills required to successfully plan and manage software development efforts. The subject content includes: the role of specification in the product life cycle, systems analysis and design, feasibility study and development cycle; the applicability of D P techniques to technical program management; defining software requirements, documentation; preparation of good project plans, size and function point metrics and their use in estimation of time and costs; implementing management controls for design and integration; the use of standard project management techniques and software packages; team working, codes of practice, whole life costing, system support plans; hardware/software integration and testing, product support and maintenance, controlling changes to software and documentation; control of the programming support environment. The assignment and laboratory work consists of design, analysis and management of a large scale software project.  
Required Reading To be advised by lecturer.  
Class Contact Three hours per week for one semester comprising approximately 65% lectures/tutorials and 35% laboratory.  
Assessment Examination, 50%; assignments and project work, 50%.

**EEG5601 PROJECT WORK**

Campus Footscray Park  
Prerequisite(s) Students must have completed at least two coursework units of the major sequence.  
Content This is systematic experimental developmental work, using existing knowledge gained from research and/or practical experience, for the purpose of creating new or improved materials, products, devices, processes or services.  
Required Reading To be advised by lecturer.  
Class Contact Three hours per week for one semester.  
Assessment Project work and report, 100%.

**EEG5602 PROJECT WORK**

Campus Footscray Park  
Prerequisite(s) Students must have completed at least two coursework units of the major sequence.  
Content This is systematic experimental developmental work, using existing knowledge gained from research and/or practical experience, for the purpose of creating new or improved materials, products, devices, processes or services.  
Required Reading To be advised by lecturer.  
Class Contact Six hours per week for one semester.  
Assessment Project work and report, 100%.

**EEH 6001 HDL AND HIGH LEVEL SYNTHESIS**

Campus Chipskills Partner Universities  
Prerequisite(s) Completed Digital Systems at undergraduate level or equivalent.  
Class Contact Four hours per week for one semester comprising two hours per week lectures and two hours per week of laboratory exercises and project.  
Assessment Assignment and laboratory exercises, 20%; project, 30%; and final examination, 50%.

**EEH 6002 INTEGRATED CIRCUIT DESIGN**

Campus Chipskills Partner Universities  
Prerequisite(s) Completed Digital Systems at undergraduate level or equivalent.  
Content Overview of MOS and sub-micron technology, scaling and signal integrity, IC design techniques. CMO S cell design: device-level design constraints, gate design, pass transistor circuits, sequential circuits, mask level design. Layout considerations, design rules and mask level design. Circuit optimisation techniques. ASC and
custom design, synchronous system design. Timing issues in VLSI circuit design. Design of VLSI system sub-systems: Arithmetic and logic processing elements, adders, counters, I/Os, buffers, data path design and layout, etc. Chip floor planning. Basic analog building blocks. Design tradeoffs—cost, power and performance. Testability and yield.


**Class Contact** Four hours per week for one semester comprising two hours per week lectures and two hours per week of laboratory exercises and project.

**Assessment** Assignment and laboratory exercises, 20%; project, 30%; and final examination, 50%.

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**EEH6003 TOOLS AND DESIGN METHODOLOGY**

**Campus** Chipskills Partner Universities

**Prerequisite(s)** Completed Digital Systems at undergraduate level or equivalent.


**Required Reading** Current available text book—students to be advised.


**Class Contact** Four hours per week for one semester comprising two hours per week lectures and two hours per week of laboratory/workshop and project.

**Assessment** Assignment and laboratory exercises, 20%; project, 30%; and final examination, 50%.

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**EEH6004 DIGITAL SYSTEM DESIGN**

**Campus** Chipskills Partner Universities

**Prerequisite(s)** Completed Digital Systems at undergraduate level or equivalent.


**Required Reading** Current available text book—Student to be advised.


**Class Contact** Four hours per week for one semester comprising two hours per week lectures and two hours per week of laboratory exercises.

**Assessment** Assignment, 20%; laboratory exercises, 30%; and final examination, 50%.

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**EEH6005 EMBEDDED SYSTEM DESIGN**

**Campus** Chipskills Partner Universities

**Prerequisite(s)** Completed Microprocessor Systems at undergraduate level or equivalent.

**Content** Overview of embedded systems. Embedded system design cycle and system modelling. Embedded system hardware and software. Real-time embedded system. Embedded system specification and verification. Hardware/software co-design, partitioning and tradeoffs. Embedded development tools. Analysis and design methods using graphical notations e.g. UML, implementation considerations, testing strategies and construction of test cases, software engineering environments and CASE tools. Embedded system design and verification.


**Class Contact** Four hours per week for one semester comprising two hours per week lectures and two hours per week of laboratory exercises and project.

**Assessment** Assignment and laboratory exercises, 20%; project, 30%; and final examination, 50%.

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**EEH6006 EMERGING TOPICS IN IC DESIGN**

**Campus** Chipskills Partner Universities

**Prerequisite(s)** Nil.

**Content** New technologies such as: Silicon carbide high-power devices, Quantum based devices, quantum wells and quantum dots Nanometer MOSFETs. Wide bandgap materials and devices. Plasma-wave electronics, Ferroelectric devices. Overview of new process technologies. Deep sub-micron technology and noise. Ultra-high-speed devices, including microwave and optical devices. New Systems-Level Architectures, such as: Nanowire arrays, Neuromorphic architectures, Reconfigurable architectures, Wafer-scale systems, Memory systems. New EDA tools and future technology projections. EMC: regulations, measurement and testing. Design issues related to EMC.


**Class Contact** Four hours per week for one semester comprising two hours per week lectures and two hours per week of workshops and seminars.

**Assessment** Assignments, 30%; seminars, 20%; and final examination, 50%.

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**EEH6007 ADVANCED VLSI DESIGN**

**Campus** Chipskills Partner Universities

**Prerequisite(s)** EEH6002 or equivalent.

**Content** Overview of design flow, requirement specification, configuration management issues. Design and simulation using industry standard EDA tools. Use full-custom design tools to generate circuit layout, design rule checking, design verification and simulation. Input/output ports. Layout generators, parameterised cells, PLA generator; Silicon compilation, Data path compiler, Placement and routing Clock distribution techniques. Layout analysis including design rules, DRC, circuit extraction, etc. Equivalence checking. Simulation: logic simulation, delay modelling, fault simulation. Mixed analog/digital system specification, integration issues. VHDL - AMS. System-level specification, validation and analysis. Reusable IP blocks. System-on-a-chip (SOC) design issues including software, hardware and IP blocks. Design verification and SOC testing. Test bench design.


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**ASSIGNMENT**

Assignment, 20%; laboratory exercises, 30%; and final examination, 50%.

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**EEH6004 DIGITAL SYSTEM DESIGN**

**Campus** Chipskills Partner Universities

**Prerequisite(s)** Completed Digital Systems at undergraduate level or equivalent.


**Required Reading** Current available text book—Student to be advised.


**Class Contact** Four hours per week for one semester comprising two hours per week lectures and two hours per week of laboratory exercises.

**Assessment** Assignment, 20%; laboratory exercises, 30%; and final examination, 50%.

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**EEH6005 EMBEDDED SYSTEM DESIGN**

**Campus** Chipskills Partner Universities

**Prerequisite(s)** Completed Microprocessor Systems at undergraduate level or equivalent.

**Content** Overview of embedded systems. Embedded system design cycle and system modelling. Embedded system hardware and software. Real-time embedded system. Embedded system specification and verification. Hardware/software co-design, partitioning and tradeoffs. Embedded development tools. Analysis and design methods using graphical notations e.g. UML, implementation considerations, testing strategies and construction of test cases, software engineering environments and CASE tools. Embedded system design and verification.


**Class Contact** Four hours per week for one semester comprising two hours per week lectures and two hours per week of laboratory exercises and project.

**Assessment** Assignment and laboratory exercises, 20%; project, 30%; and final examination, 50%.

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**EEH6006 EMERGING TOPICS IN IC DESIGN**

**Campus** Chipskills Partner Universities

**Prerequisite(s)** Nil.

**Content** New technologies such as: Silicon carbide high-power devices, Quantum based devices, quantum wells and quantum dots Nanometer MOSFETs. Wide bandgap materials and devices. Plasma-wave electronics, Ferroelectric devices. Overview of new process technologies. Deep sub-micron technology and noise. Ultra-high-speed devices, including microwave and optical devices. New Systems-Level Architectures, such as: Nanowire arrays, Neuromorphic architectures, Reconfigurable architectures, Wafer-scale systems, Memory systems. New EDA tools and future technology projections. EMC: regulations, measurement and testing. Design issues related to EMC.


**Class Contact** Four hours per week for one semester comprising two hours per week lectures and two hours per week of workshops and seminars.

**Assessment** Assignments, 30%; seminars, 20%; and final examination, 50%.

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**EEH6007 ADVANCED VLSI DESIGN**

**Campus** Chipskills Partner Universities

**Prerequisite(s)** EEH6002 or equivalent.

**Content** Overview of design flow, requirement specification, configuration management issues. Design and simulation using industry standard EDA tools. Use full-custom design tools to generate circuit layout, design rule checking, design verification and simulation. Input/output ports. Layout generators, parameterised cells, PLA generator; Silicon compilation, Data path compiler, Placement and routing Clock distribution techniques. Layout analysis including design rules, DRC, circuit extraction, etc. Equivalence checking. Simulation: logic simulation, delay modelling, fault simulation. Mixed analog/digital system specification, integration issues. VHDL - AMS. System-level specification, validation and analysis. Reusable IP blocks. System-on-a-chip (SOC) design issues including software, hardware and IP blocks. Design verification and SOC testing. Test bench design.


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**POSTGRADUATE SUBJECT DETAILS**

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**ASSIGNMENT**

Assignment, 20%; laboratory exercises, 30%; and final examination, 50%.
EEH6008 VLSI DIGITAL SIGNAL PROCESSING SYSTEMS

Campus: Chipskills Partner Universities
Prerequisite(s): Completed DSP course at undergraduate level.
Content: Overview of DSP: FFT, DFT, Z-transform and sampling theory. FIR and IIR filter design and implementation. Interpolation, decimation and multi-rate systems. Adaptive filtering and applications. DSP software building blocks, nonlinearity and choice of sampling rate. DSP hardware, architecture, processing blocks (multipliers, ALU, MAC, rail shifters). Pipelining and parallel processing, power consumption and reduction. Folding and unfolding applications: sampling period reduction, designing digit-serial hardware, time-multiplexed design. Systolic array design. Algorithmic strength reduction. Advanced DSP software and hardware. DSP system design.


Class Contact: Four hours per week for one semester comprising two hours per week lectures and two hours per week of laboratory exercises and project.
Assessment: Assignment and laboratory exercises, 20%; project, 30%; and final examination, 50%.

EEH6009 RELIABILITY AND TESTABILITY IN IC DESIGN

Campus: Chipskills Partner Universities
Prerequisite(s): EEH6001, EEH6002 and EEH6003 or equivalents.
Content: Reliability: parallel and serial reliability, failure rates. Reliability as affected by smaller dimensions and faster devices, thermal considerations. Redundancy and fault tolerance. Design for device reliability. Functional and formal verification and fault modeling. Hardware/software co-design, co-verification and co-simulation. Timing and power analysis. Design for testability and ATPG and fault coverage tools. Boundary Scan Testing. Memory testing, BIST of RAMs, RAM interconnection testing. Scan based testing of multimegabit memories, external and internal testing of megabit DRAMs. Comprehensive testing of multistage interconnection networks. Embedded system testing. Board-level interconnect testing. Test bench design.


Class Contact: Four hours per week for one semester comprising two hours per week lectures and two hours per week of laboratory exercises.
Assessment: Assignment, 20%; laboratory exercises, 30%; and final examination, 50%.

EEH6010 INTRODUCTION TO MICROSYSTEM TECHNOLOGY

Campus: Chipskills Partner Universities
Prerequisite(s): Nil.


Class Contact: Four hours per week for one semester comprising two hours per week lectures and two hours per week of laboratory exercises.
Assessment: Assignments, 20%; laboratory exercises, 30%; and final examination, 50%.

EEH6011 INTRODUCTION TO SEMICONDUCTOR DEVICE FABRICATION

Campus: Chipskills Partner Universities
Prerequisite(s): Nil
Content: Fundamental principles of fabrication processes, physical and chemical models for crystal growth, oxidation, ion implantation, etching, deposition, lithography and metallisation. Emphasis is on practical aspects of silicon device fabrication, including wafer cleaning, photolithography, etching, oxidation, diffusion, ion implantation, chemical vapour deposition, physical sputtering and wafer testing. Imperfections in semiconductors, crystal growth, solid solubility, alloying and diffusion, ion implantation, oxide masking, and epitaxy. Practical and fundamental limits to the evolution of the technology of MOS and bipolar devices. How are integrated circuits fabricated and what future changes are likely? The implications for device performance caused by material properties and fabrication techniques. Fabrication techniques for bipolar and MOS-devices, and the electrical performance of devices based on these techniques. Comparison of fabrication technologies for silicon and gallium arsenide devices. Processes and fabrication equipment to be studied will include oxidation/diffusion, CVD reactors, photolithography, plasma etching, vacuum evaporator, ion implantation, etc. Introduction to computer modelling of processing steps such as etching, lithography, diffusion, implantation (eg SUPREME).


Class Contact: Four hours per week for one semester comprising two hours per week lectures and two hours per week of laboratory exercises.
Assessment: Assignments, 20%; laboratory exercises, 30%; and final examination, 50%.

EEH6012 SEMICONDUCTOR DEVICE PHYSICS

Campus: Chipskills Partner Universities
Prerequisite(s): Nil.


**Class Contact** Four hours per week for one semester comprising two hours per week lectures and two hours per week of laboratory exercises.

**Assessment** Assignments, 20%; laboratory exercises, 30%; and final examination, 50%.

### EEH6013 PROJECT MANAGEMENT AND ENTREPRENEURSHIP

**Campus** Chipskills Partner Universities

**Prerequisite(s)** Nil


**Required Reading** Current available text book - students to be advised. Appropriate journal papers.


**Class Contact** Four hours per week for one semester. **Assessment** Assignments, 20%; seminar presentations, 10%; project, 30%; and final examination, 40%.

### EEH6014 RF AND MIXED SIGNAL DESIGN

**Campus** Chipskills Partner Universities

**Prerequisite(s)** Completed Analog Electronics at undergraduate level.

**Content** Basic concepts of wireless communication systems design. Transceiver architectures. VLSI design issues and layout techniques in wireless transceiver design. Radio circuits, LNAs, oscillators, mixers, limiters, phase detectors, frequency synthesizers, PLLs and power amplifiers. Low voltage low power design techniques and design flow for analog and mixed signal circuits and systems. OpAmps, comparators, A-to-D and D-to-A conversion circuits. Noise analysis and design tradeoffs - cost, power and performance. Students will develop hands-on experience in design, simulation, verification and implementation using industry standard EDA tools.


**Class Contact** Four hours per week for one semester comprising two hours per week lectures and two hours per week of laboratory exercises and project.

**Assessment** Assignment and laboratory exercises, 20%; project, 30%; and final examination, 50%.

### EEH6015 SPECIAL ELECTIVES

**Campus** Chipskills Partner Universities

**Prerequisite(s)** As per chosen elective.

**Content** As per chosen elective.

**Required Reading** As per chosen elective.

**Recommended Reading** As per chosen elective.

**Class Contact** As per chosen elective.

**Assessment** As per chosen elective.

### EEH6020 MINOR PROJECT

**Campus** Chipskills Partner Universities

**Prerequisite(s)** Completed EEH6001, EEH6002, EEH6003 or equivalent.

**Content** It is expected that the majority of industry-based students will undertake projects as part of their normal employment, where relevant opportunities exist and suitable resources and supervision can be guaranteed. A project can be structured to be the equivalent of 2 units of study. Projects would be expected to demonstrate a good working knowledge in chip design and implementation. Students must demonstrate their ability to integrate and draw upon their coursework studies relevant to the project. A dissertation of no less than 10000 words must be submitted and will be examined by one examiner selected by the examining panel for this module. Commercial in-confidence programs can be undertaken, with appropriate restrictions on publication and choice of examiners. Intellectual property of projects initiated by a company and undertaken in that company will remain with the company. All other projects will be subject to the Intellectual Property policy of the relevant university partner.

**Required Reading** Current available text - students to be advised. Appropriate IEEE/IEE Journal materials.


**Class Contact** Eight hours per week for one semester.

**Assessment** Assessment will be based on project proposal, 10%; progress report and seminars, 10%; project, 40%; and final report, 40%.

### EEH6030 MAJOR PROJECT

**Campus** Chipskills Partner Universities

**Prerequisite(s)** Completed EEH6001, EEH6002 and EEH6003 or equivalents.

**Content** It is expected that the majority of industry-based students will undertake projects as part of their normal employment, where relevant opportunities exist and suitable resources and supervision can be guaranteed. Collaboration with international partners will also be encouraged. A project can be structured to be the equivalent of 4 units of study. Projects would be expected to demonstrate mastery in chip design and implementation at a level considered no less than that of an experienced practitioner in the field. Students must demonstrate their ability to integrate and draw upon their coursework studies relevant to the project. A dissertation of no less than 15000 words must be submitted and will be examined by two examiners selected by the examining panel for this module. Commercial in-confidence programs can be undertaken, with appropriate restrictions on publication and choice of examiners. Intellectual property of projects initiated by a company and undertaken in that company will remain with the company. All other projects will be subject to the Intellectual Property policy of the relevant university partner.

**Required Reading** Current available text - students to be advised. Appropriate IEEE/IEE Journal materials.
Recommended Reading


Recommended Reading


Recommended Reading


Class Contact

Sixteen hours per week for one semester. Assessment Assessment will be based on project proposal, 10%; progress report and seminars, 10%; project, 40%; and final report, 40%.

EEH6101 ASIC DESIGN

Campus Footscray Park

Prerequisite(s) Nil

Co-requisite(s) EEH6151 VHDL and High-level Synthesis


Recommended Reading


Class Contact

Three hours per week for one semester comprising two hours per week of lecture and one hour per week of tutorial/lab.

EEH6102 CUSTOM IC DESIGN B

Campus Footscray Park

Prerequisite(s) EEH6101 ASIC Design

Content The students will use modern integrated CAD software to accomplish schematic capture, simulation, layout, extraction, place and route and design verification. Mixed analog digital system specification. Design and simulate circuit using schematic capture tools and HSPICE. Use of Mentor Graphics. Full-custom design tools to generate circuit layout, design rule checking, design verification and simulation. Input/output pads. Layout generators. Layout analysis. Placement and routing. Testing. Required Reading Selected papers from IEEE/IEE Journal. To be advised by the lecturer.

Recommended Reading


Class Contact

Three hours per week for one semester comprising two hours per week of lecture and one hour per week of tutorial/lab.

EEH6111 DIGITAL CIRCUIT DESIGN

Campus Footscray Park

Prerequisite(s) Nil


Recommended Reading


Class Contact

Three hours per week for one semester comprising two hours per week of lecture and one hour per week of tutorial/lab.

EEH6122 CUSTOM IC DESIGN A

Campus Footscray Park

Prerequisite(s) EEH6121 Basic IC Design/Devices or equivalent


Class Contact Three hours per week for one semester comprising two hours per week of lecture and one hour per week of tutorial/laboratory.

Assessment Test, assignments and laboratory exercises 40%, final examination 60%.


Class Contact Three hours per week for one semester. This includes one hour of lecture per week, one hour of tutorial and one hour of laboratory.

Assessment Examination 100%.

EEH6131 HARDWARE DESCRIPTION BASED DESIGN

Campus Footscray Park

Prerequisite(s) Nil

Co-requisite Nil

Content Introduction to VHDL: traditional design methods, hardware, abstraction. Language elements: basic terminology, entity, modelling of architecture (structural, data flow and mixed) identifiers, data objects and types, operators. Subprograms and overloading. Packages and libraries. Synthesis: constraints, attributes, technology libraries, realisation with CPLDs and FPGAS/EDA design and development tools.


Class Contact Three hours per week for one semester. This includes two hours of lecture per week, one hour of tutorial and one hour of laboratory for every two weeks.

Assessment Assignments: 20%; Examination: 80%. A pass in each component of assessment is required for a subject pass.

EEH6132 INTEGRATED CIRCUIT TESTABILITY

Campus Footscray Park

Prerequisite(s) Nil

Content System partitioning, Layout and testability, Design for testability, Defects and fault models. Functional and structural testing Test access. DFT techniques. Fault simulation and automatic test pattern generation. Ad-hoc DFT. Scan-path DFT. Built-in self test (BIST). Boundary scan DFT.


Recommended Reading Pucknell, D.A. and Eshraghian, K., 1994, Basic VLSI Design System and Circuits, Prentice Hall.

Class Contact Three hours per week for one semester comprising two hours per week of lecture and one hour per week of tutorial/laboratory.

Assessment Test, assignments and laboratory exercises 40%, final examination 60%.

EEH6142 EMERGING TECHNOLOGIES

Campus Footscray Park

Prerequisite(s) Nil.


Required Reading Selected papers from IEEE/IEE Journals. To be advised by the lecturer.


Class Contact Three hours per week for one semester comprising two hours per week of lecture and one hour per week of tutorial/laboratory.

Assessment Test, assignments and laboratory exercises 40%, final examination 60%.

EEH6151 VHDL AND HIGH LEVEL SYNTHESIS

Campus Footscray Park

Prerequisite(s) Nil.


Class Contact Three hours per week for one semester comprising two hours per week of lecture and one hour per week of tutorial/laboratory.

Assessment Assignment, 20%, final examination, 80%.

EEH6152 ADVANCED MICROPROCESSORS

Campus Footscray Park

Prerequisite(s) EEH6111 Digital Circuit Design

Content 68020 programming model, data organisation, addressing modes and instructions sets. Exception processing, stack frames, parameter passing and procedure calls. Software development for embedded systems. External bus behaviour and design of decoders, Stack and BERR circuitry using PLDs. Interfacing memory and peripheral devices. Embedded microcontroller devices -
architecture, features, peripherals and programming. Coprocessor interface and memory management.

**Required Reading** Selected papers from IEEE/IEE Journals. To be advised by the lecturer.


**Class Contact** Three hours per week for one semester comprising two hours per week of lecture and one hour per week of tutorial/laboratory.

**Assessment** Test, assignments and laboratory exercises 40%, final examination 60%.

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**EET6500 COMMUNICATION SYSTEMS CASE STUDY**

**Campus** Footscray Park

**Prerequisite(s)** EET510 Communication Theory Principles

**Content** This subject provides the students with the opportunity to carry out an in-depth study of a specific topic in communication systems. A typical study would involve a detailed literature survey followed by a comprehensive analysis of the topic, and the compilation of a full report. The report is to be presented in a seminar at the end of the semester.

**Required Reading** Technical journal articles and other references as determined.

**Class Contact** Three hours per week for one semester.

**Assessment** Final report, 70%; seminar presentation, 30%.

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**EET530 COMMUNICATION THEORY PRINCIPLES**

**Campus** Footscray Park

**Prerequisite(s)** Nil

**Content** This subject will provide students with a review of the fundamental principles on which communication systems operate. The subject examines the following topics. Review of analysis techniques. Fourier series, Fourier transform, Bandwidth and rise time of signals. Convolution theorem and its applications. Sampling theorem and signal recovery. Review of modulation techniques. Auto-correlation, cross-correlation functions. Coherence. Power spectral density. Spectral analysis of random data signals. Noise analysis. Baseband data communication systems and their bit-error rate performance analysis. Information theory and coding.


**Class Contact** Three hours per week for one semester.

**Assessment** Examination, 70%; assignments, 30%.

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**EET6501 COMMUNICATION SYSTEM MODELING AND SIMULATION 1**

**Campus** Footscray Park

**Prerequisite(s)** Nil

**Co-requisite** Nil

**Content** Introduction to research methodology. System modeling. Simulation procedures. MATLAB and its application in the design and simulation of communication subsystems.

**Required Reading** To be advised by lecturer.

**Recommended Reading** To be advised by lecturer.

**Class Contact** Three hours per week for one semester.

**Assessment** Preliminary assignments, 40%; final assignment, 60%.

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**EET6502 COMMUNICATION SYSTEM MODELING AND SIMULATION 2**

**Campus** Footscray Park

**Prerequisite(s)** Nil

**Co-requisite** Nil

**Content** Introduction to OPNET and other industry standard simulation tools and their application in telecommunication systems modeling and simulation.

**Required Reading** To be advised by lecturer.

**Recommended Reading** To be advised by lecturer.

**Class Contact** Three hours per week for one semester.

**Assessment** Preliminary assignments, 40%; final assignment, 60%.

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**EET651I DATA NETWORK ANALYSIS AND DESIGN**

**Campus** Footscray Park

**Prerequisite(s)** Nil

**Co-requisite** Nil


**Class Contact** Three hours per week for one semester comprising two hour lecture and one hour tutorial/laboratory.

**Assessment** Tests/Assignments: 40%; Examination: 60%. A pass in each component of assessment is required for a subject pass.

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**EET6512 INTELLIGENT NETWORKS AND NETWORK MANAGEMENT**

**Campus** Footscray Park

**Prerequisite(s)** Nil

**Co-requisite** Nil


**Recommended Reading** Lewis, L., 1996, Managing Computer Networks, Artech House.

**Class Contact** Three hours per week for one semester comprising 2 hour lecture and 1 hour tutorial/laboratory.

**Assessment** Tests/Assignments: 40%; Examination: 60%. A pass in each component of assessment is required for a subject pass.

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**EET652I DIGITAL SWITCHING AND SIGNALLING SYSTEMS**

**Campus** Footscray Park

**Prerequisite(s)** Nil

**Co-requisite** Nil

Required Reading To be advised by the lecturer.
Recommended Reading To be advised by the lecturer.
Class Contact Three hours per week for one semester comprising two hour lecture and one hour tutorial/laboratory.
Assessment Tests/Assignments: 40%; Examination: 60%. A pass in each component of assessment is required for a subject pass.

EET6522 TELECOMMUNICATION TARIFF

Content This subject will provide an understanding of the various aspects of telecommunication tariff structures and their implementation. Subject content will include the following:

- Basic telecommunication tariff structures and their formulation
- Engineering, Economic, Social, and Political considerations in tariff setting
- Global operation and international agreements
- Local and national call accounting
- Network operator, service provider and customer partnerships
- Service differentiation between voice, data and ISDN connections
- Tariff policies in broadband, interactive multimedia and Internet connections
- Tariff regimes in cellular mobile systems
- Teletraffic engineering principles
- Queuing theory
- Loss Systems D-day systems
- Availability
- Dynamic equivalence
- Erlang’s formula
- Network dimensioning
- Dynamic routing
- Minimum network design
- Network traffic management techniques
- Network management

Required Reading To be advised by the lecturer.

Class Contact Three hours per week for one semester comprising two hour lecture and one hour tutorial/laboratory.
Assessment Tests/Assignments: 40%; Examination: 60%. A pass in each component of assessment is required for a subject pass.

EET6531 WIRELESS COMMUNICATION SUBSYSTEMS

Content This subject will provide a theoretical and practical understanding of wireless communication systems and the subsystems involved in them. It provides an overview of existing wireless systems with special reference to its hardware implementation. Subject content will include the following:

- Propagation modelling at UHF: Path loss, slow fading and fast fading
- Okumura’s model: Delay spread, coherence bandwidth, and level crossing rate
- Multipath propagation
- Interference cancellation
- Antennas: Antenna gain, radiation resistance, and phased array antennas
- Base station antennas for cellular mobile systems: Low profile portable antennas, Modulation and coding for the mobile channel
- FM, CPM, GMSK, and QPSK: Bit error rate and error flow
- Channel equalisation: The effect of space, time and frequency diversity
- Spread spectrum: CDMA, TDMA and FDMA

Required Reading To be advised by the lecturer.

Class Contact Three hours per week for one semester comprising two hour lecture and one hour tutorial/laboratory.
Assessment Tests/Assignments: 40%; Examination: 60%. A pass in each component of assessment is required for a subject pass.

EET6532 MICROWAVE AND SATELLITE COMMUNICATION SYSTEMS


Class Contact Three hours per week for one semester comprising two hour lecture and one hour tutorial/laboratory.
Assessment Tests/Assignments: 40%; Examination: 60%. A pass in each component of assessment is required for a subject pass.

EET6541 MULTIMEDIA AND INTERNET TECHNOLOGY


Class Contact Three hours per week for one semester comprising two hour lecture and one hour tutorial/laboratory.
Assessment Tests/Assignments: 40%; Examination: 60%. A pass in each component of assessment is required for a subject pass.

EET6542 MOBILE AND PERSONAL COMMUNICATION SYSTEMS

EET6551 MICROWAVE ELECTRONIC CIRCUIT DESIGN

Campus Footscray Park
Prerequisite(s) Nil

Content This subject will provide an introduction to microwave electronic circuit design based around the 'Microstrip' transmission line structure. Students will be given small design projects to complete operating at the frequencies relevant to mobile communications (ie. 0.9 to 3 GHz). Extensive use will be made of Agilent's simulation and design package, ADS and other software packages in this course. Subject content: A review of basic transmission line theory, A review of microwave transmission structures. A discussion of corrections for microstrip discontinuities. A review of the Smith Chart. Consideration of matching requirements for small signal amplifiers. A review of matching techniques. Bias circuit design and power amplifier design.

Passive RF Components.

Required Reading Gonzalez, G., 1984, Microwave Transistor Amplifiers – Analysis and Design, Prentice-Hall.


Class Contact Three hours per week for one semester comprising one hour lecture and two hour tutorial/ laboratory.

Assessment Assignments: 60%; Examination/ test: 40%. A pass in each component of assessment is required for a subject pass.

EET6552 COMPUTER NETWORKS AND NETWORKING SOFTWARE

Campus Footscray Park
Prerequisite(s) Nil


Class Contact Three hours per week for one semester comprising two hour lecture and one hour tutorial/ laboratory.

Assessment Tests/ Assignments: 40%; Examination: 60%. A pass in each component of assessment is required for a subject pass.

EET6561 LOCAL AREA AND BROADBAND NETWORKS

Campus Footscray Park
Prerequisite(s) Nil

Co-requisite Nil


Required Reading To be advised by the lecturer.


Class Contact Three hours per week for one semester comprising two hour lecture and one hour tutorial/ laboratory.

Assessment Tests/ Assignments: 30%; Examination: 70%. A pass in each component of assessment is required for a subject pass.

EET6562 DIGITAL SIGNAL PROCESSING

Campus Footscray Park
Prerequisite(s) Nil

Co-requisite Nil


Required Reading To be advised by lecturer.

Recommended Reading To be advised by lecturer.

Class Contact Three hours per week for one semester comprising two hour lecture and one hour tutorial/ laboratory.

Assessment Tests/ Assignments: 40%; Examination: 60%. A pass in each component of assessment is required for a subject pass.

EPM5000 INTERMODAL FREIGHT MARKETS - DYNAMICS AND STRUCTURE

Campus Werribee
Prerequisite(s) Nil

Content This subject is concerned with the way in which rapidly restructuring logistics and freight handling systems are impacting on the efficiency and effectiveness of service providers in integrated and intermodal freight markets. It focuses particularly on developing concepts, skills and techniques that will assist transport professionals and managers in intermodal freight handling firms not only to understand the economic and competitive drivers in the market place but also to define their corporate ‘product’ and the way in which they do business. The subject meshes principles with practice and is developed within a framework or a detailed understanding of
the Australian freight industry and its operations and practice, and it is informed also by extensive experience in Southeast Asian and Pacific Rim countries, in the United States and in Europe.

**Required Reading** Course Handbook provided to each student.


**Class Contact** Forty five hours of block mode teaching.

**Assessment** Case study and seminar presentation, 10%; Syndicate group project, 40%; Research report, 50%.

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**EPM5001 INTEGRATING INTERMODAL FREIGHT SYSTEMS**

**Campus Werribee**

**Prerequisite(s)** EPM5000 Intermodal Freight Markets - Dynamics and Structure.

**Content** This subject focuses on the need to create seamless transport services and operations that span complex networks involving different modes and many interface points - depots, terminals, warehouses, ports, for example. It recognises that intermodal efficiency may not be easily achieved; and that action may be required on many fronts - including operational capacity matching, alliance formation, information and e-business streamlining, rationalising chain structures, eliminating market structure inefficiency and harmonising policies and policy frameworks. Particular attention is paid to capacity measurement, provision and adjustment in freight networks; to efficiency costs and pricing frameworks; to ways and means of achieving efficient chain and supply chain structures; and to overcoming policy and regulatory constraints. This subject draws heavily not only on the Australian freight industry but also on international experience.

**Required Reading** Course Handbook provided to each student.


**Class Contact** Forty five hours of block mode teaching.

**Assessment** Case study and seminar presentation, 10%; Syndicate group project, 40%; Research report, 50%.

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**EPM5002 DEFINING STRATEGIES FOR INTERMODAL FREIGHT SYSTEMS**

**Campus Werribee**

**Prerequisite(s)** Nil

**Content** This subject builds on the concepts, skills and techniques developed in EPM5000 and EPM5001. In those subjects students examined the nature of the intermodal freight market and the role of the intermodal service provider in it; and the ways and means of managing to achieve seamless and efficient operations. In this subject the guiding questions are strategic ones and focus on positioning the firm for the future. More particularly, the subject develops a strong understanding of the notion of strategy and of an adequate conceptual framework within which to define strategies. It also outlines some quite specific attributes of strategy for intermodal firms and for the effective achievement of integrated freight networks. This subject draws heavily not only on the Australian freight industry but also on international experience.


**Class Contact** Forty five hours of block mode teaching.

**Assessment** Case study and seminar presentation, 10%; Syndicate group project, 40%; Research report, 50%.
Required Reading Current available text book - student to be advised.


Class Contact Teaching for each unit is over a five day block.

Assessment A seminar paper, 10%; Group syndicate work, 40%; Research report, 50%.

EPM5005 STRATEGY, STRATEGIC OPTIONS AND BUSINESS SUCCESS IN CHAIN SYSTEMS MANAGEMENT

Campus Werribee
Prerequisite(s) Nil

Content Real and continuing changes in complex intermodal and chain systems are resulting in significantly increased competitive pressures for third party service provider firms. What strategic options are available to stakeholder firms? How can one identify and select competitive strategies that return sustainable profits? These are the issues faced by the strategic managers of all types of businesses, and are particularly pertinent to the specialist carriers of break-bulk cargoes.


EQB5621 FIRE GROWTH, DETECTION AND EXTINGUISHMENT

Campus Werribee
Prerequisite(s) Nil

Content The subject provides students with basic information on fire technology and explains the initiation and development of fires including an understanding and facility in the application of the range of detection systems and of manual and automatic extinguishing subsystems in terms of: mechanism of extinguishment; detection performance; component modelling, response time assessment; reliability criteria, redundancy and the effect of maintenance; performance testing. The subject covers the combustion process and the fire triangle. Heat transfer mechanism, combustion of gases and vapours and fire plumes. Combustion of liquids and solids, fire toxicity and products of combustion. Fire behaviour of materials and products and fire retardants, fire test methods. Fire initiation and development. Fire and Post flashover enclosure fires. Mathematical modelling of enclosure fires (zone and field models). Management of fire initiation and development and implications to performance design. Detection and extinguishment, principles of detection and alarm. Fire detection and alarm systems, water based extinguishment. Fire engineering design for extinguishment, system reliability. Fire brigade response and operations.


EQB5632 SMOKE AND FIRE SPREAD, FIRE SAFETY SYSTEM DESIGN

Campus Werribee
Prerequisite(s) Nil


EQB5642 PERFORMANCE CODES METHODOLOGY AND STRUCTURE
Campus Werribee
Prerequisite(s) Nil

Content The subject introduces the student to the principles, methodology and scope of performance based codes including a conceptual framework and historical background and provides the student with an understanding of the structure of performance design and approval and background and refresher material essential to an understanding of further subjects in the course. The subject covers: Conceptual framework of performance regulations, life safety, illness and injury, health, safety and amenity and asset protection. Historical background, ISO 6241, NKB, international approaches, NZ model, equivalency concept. State legislation and the model building act (administrative framework). The Performance Based Code of Australia and Australian Standards (technical framework). Process and procedural matters; legal issues, documentation, joint and several tortfeasor liability. Integrated approvals; impact of performance regulation on other approvals. Fire Code Reform Centre (FCRC) overview and submodels. Risk management and assessment, an overview. Other PBCC performance designs. Through life performance and maintenance. Essential services recognition and documentation. Quality assurance and the building permit/inspection process.


EQB5751 FIRE TECHNOLOGY MODELLING
Campus Werribee
Prerequisite(s) EQB561 and EQB562

Content The subject provides students with an understanding of the details of modelling fire growth and spread in buildings. The subject covers development of the design fire; fire spread models; smoke movement models; atiums and large spaces; network modelling; computational fluid dynamics models; post-flashover compartment fire models; and model validation.


Class Contact Equivalent to three hours of lectures per week for thirteen weeks.

Assessment Four written assignments, 10%, 10%, 30% and 50%. Page limits: 10% - 4 pages, 30% - 12 pages, 50% - 20 pages.

EQB5761 FIRE SAFETY SYSTEMS MODELLING
Campus Werribee
Prerequisite(s) EQB5611, EQB5621 and EQB5632

Content The subject provides students with an understanding of the details of modelling of active, and passive, building fire safety subsystems, and the details of human behaviour modelling. The subject covers detection and sprinkler operation predictions; modelling of barrier failure; structural fire safety; human behaviour modelling; suppression models; and a fire brigade intervention model.


Class Contact Equivalent to three hours of lectures per week for thirteen weeks.

Assessment Four written assignments, 10%, 10%, 30% and 50%. Page limits: 10% - 4 pages, 30% - 12 pages, 50% - 20 pages.

EQB5772 FIRE SAFETY SYSTEM DESIGN
Campus Werribee
Prerequisite(s) Fire Safety System Design: EQB5751, EQB5761 and EQB5642.

Content The subject provides a description of various approaches used for the design of the safety in buildings, with particular emphasis placed on a fire safety system (FSS) performance model. The FSS model uses a risk assessment methodology to assess the risk to life safety and the expected losses, and to incorporate this risk assessment as part of the design procedure for the fire safety in buildings. The subject covers: introduction, alternative design approaches, fire engineering design code framework, risk assessment methodology, and description of a fire safety system (FSS) model and its parameters; risk to life submodel and economic submodel. Description of the various submodels comprising the FSS model–namely: fire initiation and growth submodel, smoke spread submodel, fire spread submodel, occupant communication and avoidance submodel, fire brigade submodel. In-service performance. Application of fire safety system models.


Class Contact Three hours of lectures per week for one semester.

Assessment Assessment will be made on the basis of assignments. Four assignments, each 25%. Supplementary assessment will not be available.

EQB5782 FIRE SPREAD AND FIRE SAFETY SYSTEM DESIGN PROJECT
Campus Werribee
Prerequisite(s) Fire Spread and Fire Safety System Design Project.

Co-requisite(s) EQB5772 Fire Safety System Design.

Content The first part of this subject provides an understanding of the mechanisms of and impediments to the spread of fire in buildings, and to provide a knowledge of the behaviour, analysis and design of the available subsystems for the management of fire spread. The subject covers: introduction and overview; reliability of smoke and fire management subsystems; mechanisms, timing and probability of fire spread; modelling fire spread; fire spread management subsystem; design of fire spread system. In the
second part of the subject Fire Safety System design project will apply knowledge gained during the course to the analysis and design of a cost-effective fire safety system for a proposed building project.


**Class Contact** Three hours of lectures per week for one semester. 
**Assessment** Assessment will be on the basis of submission of required assignments and a project. Assessment of the Fire Safety System Project will be on the basis of submission of a major report. Project submission, 70%; assignments, 30%. Supplementary assessment will not be available.

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**EQT6060 BUILDING FIRE RESEARCH (FULL-TIME)**

**Campus Werribee** 
**Prerequisite(s)** Students are normally expected to have completed the Graduate Diploma in Building Fire Safety and Risk Engineering with an Honours average.

**Content** The thesis will normally be from 15,000 to 25,000 words. It will report on independently conducted research which demonstrates the student’s ability to clearly define a problem, to undertake a detailed literature search and review the literature on the topic area. The student shall, where appropriate, demonstrate both the ability to develop and/or apply models to study the problem together with appropriate data selection, collection and analysis. Students will normally be supervised by an academic member of staff and by a co-supervisor external to the Centre. The external supervisor will be an academic from the University or from another institution or a practitioner.

**Required Reading** To be advised by lecturer.


**Class Contact** Regular contact will be made by arrangement with the supervisor.

**Assessment** Before commencing actual research, students must complete, to the satisfaction of the research supervisor, a paper critically reviewing the literature and providing a clear outline of the proposed research methodology and resources required to complete the thesis. The final thesis will be assessed by two examiners with expertise in the area of the research. These examiners may be internal or external to the Centre or the University and will not include the supervisors. Students may be asked to present themselves for oral or written examination by these examiners, at the examiner’s discretion.

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**EQT6060 BUILDING FIRE RESEARCH (PART-TIME)**

**Campus Werribee** 
**Prerequisite(s)** Students are normally expected to have completed the Graduate Diploma in Building Fire Safety and Risk Engineering with an Honours average.

**Content** The thesis will normally be from 15,000 to 25,000 words. It will report on independently conducted research which demonstrates the student’s ability to clearly define a problem, to undertake a detailed literature search and review the literature on the topic area. The student shall, where appropriate, demonstrate both the ability to develop and/or apply models to study the problem together with appropriate data selection, collection and analysis. Students will normally be supervised by an academic member of staff and by a co-supervisor external to the Centre. The external supervisor will be an academic from the University or from another institution or a practitioner.

**Required Reading** To be advised by lecturer.


**Class Contact** Regular contact will be made by arrangement with the supervisor.

**Assessment** Before commencing actual research, students must complete, to the satisfaction of the research supervisor, a paper critically reviewing the literature and providing a clear outline of the proposed research methodology and resources required to complete the thesis. The final thesis will be assessed by two examiners with expertise in the area of the research. These examiners may be internal or external to the Centre or the University and will not include the supervisors. Students may be asked to present themselves for oral or written examination by these examiners, at the examiner’s discretion.

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**SFB6710 FOOD ANALYSIS**

**Campus Werribee** 
**Prerequisite(s)** Eligibility for entry to the Master of Science in Food Science and Technology.

**Content** This subject provides an introduction to the laboratory analysis of the chemical, physical and biochemical properties of foods and food components. The subject covers: the reasons for analysing foods; food composition tables and databases; sampling and sample preparation; the proximate analysis system; water activity; analyses of proteins, carbohydrates, lipids, vitamins, minerals and pigments; the use of enzyme based assays for food components; rheology, texture, viscosity and colour of foods – principles and recent developments in analysis; enzymes as processing aids and as deteriorative agents - measurement of food enzymes.

SBF6720 FOOD MICROBIOLOGY

Campus Werribee
Prerequisite(s) Eligibility for entry to the Master of Science in Food Science and Technology.


Class Contact Six hours per week comprising three hours of lectures and tutorials and three hours of practical work for one semester.

Assessment Assignments and tests 30%, practical work 20%, final examination 50%.

SBF6721 FRUIT AND VEGETABLE SCIENCE AND TECHNOLOGY

Campus Werribee
Prerequisite(s) Eligibility for entry to the Master of Science in Food Science and Technology.

Content This subject introduces students to the principles and technology of fruit and vegetable processing and to recent developments in the processing of these commodities. Topics covered include: The fruit and vegetable industry: plant physiology; the biochemistry of fruit ripening; diseases; maturity prediction and testing; post-harvest handling and storage, chilling and freezing, canning, microwave processing, cooking and dehydration; changes in quality. The juicing of fruit and vegetables, product deterioration, blanching treatments, product quality, quality assurance, and legal requirements.

Required Reading To be advised by lecturers.


Class Contact Six hours per week comprising lectures, tutorials, practical work and/or field trips for one semester.

Assessment Assignments and tests 30%, practical work 20%, final examination 50%.

SBF6722 GRAIN SCIENCE AND TECHNOLOGY

Campus Werribee
Prerequisite(s) Eligibility for entry to the Master of Science in Food Science and Technology.

Content This subject will provide students with an understanding of the principles and practices involved in the technology of food cereals and legumes. Topics covered include: Cereal and legumes of the world – nutritional, physical, compositional and biochemical characteristics. The characteristics of grain proteins and starches; protein functionality, the starch granule. The milling of cereals and legumes – cleaning, conditioning, the concept of starch damage and the control of mill product quality. Flour quality, analytical approaches, quality control, grain sprouting and end use suitability. Dough development. The technology of baking, ingredients used and their functional properties. International breadmaking processes and equipment. Storage, packaging and staling of cereal products. The preparation of flat breads, traditional Asian noodles and steamed breads and other Asian grain based products. The technology of breakfast cereals including enrichment. The processing of starch, gluten, glucose syrups and use of enzymes. The processing of pasta, malted barley products, rice, oats, maize, sorghum and rye. Current trends in cereal and pulse processing. The application of molecular genetics to quality improvement in grains.


Class Contact Six hours per week comprising lectures, tutorials, practical work and/or field trips for one semester.

Assessment Assignments and tests 30%, practical work 20%, final examination 50%.

SBF6723 MUSCLE FOOD SCIENCE AND TECHNOLOGY

Campus Werribee
Prerequisite(s) Eligibility for entry to the Master of Science in Food Science and Technology.

Content This subject aims to study the physical, chemical and biochemical parameters of muscle foods which have effect on the processing, technology and final quality of the product. The subject covers: The meat industry; Anatomical microstructure and histochemical characterists of muscle; Muscle pigments; Post-mortem biochemistry of muscle; Conversion of muscle to food by processing - slaughtering, chilling, freezing, curing, emulsifying, smoking, fermenting, canning and others. The assessment of product quality. Special religious requirements and the processing of muscle foods to meet these values; By-product processing.


Class Contact Six hours per week comprising lectures, tutorials, practical work and/or field trips for one semester.

Assessment Assignments and tests 30%, practical work 20%, final examination 50%.

SBF6724 DAIRY SCIENCE AND TECHNOLOGY

Campus Werribee
Prerequisite(s) Eligibility for entry to the Master of Science in Food Science and Technology.

Content This subject provides a study of the science and technology associated with the processing of milk and milk products. The subject covers: Structure of the Dairy Industry; Effects of heat treatment on milk; Processing of milk to various dairy products: Advances in testing of milk and milk products; Quality management of milk and dairy products; Starter cultures and friendly bacteria; Advances in dairy fermentation; UHT of milk and milk products; Membrane technology; Nutritional issues in dairy product development; Dairy ingredients.

Required Reading To be advised by lecturers.
SBF67030 PRESERVATION AND PROCESSING TECHNOLOGY

Campus Werribee

Prerequisite(s) Eligibility for entry to the Master of Science in Food Science and Technology.

Content This subject provides an introduction to the principles and technology of food processing and preservation by traditional and modern techniques and their effects on the safety, appearance and nutritional quality of foods and the implications of processing and preservation methodologies on the physical, chemical, microbiological and nutritional quality of foods. This subject covers: A brief history of the food processing industry; A basic introduction to unit operations. Preservation by moisture control: water activity, intermediate moisture foods, concentration, dehydration and freeze drying. Preservation by heat treatment: pasteurisation, sterilisation, canning Preservation by chilling and freezing. Chemical preservation and fermentation. Preservation by irradiation. Modified atmospheres. Influence of processing on product safety, quality and nutritional value of foods. Principles of food packaging, packaging requirements.


Class Contact Six hours per week comprising lectures, tutorials, practical work and/or field trips for one semester.

Assessment Assignments and tests 30%, practical work 20%, final examination 50%.

SBF6745 FOOD PRODUCT DEVELOPMENT

Campus Werribee

Prerequisite(s) Eligibility for entry to the Master of Science in Food Science and Technology.

Content This subject provides an introduction to the systematic methods used in the development of new products, market research, product design and specification and evaluation of product development project. This subject covers: Development of aims, objectives and constraints; Collection and analysis of marketing and technical information required for product development; Product idea generation; Screening of new product ideas; Product concept development and testing; Marketing-strategy development; Product development process (project planning, formulation development, process development, shelf-life testing); Consumer testing; Market trial methods and estimation of market size; Product specifications (raw materials, process, finished product); Packaging and labelling, product evaluation, product costing and pricing; Production planning; Market development and product launch.


Class Contact Three hours per week comprising lectures/ tutorials and practical work for one semester.

Assessment Assignments and tests 20%, practical work 30%, final examination 50%.

SBF6750 FOOD SAFETY AND QUALITY ASSURANCE

Campus Werribee

Prerequisite(s) Eligibility for entry to the Master of Science in Food Science and Technology.

Content This subject provides an introduction to the concepts and principles of food safety and quality assurance, food legislation, food standards, sensory and objective evaluation of foods and conduct of objective and sensory evaluation tests on foods. The subject covers: Sensory attributes and sensory evaluation; sensory perception, use of sensory and objective evaluation in quality control and product development, experimental design and analysis, questionnaire design, taste panels, shelf-life assessment; food law: Australian and International food standards codes, food hygiene regulations, micro-biological standards and codes of practice; the development and underlying principles of food standards, Codex standards, export standards; food additives, types, functions, toxicological evaluation and regulations governing usage; toxic substances and contaminants; hygiene and sanitation in food processing and production, techniques for evaluation of food processing plants; quality assurance principles and systems: parameters of food quality and its evaluation and control, role of quality assurance, concepts of total quality control (TQC) and total quality management (TQM), good manufacturing practice, sampling plans, specification writing, hazard analysis and critical control point (HACCP) concept, product recall procedures, Australian and International quality systems.

Required Reading To be advised by lecturers.

SBF0910 MINOR PROJECT
Campus Werribee
Prerequisite(s) Eligibility for entry to the Master of Science in Food Science and Technology.

Content This subject allows students to conduct a research project of their own design, analyse and interpret data and communicate research findings clearly and concisely in both oral and written form. This subject covers: Conduct of a project on an aspect of food science and technology; Design and development of the study, collection and analysis of data and submission of a written report; Presentation of a seminar on the research work. Subject to approval, the project may be related to the student's work situation and/or may involve laboratory or plant based work.

Required Reading Students will be responsible for reviewing the current literature on their project topic.

Class Contact Six hours per week of laboratory/tutorial work for one semester.

Assessment Oral Presentation 20%, Written reports 80%.

SBF0920 MAJOR PROJECT
Campus Werribee
Prerequisite(s) Eligibility for entry to the Master of Science in Food Science and Technology.

Content In this subject students will conduct a research project of their own design, analyse and interpret data and communicate research findings clearly and concisely in both oral and written form. The project will be carried out on an individual basis under the supervision of a Food Technology staff member of the School of Life Sciences and Technology and a member of industry where appropriate. The subject involves: Conduct of a project on an aspect of food science and technology; Design and development of the study; collection and analysis of data and submission of a written report; Presentation of a seminar on the research work. Subject to approval, the project may be related to the student's work situation and/or may involve laboratory or plant based work.

Required Reading Students will be responsible for reviewing the current literature on their project topic.

Class Contact Twelve hours per week of laboratory/tutorial work for one semester or Six hours per week of laboratory/tutorial work for two semesters.

Assessment Oral presentation 20%, Written reports 80%.

SBM5401 THE SCIENCE OF CANCER
Campus Footscray Park
Prerequisite(s) Nil.

Content The aim of this subject is to introduce the student to the scientific understanding of tumour development and cancer treatment. Emphasis will be placed on the biological impact of tumours at the cell and system levels, including metastatic tumour development. The principles underlying common treatment and causal modalities will be explored to provide the basis for clinical assessment, planning, intervention and evaluation in nursing practice.


Class Contact Two hours per week for one semester.

Assessment One hour multiple choice examination, 50%; one hour short answer examination, 50%.

SBT8000 RESEARCH THESIS (FULL-TIME)
Campus Werribee
Prerequisite(s) Eligibility for entry to a Master of Science or Doctor of Philosophy program.

SBT8010 RESEARCH THESIS (PART-TIME)
Campus Werribee
Prerequisite(s) Eligibility for entry to a Master of Science or Doctor of Philosophy program.

SCM3614 EXPERIMENTAL DESIGN 1
Campus Werribee
Prerequisite(s) Nil.

Content This subject focuses on modelling the financial flows associated with investment both in commercial projects and in financial assets. Topics may include: the riskless investment: compound interest, present-value and future-value of a sequence of dated cash-flows, measures of rate-of-return; the single-period risky investment, the Markowitz mean-variance comparison of investments; reduction of risk through portfolio optimisation; the capital asset pricing model; extension to multi-period risky investments, financial instruments underlying sources of finance, bonds, shares, options, futures, currencies; Black/Scholes pricing of options; interest rate risk (duration and convexity); software-packages for financial modelling.


Class Contact Three hours per week comprising two one-hour lectures and one one-hour laboratory/tutorial for one semester.

Assessment Assignments 30%, final examination 70%.

SCM5404 FINANCIAL DECISION SUPPORT SYSTEMS
Campus Footscray Park
Prerequisite(s) Nil.

Content This subject focuses on the study, collection and analysis of data and submission of a written report; Presentation of a seminar on the research work. Subject to approval, the project may be related to the student's work situation and/or may involve laboratory or plant based work.

Required Reading Students will be responsible for reviewing the current literature on their project topic.

Class Contact Twelve hours per week of laboratory/tutorial work for one semester or Six hours per week of laboratory/tutorial work for two semesters.

Assessment Oral presentation 20%, Written reports 80%.

SCM5602 QUALITY MANAGEMENT AND STATISTICS
Campus Footscray Park
Prerequisite(s) Nil.

Content Quality as an integral part of the business environment. Statistical process control: Pareto analysis, standards, process capability, control charts, acceptance sampling.

Required Reading To be advised by lecturer.

Recommended Reading Oakland, J.S., Total Quality Management, Heinemann.

Class Contact Three hours per week comprising two hours of lectures and one one-hour tutorial.

Assessment Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

SCM5602 QUALITY MANAGEMENT AND STATISTICS
Campus Footscray Park
Prerequisite(s) Nil.

Content Quality as an integral part of the business environment. Statistical process control: Pareto analysis, standards, process capability, control charts, acceptance sampling.

Required Reading To be advised by lecturer.

Recommended Reading Oakland, J.S., Total Quality Management, Heinemann.

Class Contact Three hours per week comprising two hours of lectures and one one-hour tutorial.

Assessment Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.
SCM5807 ADVANCED INFORMATION SYSTEMS

Campus: Footscray Park, Hong Kong

Prerequisite(s): SCM5802 Information Systems or equivalent.

Content: Data analysis and modelling using the Enhanced Entity-Relationship model and normalisation. Constraints beyond the EER model, and advanced data modeling issues. Database transactions: concept, ACID properties, specification. Transaction processing: commit and rollback, concurrency control, locking, scheduling, and recovery. Database application development using embedded SQL.

Required Reading: To be advised by lecturer.


Class Contact: Two hour lecture and one hour laboratory per week.

Assessment: Final examination, 80%; test, 20%.

SCM5811 OPERATING SYSTEMS

Campus: Footscray Park, Hong Kong

Prerequisite(s): Nil.

Content: Operating Systems, system structure, memory management, process management, concurrent processes, resource allocation, protection, advanced architecture and operating systems, implementations, operating environment for application programs, job control languages, job streams, check points, utilities and system routines, discussion of why the operating system exists and the practical consequences.

Required Reading: To be advised by lecturer.

Class Contact: Three hours per week for one semester comprising two hours of lectures and one one-hour practical.

Assessment: Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

SCM5813 ARTIFICIAL INTELLIGENCE

Campus: Footscray Park

Prerequisite(s): Nil.

Content: LISP, knowledge representation - semantic nets, problem solving, search, frames; knowledge based systems - rule-based systems; logic programming; developing an expert system.

Required Reading: To be advised by lecturer.

Class Contact: Three hours per week for one semester comprising two hours of lectures and one one-hour practical.

Assessment: Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

SCM5819 COBOL PROGRAMMING

Campus: Footscray Park

Prerequisite(s): Nil.

Content: Advanced Programming, programming language, structured programming concepts; data organisation and accessing, file processing environment, sequential access, random access, file input-output, implementation considerations; design techniques, formal models of structured programming, demonstration of code reading and correctness; stepwise refinement; reorganisation and segmentation; top-down design and development, structured design, strength and coupling measures.

Required Reading: To be advised by lecturer.

Class Contact: Three hours per week for one semester comprising two hours of lectures and one one-hour practical.

Assessment: Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

218
SCM5820 NETWORK OPERATING SYSTEMS ADMINISTRATION

Campus: Footscray Park
Prerequisite(s): SCM5805 Communication and Networks.


Class Contact: Three hours per week for one semester, comprising two one-hour lectures and one one-hour laboratory/tutorial.

Assessment: Final examination, 50%; assignment and tests, 50%.

SCM5821 INTRODUCTION TO MULTIMEDIA SYSTEMS

Campus: Footscray Park
Prerequisite(s): Nil.


Required Reading: To be advised by the lecturer.


Class Contact: Three hours per week for one semester, comprising one one-hour lecture and one two-hour laboratory/tutorial.

Assessment: Final examination, 80%; assignments, 20%.

SCM5822 NETWORK MULTIMEDIA SYSTEMS

Campus: Footscray Park
Prerequisite(s): SCM5821 Introduction to Multimedia Systems.


Class Contact: Three hours per week for one semester, comprising two one-hour lectures and one one-hour laboratory/tutorial.

Assessment: Final examination, 80%; assignments, 20%.

SCM5824 OBJECT ORIENTED PROGRAMMING GD2

Campus: Footscray Park, Hong Kong
Prerequisite(s): SCM5800 Object Oriented Programming GD1

Content: This subject provides practice to object oriented programming and methodology using advanced features and the application programming interface of the Java programming language. A deeper discussion of classes and objects, encapsulation, polymorphism, inheritance, relationships among classes of objects and programming with related classes along with exception handling, multithreading, file I/O and building GUI components.

Required Reading: To be advised by lecturer.

Class Contact: Three hours per week for one semester comprising two hours of lectures and one one-hour laboratory.


Assessment: Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

SCM5901 INTRODUCTION TO DECISION SUPPORT SYSTEMS

Campus: Footscray Park
Prerequisite(s): Nil.


Required Reading: To be advised by lecturer.

Class Contact: Three hours per week for one semester comprising two hours of lectures and one hour tutorial.

Assessment: Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

SCM5903 SYSTEMS AND SIMULATION STUDIES

Campus: Footscray Park
Prerequisite(s): Nil.

Content: Philosophy and concepts of simulation; discrete and continuous event simulation of physical systems; modeling of transactions, resources and queues; analysis and design of simulation experiments. Practical program will involve building and implementing production, inventory control and general queuing models using SLAM II simulation language.

Required Reading: To be advised by lecturer.

Class Contact: Three hours per week for one semester comprising one one-hour lecture and two hours of tutorial.

Assessment: Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

SCM6801 INDUSTRY PROJECT

Campus: Footscray Park
Prerequisite(s): Nil.

Content: The project work gives the students: an opportunity to work on a complex real-life problem; experience in liaising with industrial personnel from various sections of the sponsoring company; experience at defining a problem in precise terms; experience in searching the literature and using library facilities; experience at presenting reports in both written and verbal forms. In all cases, students operate individually under the supervision of a staff member and tackle a problem using appropriate methods of statistical analysis. Typical project areas are: multivariate data analysis; quality control studies; econometric modelling; time series forecasting; reliability modelling; design and analysis of experiments; production scheduling; A.I. application in industry; database construction; systems analysis and design; development of expert systems.

Required Reading: To be advised by lecturer.

Class Contact: Six hours per week for one semester comprising individual supervision.

Assessment: Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.
SCM6501 IMAGE PROCESSING ALGORITHMS

Campus Footscray Park
Prerequisite(s) Nil.

Content An introductory subject which covers the fundamental algorithms used in imaging. The topics include: point, algebraic and geometric operations; smoothing and edge detection, linear convolution, median and max/min filters, non-linear edge detection; shape detection algorithms; segmentation, template matching, Hough methods, morphological operations; texture generation and recognition; colour space; image coding and compression; three dimensional reconstruction.

Required Reading To be advised by lecturer.

Class Contact Three hours per week for one semester comprising lectures/ tutorials.

Assessment Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

SCM6502 MATHEMATICS OF IMAGE PROCESSING

Campus Footscray Park
Prerequisite(s) Nil.

Content An introduction to the many mathematical concepts and techniques used in image processing. The following topics will be included. Set Theory: continuous and discrete sets, topology, morphology; measurement; similarities and differences between continuous and discrete space. Linear Algebra: theory of vector spaces; metrics, Banach and Hilbert space; transformations; matrix decomposition; affine and projective geometry. Transform Theory: the Fourier transform in one and two dimensions; discrete and fast Fourier transforms; other transforms especially the cosine, Hilbert, and wavelet transforms and singular value decomposition.

Required Reading To be advised by lecturer.

Class Contact Three hours per week for one semester comprising lectures/ practicals.

Assessment Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

SCM6503 STATISTICAL IMAGE PROCESSING

Campus Footscray Park
Prerequisite(s) Nil.

Content This is a subject covering probability and statistics most relevant to image processing. The topics include: stochastic and deterministic processes stochastic fields, Wiener processes; iterated function systems, self-similarity, fixed point behaviour and chaos; estimation theory, multivariate analysis, discriminant analysis, autoregressive models; fuzzy logic; belief systems and inference.

Required Reading To be advised by lecturer.

Class Contact Three hours per week for one semester comprising lectures/ practicals/ laboratories.

Assessment Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

SCM6601 RELIABILITY AND MAINTENANCE

Campus Footscray Park
Prerequisite(s) Nil.

Content This subject studies the important interrelated topics of system reliability, maintainability and availability. A statistical approach is taken and methods are tempered to meet practical considerations. Introduction: Historical perspective of reliability, fundamental concepts, analysis of Failure data. Combinatorial system reliability, Bayesian methods in reliability analysis, analysis of failure data in maintained systems, replacement strategies, techniques for reliability analysis of complex systems, distributed system reliability, software systems available for reliability and maintenance, software reliability models.

Required Reading To be advised by lecturer.

Class Contact Three hours per week for one semester comprising lectures/ tutorials.

Assessment Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

SCM6602 STOCHASTIC PROCESSES

Campus Footscray Park
Prerequisite(s) Nil.

Content This subject is an overview of stochastic processes. Some important topics in the theory of such processes are dealt with. The processes considered have been chosen because they have found application in various branches of science and technology. Computer Science and Operations Research applications are particularly emphasised. The subject consists of: Markov Chains: Transition probabilities, classification of states, absorption

**Required Reading** To be advised by lecturer.

**Class Contact** Three hours per week for one semester comprising lectures and tutorial.

**Assessment** Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

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**SCM6603 STATISTICAL CONTROL OF CONTINUOUS PROCESSES**

**Campus** Footscray Park

**Prerequisite(s)** SCM3602 Quality Management and Statistics or equivalent.


**Required Reading** To be advised by lecturer.

**Class Contact** Three hours per week for one semester comprising lectures/tutorials.

**Assessment** Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

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**SCM6604 EXPERIMENTAL DESIGN 2**

**Campus** Footscray Park

**Prerequisite(s)** SCM3604 Experimental Design 1 or equivalent.


**Required Reading** To be advised by lecturer.

**Class Contact** Three hours per week for one semester comprising lectures and tutorials.

**Assessment** Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

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**SCM6605 REGRESSION ANALYSIS 2**

**Campus** Footscray Park

**Prerequisite(s)** Regression Analysis 1 or equivalent.

**Content** Review of Linear regression; the geometry of linear least squares; nonlinear regression: Nonlinear least squares; Guass-Newton procedure for estimates; the geometry of nonlinear regression; nonlinear regression inference using the linear approximation; practical considerations in Nonlinear regression; introduction to nonnormal error structures: Logistic and Poisson regression; generalised linear models.

**Required Reading** To be advised by lecturer.

**Class Contact** Three hours per week for one semester comprising lecture and tutorial.

**Assessment** Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

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**SCM6606 TIME SERIES ANALYSIS**

**Campus** Footscray Park

**Prerequisite(s)** Nil.

**Content** An advanced subject in time series analysis. It consists of the following topics: review of forecasting techniques including ARIMA modelling; spectrum analysis, spectral density Fourier transforms; transfer functions, cross-correlations, linear systems, forecasting; intervention analysis, model identification, estimation; use of computer packages such as SAS; review of current literature.

**Required Reading** To be advised by lecturer.

**Class Contact** Three hours per week for one semester comprising lectures and tutorials.

**Assessment** Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

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**SCM6607 STATISTICAL COMPUTING**

**Campus** Footscray Park

**Prerequisite(s)** Nil.

**Content** Lecture Program Data manipulations using an appropriate language. What packages are available? Similarities and differences in what they can do. Writing macros or their equivalent. Producing graphical displays. (Including EDA). Statistical modelling. Creating useful output. Working with input from various sources. Using the Bootstrap. Using the Jackknife. Testing assumptions about data distributions. Practical program: laboratory sessions are designed to give students practical experience in using computers for statistical purposes.

**Required Reading** To be advised by lecturer.

**Class Contact** Three hours per week for one semester comprising lecture and practical.

**Assessment** Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

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**SCM6608 MULTIVARIATE ANALYSIS**

**Campus** Footscray Park

**Prerequisite(s)** Nil.

**Content** This subject extends the concepts of estimation and statistical analysis to handle problems involving mandependent variables. Some of the more commonly used multivariate statistical procedures are presented in detail. The topics consist of: Covariance and Correlation: Population and sample covariance and correlation matrices; properties and tests. Linear combinations and multiple and partial correlation. Multivariate Normal Distribution: Features, properties and the key role it plays in many multivariate statistical procedures. Tests on mean vectors. Specific Procedures: Multivariate multiple regression, multivariate analysis of variance, canonical correlation, discriminant analysis, principal components, factor analysis and clustering techniques.

**Required Reading** To be advised by lecturer.

**Class Contact** Three hours per week for one semester comprising lecture and tutorial.

**Assessment** Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.
SCM6700 INTERNET DATA MANAGEMENT 1

Campus: Footscray Park, Hong Kong, Malaysia

Prerequisite(s): A first subject in Internet Programming.

Content: Client-side scripts versus server-side scripts; Difference between ASP applications and sessions; The Global.asa file to launch applications; Request object's Form, QueryString, and ServerVariables collections to obtain user-supplied information; Scripting objects such as Dictionary, FileSystemObject, and TextStream objects; The relationship between ASP and ADO; Integration of Server-side script with Microsoft Access, Oracle and Microsoft SQL Server; Using ADO to extract, add, update, and delete records in a database with direct query string; Using ADO from the middle tier to access data and invoke business and data services implemented in SQL; Understand the Strategies for an Enterprise Web Application (N-tier Applications).

Required Reading: Lecture notes will be provided by the lecturer.


Class Contact: Two hour lecture and one laboratory/tutorial per week.

Assessment: Final examination, 50%; tests/lab work, 50%.

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SCM6701 INTERNET DATA MANAGEMENT 1

Campus: Footscray Park, Hong Kong, Malaysia

Prerequisite(s): A first subject in Internet Programming.

Content: Client-side scripts versus server-side scripts; Difference between ASP applications and sessions; The Global.asa file to launch applications; Request object's Form, QueryString, and ServerVariables collections to obtain user-supplied information; Scripting objects such as Dictionary, FileSystemObject, and TextStream objects; The relationship between ASP and ADO; Integration of Server-side script with Microsoft Access, Oracle and Microsoft SQL Server; Using ADO to extract, add, update, and delete records in a database with direct query string; Using ADO from the middle tier to access data and invoke business and data services implemented in SQL; Understand the Strategies for an Enterprise Web Application (N-tier Applications).

Required Reading: Lecture notes will be provided by the lecturer.


Class Contact: Two hour lecture and one laboratory/tutorial per week.

Assessment: Final examination, 50%; tests/lab work, 50%.

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SCM6702 INTERNET DATA REPRESENTATION 1

Campus: Footscray Park, Hong Kong, Malaysia

Prerequisite(s): A first subject in Internet programming or experience in a Web language.

Content: DRL data access and use; Metadata, such as Resource Description Framework; DRL tools; DRL definition and declaration, such as XML Schema; Parsers and validators; Presentation of DRL data; Research applications of the DRL.


Recommended Reading: http://www.w3.org/TR/REC-xml; http://www.xml.com/

Class Contact: Two hour lecture and one laboratory/tutorial per week.

Assessment: Final examination, 70%; assignments, 30%.

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SCM6805 ARTIFICIAL INTELLIGENCE 1

Campus: Footscray Park

Prerequisite(s): Nil.

Content: Traditional programming versus artificial intelligence/expert systems; applications of artificial intelligence/expert systems; problem solving, classification, diagnosis, interpretation, monitoring, synthesis, planning, design, artificial intelligence/expert systems programming tools; practical work with one of PROLOG/LISP/SMALLTALK/OPS-5; multi-paradigm tools, ES shells; knowledge engineering techniques; knowledge representations in AI and operations research; using artificial intelligence/expert systems; commercial applications.

Required Reading: To be advised by lecturer.

Class Contact: Three hours per week comprising lectures/seminars/workshops.

Assessment: Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

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SCM6806 ARTIFICIAL INTELLIGENCE 2

Campus: Footscray Park

Prerequisite(s): SCM6805 Artificial Intelligence 1 or equivalent.

Content: Advanced LISP/Prolog programming techniques; nondeterministic programming; Incompact data structures; search techniques. Applications: implementing natural language processing, finite state techniques, recursive and augmented transition networks, grammars, chart parsing, semantics; database query languages, pragmatics. Selection of current research topics in AI: symbolic computation, neural nets, computer integrated manufacturing, expert systems.

Required Reading: To be advised by lecturer.

Class Contact: Three hours per week comprising lectures/seminars/workshops.

Assessment: Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

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SCM6807 KNOWLEDGE ENGINEERING 1

Campus: Footscray Park, Hong Kong

Prerequisite(s): Nil.

Content: A study of various methodologies to represent knowledge, and to design and implement knowledge based systems. Topics include: knowledge, general concepts, knowledge organisation, knowledge processing, knowledge representation, formalised symbolic logics, reasoning under uncertainty, structured knowledge and data structures, object-oriented representations; knowledge organisation and manipulation, search and control strategy, memory techniques; knowledge engineering techniques, knowledge acquisition, knowledge representations in AI and applications.

Required Reading: To be advised by lecturer.

Class Contact: Three hours per week for one semester comprising lectures/seminars/workshops.

Assessment: Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.
SCM6809 PARALLEL PROCESSING 1
Campus Footscray Park
Prerequisite(s) SCM5800 Object Oriented Programming GD1, Introduction to Computer Science or equivalent.
Content Introduction to parallel processing: evolution of computer systems, parallelism in uniprocessor systems, parallel computer structures, architectural classification schemes, parallel processing applications. Introduction to parallel programming: sequential programming languages, achronymous parallel programming languages, synchronous parallel programming languages, data flow languages. Parallel machines: Transputer, Connection Machine, CRAY Machines. Parallel programming: OCCAM, Parallel-C.
Required Reading To be advised by lecturer.
Class Contact Three hours per week comprising two hours of lecture/tutorial and one one-hour laboratory.
Assessment Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

SCM6810 PARALLEL PROCESSING 2
Campus Footscray Park
Prerequisite(s) SCM6809 Parallel Processing 1 or equivalent.
Content Models of parallel processing: classical computational models, parallel computational models, dataflow and related models; models for synchronous computers; analysis and semantics of parallel processes, fundamentals of semantics of concurrency, semantics of Petri net models, tree semantics, power domain semantics, actor semantics; complexity and speed-up in parallel computations; realisation of parallel machines; universal interconnection patterns, VLSI computational complexity; physical complexity and neural networks; parallel processing of databases; modelling and analysis of concurrency in database systems; database architecture and languages.
Required Reading To be advised by lecturer.
Class Contact Three hours per week comprising two hours of lectures/tutorials and one one-hour laboratory.
Assessment Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

SCM6811 INFORMATION NETWORKING 1
Campus Footscray Park
Prerequisite(s) SCM5805 Communications and Networks or equivalent.
Content Introduction to information networks; communication fundamentals; communication protocols; network architectures; network design; modelling and simulation of networks; network services; network management.
Required Reading To be advised by lecturer.
Class Contact Three hours per week comprising two hours of lectures and one one-hour tutorial.
Assessment Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

SCM6812 INFORMATION NETWORKING 2
Campus Footscray Park
Prerequisite(s) SCM6811 Information Networking 1 or equivalent.
Required Reading To be advised by lecturer.
Class Contact Three hours per week comprising two hours lecture and one one-hour tutorial.

Assessment Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

SCM6813 DATA MANAGEMENT 1
Campus Footscray Park
Prerequisite(s) SCM5800 Object Oriented Programming GD1; SCM5801 Introduction to Computer Science; SCM5803 Data Structures and Programming or equivalent.
Content A mortized analysis; self-adjusting data structures, e.g. AVL and splay trees; multivay search trees, e.g. B-trees; range queries; data compression; dynamic structures, e.g. extendible and linear hashing; partial match retrieval.
Required Reading To be advised by lecturer.
Class Contact Three hours per week comprising two hours of lecture and one one-hour tutorial.
Assessment Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

SCM6814 DATA MANAGEMENT 2
Campus Footscray Park, Hong Kong
Prerequisite(s) SCM5813 Data Management 1 or equivalent.
Content Relational database systems. Relational algebra and calculus, relational query processing and optimisation. Inadequacies of the relational model. Deductive database systems design; Semantic data modelling Object-oriented database systems.
Required Reading To be advised by lecturer.
Class Contact Three hours per week comprising two hours lecture and one-one hour tutorial/laboratory.
Assessment Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

SCM6815 THEORETICAL COMPUTER SCIENCE 1
Campus Footscray Park, Hong Kong
Prerequisite(s) Undergraduate studies in mathematics up to and including at least one unit at second-year level.
Required Reading To be advised by lecturer.
Class Contact Three hours per week comprising two hours of lectures and one one-hour tutorial.
Assessment Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

SCM6817 SYSTEMS MODELLING WITH PETRI NETS
Campus Footscray Park
Prerequisite(s) Nil.

223
Assessment

Three hours per week for one semester comprising two hours lecture and one-hour laboratory/tutorial per week.

Recommended Reading


Class Contact

Three hours per week two hours lecture and one-hour laboratory/tutorial.

Assessment

Final examination 70%. Assignment/Test 30%.

SCM6821 DATA STRUCTURES AND PROGRAMMING

Campus Footscray Park, Hong Kong

Prerequisite(s) SCM5800 Object-Oriented Programming GD1 Introduction to Computer Science or equivalent.

Content

Points, structures, pointers to functions, dynamic memory allocation; recursion, abstract data types, polymorphism, software development, complexity; lists, stacks and queues, circular and doubly-linked lists; binary trees, heaps, graphs; sets, searching and sorting. Practical Program Laboratory and tutorial sessions provided to give students practical experience in developing application software.

Required Reading

To be advised by lecturer.

Class Contact

Three hours per week comprising two hours lecture and one-hour laboratory/tutorial per week.

Assessment

Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

SCM6819 USER INTERFACE DESIGN

Campus Hong Kong, Footscray Park.

Prerequisite(s) SCM6822 Internet Programming

Content

Aspects of the process of designing, implementing, and evaluating user interfaces. Inputs to the process include systems analysis and task analysis. Outputs of the process include software systems.

Required Reading

To be advised by lecturer.

Recommended Reading


Class Contact

13 x 3 hour lectures/tutorials.

Assessment

Assignment, 40%; final examination, 60%.

SCM6820 DISTRIBUTED SYSTEMS

Campus Footscray Park, Hong Kong

Prerequisite(s) Nil.

Content

This subject will study advanced topics in Networking with emphasis on Distributed Systems. After completing the subject the students will have gained a understanding of the following topics: OSI layers, Client-Server models and group programming, Networking programming, Distributed Systems

Required Reading


Recommended Reading


Class Contact

Three hours per week two hours lecture and one-hour laboratory/tutorial.

Assessment

Final examination 70%. Assignment/Test 30%.

SCM6821 DECISION SUPPORT TECHNOLOGY

Campus Hong Kong, Footscray Park.

Prerequisite(s) Nil.

Content

Processes and phases of organisational decision making and modelling. Online analytic processing (OLAP) vs online transaction processing (OLTP). Decision support framework and applications. Data requirements and benefits of decision support systems. Structure, components and types of decision support systems. Data mining concepts. Data warehousing and production systems. Warehouse data characteristics and requirements. Data fusion and data scrubbing. Data models for data warehousing and data mart. Star schemas and hypercubes. Multidimensional analysis (ROLAP and MOLAP). Data warehousing administration. Warehouse database management technology.

Recommended Reading


Class Contact

Three hours per week two hours lecture and one-hour laboratory/tutorial.

Assessment

Final examination 70%. Assignment/Test 30%.

SCM6822 INTERNET PROGRAMMING

Campus Footscray Park, Hong Kong

Prerequisite(s) Competency in Java.

Content


Required Reading

Deitel, Deitel and Nieto, 2001 or later, Internet and World Wide Web: How to Program, Prentice Hall. D.R. Watson’s five hypertexts on Internet Programming, all available on the school’s intranet at s:\samples\scm6822\Launcher.html or http://melba.vu.edu.au/~scm6822/

Recommended Reading


Class Contact

Two hour lectures and 1 hour laboratory per week.

Assessment

Final Examination 58%, mid-semester practical test 30%, laboratory 12%.

SCM6823 DATABASE DESIGN, MANAGEMENT AND ADMINISTRATION

Campus Footscray Park, Hong Kong

Prerequisite(s) Good knowledge of relational databases; basic understanding of UNIX.

Content


Required Reading


Recommended Reading


Class Contact

Two hour lectures and one hour laboratory per week.

Assessment

Final Examination, 80%; Assignment, 20%.
SCM6825 MULTIMEDIA SYSTEMS DESIGN AND DEVELOPMENT

Campus Footscray Park
Prerequisite(s) Introduction to Multimedia SCM5821
Content The aim of this subject is to develop a clear understanding of the processes and current methodologies used in the design and development of multimedia systems. The aim of the practical work is to put into practice the theoretical knowledge gained in the lectures. Each student will develop a project based on the design and development methodologies described in the lectures.
Required Reading: to be advised by the lecturer

SCM6830 KNOWLEDGE ENGINEERING AND E-COMMERCE TECHNOLOGY

Campus Footscray Park, Hong Kong
Prerequisite(s) Competency in a programming language.
Content This subject introduces students to concepts of knowledge and systems engineering with particular emphasis on electronic commerce systems. A study is made of the current and past technologies that have enabled the recent growth and establishment of electronic commerce. The supporting technologies needed for the three-tiered architecture of electronic commerce sites, i.e. front end interfaces, middleware and back-end servers together with their databases, are investigated in detail and form the basis of practical exercises.
Required Reading To be advised by lecturer.

SCM6840 SOFTWARE ENGINEERING 1

Campus Footscray Park, Sydney, Hong Kong, Malaysia, Singapore
Prerequisite(s) Nil.

Class Contact Two hours lecture and one hour laboratory/tutorial per week for one semester.
Assessment Final examination, 70%; assignment, 30%. Students must obtain at least 40% standard in the assignment and at least 40% on the final examination, and obtain an overall mark of 50%.

SCM6841 SOFTWARE ENGINEERING 2

Campus Footscray Park, Hong Kong, Malaysia, Singapore
Prerequisite(s) SCM6840 Software Engineering 1.
Content Revision of concepts taught in Software Engineering 1; Tools - Stepwise refinement, cost benefit analysis, software metrics and CASE tools, software versions, configuration control; Documentation - formats, tools, user interface documentation, internal documentation; Testing - Non execution based testing: walkthroughs, inspections and their comparison; Execution based testing, static analysis, unit testing, integration testing, regression testing, tools for testing; Reusability, Portability and Interoperability; Planning and Estimating: Revision of the requirements, specification and design phase with respect to both structure and object-oriented paradigm; Implementation Phase; Implementation and Integration Phase; Maintenance phase; Overview of project management; Relationship to lifecycle, project planning, project control, project organisation, risk management, cost models, configuration management, version control, quality assurance.

Class Contact Two hours lecture and one hour laboratory/tutorial per week for one semester.
Assessment Final examination, 70%; assignment, 30%. Students must obtain at least 40% standard in the assignment and at least 40% on the final examination, and obtain an overall mark of 50%.

SCM6842 ADVANCED TOPICS IN SOFTWARE ENGINEERING

Campus Footscray Park, Hong Kong, Malaysia, Singapore
Prerequisite(s) SCM6841 Software Engineering 2.
Content Analysis, discussion and implementation of issues from research papers in an area of Software Engineering. For instance, papers on Goal-based methods in Scenario-based Design.

Class Contact Two hour lecture and one hour laboratory per week.
Assessment Contributions to projects, laboratories and seminars, 50%; assignments, 50%.

SCM6843 SOFTWARE ENGINEERING PROJECT

Campus Footscray Park, Hong Kong, Malaysia
Prerequisite(s) SCM6841 Software Engineering 2.
Content Each student will work on a project as a member of a software development team. Students will be required to present written reports and give oral presentations during the course of the project. Projects will focus on industrial and business applications and will incorporate areas such as user interface development, database management systems, networking, web based and general application development environments.
Recommended Reading Research articles in Software Engineering; Course notes and relevant textbooks.

Class Contact Three hours per week, primarily in the laboratory.
Assessment Performance in project oral presentations, 30%; Quality of submitted reports, 70%.

SCM6845 OBJECT ORIENTED TECHNOLOGY
Campus Footscray Park, Hong Kong, Malaysia
Prerequisite(s) Two semesters of Java programming.
Content JavaBeans Component Model - Overview, Introspection, Properties of Beans; Networking - InetAddress Class, URL Class, URLEncoder Class, URLConnection Class, Sockets, Server Sockets, Datagram Clients/Servers; Servlet overview and architecture, HttpServlet Class, HttpServletRequest Interface, HttpServletRequest Interface, Handling HTTP get and post Requests, setting up Apache Tomcat Server, deploying a web application, session tracking; JSP Overview, scripting components, standard actions, directives, custom tag libraries; EJB Overview, session beans, EJB transactions.
Class Contact Two hours lecture and one hour laboratory/tutorial per week for one semester.
Assessment Final examination, 70%; Practical/Assignment, 30%. Students must obtain at least 40% standard in the practicals and assignment and at least 40% on the final examination, and obtain an overall mark of 50%.

SCM6846 OBJECT ORIENTED DESIGN
Campus Footscray Park, Hong Kong, Malaysia
Prerequisite(s) SCM5824 Object Oriented Programming GD2 or equivalent.
Content Unified Modeling Language (UML): Introduction to Rational Rose; Unified Method and the design of the domain layer; Concepts of persistence and transactions in an OO context; Interaction layer design considerations; Introduction to an Object Oriented development environment and OODBMS (JADE); Implementation and deployment models; Packages, subsystems and models; Design patterns and frameworks.
Required Reading E. Braude, 2004, Software Design: From programming to architecture, Wiley.
Class Contact Two hours lecture and one hour laboratory/tutorial per week for one semester.
Assessment Final examination, 70%; assignment, 30%. Students must obtain at least 40% standard in the assignment and at least 40% on the final examination, and obtain an overall mark of 50%.

SCM6902 MATHEMATICAL PROGRAMMING I
Campus Footscray Park
Prerequisite(s) Consent of lecturer.
Content Overview of mathematical programming; review of linear constraints, convexity; the primal and dual problems; the simplex method, slack variables, optimality, post-optimality and sensitivity analysis; basis change, reduced basis, upper bounded variables; quadratic programs, integer (linear) programs; commercial packages for mathematical programming. Interger programming.
Required Reading To be advised by lecturer.
Class Contact Three hours per week for one semester comprising lectures/tutorials.
Assessment Will be based on a combination of examination, assignments, and presentations according to a formula to be provided during the first week of classes.

SCM6904 SIMULATION
Campus Footscray Park
Prerequisite(s) Nil.
Content Problem formulation using the concepts of entities, attributes, files, events etc. Generating random numbers from discrete and continuous distributions. Practical coding experience using SLAMII including debugging and verifying that the translated model executes as intended. Systems approach, flow diagram and problem analysis for discrete event systems. Network modelling involving queueing, resources, pre-emption, priorities and machine breakdown. Design and analysis of simulation experiments. Practical coding experience using SLAMII.
Required Reading To be advised by lecturer.
Class Contact Three hours per week for one semester comprising lectures/tutorials.
Assessment Will be based on a combination of examination, assignments, and presentations according to a formula to be provided during the first week of classes.

SCM6905 SEQUENCING AND SCHEDULING
Campus Footscray Park
Prerequisite(s) Nil.
Required Reading To be advised by lecturer.
Class Contact Three hours per week for one semester comprising lectures and tutorials.
Assessment Will be based on a combination of examination, assignments, and presentations according to a formula to be provided during the first week of classes.

SCM6906 OPTIMISATION TECHNIQUES
Campus Footscray Park
Prerequisite(s) Consent of lecturer.
Content Lecture Program Topics: Decision Tote and AHP; Maximal flow problems, Shortest-route problem, Minimal spanning tree problem, Estimating network flows; Queuing Theory; Combinatorial Models.
Required Reading To be advised by lecturer.
Class Contact Three hours per week for one semester comprising lectures/tutorials.
Assessment Will be based on a combination of examination, assignments, and presentations according to a formula to be provided during the first week of classes.
SCM5008 LOGISTICS FOR LOCATION AND DISTRIBUTION
Campus Footscray Park
Prerequisite(s) Nil.
Content A review of traditional and current algorithms, computer packages and case studies for location and distribution in industry. Background to plant and warehouse location problems and their mathematical and computing models; heuristic methods for rating problems; mathematical programming formulations; algorithms for fixed-charge problems; partitioning and decomposition methods; commercial packages available for location problems; background to distribution and collection problems and their mathematical and computing models; basic heuristics for vehicle scheduling; mathematical programming approaches to vehicle scheduling; commercial packages available for vehicle scheduling.
Required Reading To be advised by lecturer.
Class Contact Three hours per week for one semester comprising lectures/tutorials.
Assessment Assignments and project, 40%; final examination, 60%.

SCS5100 RESEARCH METHODOLOGY
Campus Footscray Park
Prerequisite(s) Nil.
Content Experimental design, statistics in research, data analysis, computer applications and software, literature analysis and critical appraisal, ethics in research, scientific writing and data presentation. Qualitative data analysis.
Required Reading To be advised by lecturer.
Class Contact 1 hour/week x 26 weeks – lectures and computer labs.
Assessment Assignment only.

SCS5112 PRINCIPLES OF ENVIRONMENTAL MANAGEMENT
Campus Footscray Park
Prerequisite(s) Nil.
Class Contact Four hours per week, consisting of lectures and practicals for one semester.
Assessment Assignment and practical, 30%; examination, 70%.

SCS5121 ENVIRONMENTAL LAW AND STANDARDS 1
Campus Footscray Park
Prerequisite(s) Nil.
Class Contact Two hours of lecture per week for one semester.
Assessment Continuous assessment by assignments, presentations and reports.

SCS5132 ENVIRONMENTAL LAW AND STANDARDS 2
Campus Footscray Park
Prerequisite(s) Nil.
Class Contact Two hours each week for one semester.
Assessment Continuous assessment by assignments, presentations and reports.

SCS5141 AIR QUALITY MANAGEMENT
Campus Footscray Park
Prerequisite(s) Nil.
Required Reading To be advised by lecturer.
Class Contact Four hours each week for one semester.
Assessment Assignments, 40%; examination, 60%.
SCS5152 LIQUID WASTE MANAGEMENT
Campus Footscray Park
Prerequisite(s) Nil.
Class Contact Four hours per week for one semester.
Assessment Assignments, 40%; examination, 60%.

SCS5161 OCCUPATIONAL AND PUBLIC HEALTH
Campus Footscray Park
Prerequisite(s) Nil.
Content Nature of hazards; basic risk assessment; prevention, protection, detection and decontamination of toxic chemicals; radioactivity; indoor air quality; principles of occupational health and safety; emergency incidents; case studies.
Class Contact Four hours per week for one semester.
Assessment Assignments, 40%; examination, 60%.

SCS5172 SOLID WASTE MANAGEMENT
Campus Footscray Park
Prerequisite(s) Nil.
Content Nature and sources of solid wastes; hazardous waste handling; incineration; landfills; other disposal alternatives; monitoring and control.
Required Reading To be advised by lecturer.
Class Contact Four hours per week for one semester.
Assessment Assignments, 80%; oral presentation, 20%.

SCS5181 WATER POLLUTION MONITORING
Campus Footscray Park
Prerequisite(s) Nil.
Class Contact Four hours per week, consisting of lectures and site visits for one semester.
Assessment Assignments, 40%; examination, 60%.

SCS5182 CLEAN PRODUCTION TECHNOLOGY AND WASTE MINIMISATION
Campus Footscray Park
Prerequisite(s) Nil.
Content The concept and history of the Cleaner Production approach. 'End-of-pipe' versus Cleaner Production. Cleaner Production and regulatory authorities. The Cradle-to-Grave concept. Process design and life cycle analysis. Waste minimization and recycling. Environmental auditing, the 'eco-audit'. Worldwide attitudes and approaches to Cleaner Production. Detailed case studies and analysis.
Required Reading To be advised by lecturer.
Class Contact Four hours per week, consisting of lectures and site visits for one semester.
Assessment Assignment and site visit reports, 40%; examination, 60%.

SCS6010 PROJECT (FULL-TIME)
SCS6020 PROJECT (PART-TIME)
Campus Footscray Park
Prerequisite(s) Nil.
Content This subject, which will enable students to competently research an area of study utilising knowledge and skills gained in the coursework component of the SMEM degree program, consists of a research project carried out on an individual basis. The project is expected to be a scientific investigation of an approved topic, followed by the submission of a suitably formatted research project in which the topic is introduced and formulated; the scientific investigation described in detail; results and conclusions from the study elaborated; and an extended discussion presented. Normally the length of the report shall be in the range of 12,000 to 20,000 words.
Required Reading To be advised by lecturer.
Class Contact 247 hours, equivalent to one third of full Masters program, over one semester (full-time) or over two semesters (part-time).
Teaching Method Each student will be required to work independently, undertaking an individual piece of work related to the course. Students will be encouraged to propose their own topics in consultation with members of staff. The supervisor (or co-supervisor) will be responsible for providing guidance to the student. The selection of the supervisor (or co-supervisor) will be based on staff expertise, interests and research activities.
Assessment The research project will normally be assessed by at least two expert examiners from an appropriate area of expertise.

SLS8000 RESEARCH THESIS (FULL TIME)
Campus St. Albans, Werribee, Footscray Park
Prerequisite(s) Eligibility for entry to a Master of Science or Doctor of Philosophy

SLS8010 RESEARCH THESIS (PART TIME)
Campus St. Albans, Werribee, Footscray Park
Prerequisite(s) Eligibility for entry to a Master of Science or Doctor of Philosophy

SPH5111 FIBRE OPTIC TECHNOLOGY
Campus Footscray Park
Prerequisite(s) Nil.

Content This subject provides a first course in the practical and theoretical aspects of optical fibre systems and devices for electrical engineering students. This subject gives students an understanding of the fundamentals of optical fibre communications and sensor technology, and an appreciation of the practical aspects of optical fibre communications and sensing systems. Topics covered: Review of basic optical theory. Types of optical fibres. Attenuation in silica optical fibres. Modes in slab waveguides. Modes, dispersion and distortion in optical fibres. Sources and detectors for fibre optic systems. Noise in detector systems. Fibre optic communications systems. Fibre optic sensors. Optical fibre fabrication. Practical program - Several small demonstrations to give students practical experience in handling fibres and fibre equipment.

Required Reading Palais, J.C. 1998, *Fibre Optic Communications*, 4th edn, Prentice-Hall, NJ.


Class Contact Three hours per week for one semester comprising lectures, tutorials and laboratory work.

Assessment End of semester three hour examination plus assignments as advised by lecturer (up to 20%). Supplementary assessment will only be available if requested by the School governing the course in which the student is enrolled.
Recognition of Learning – Pathways, Credit Transfer and RPL/ RCC

Victoria University recognises that valuable learning takes place outside the university through:
• study towards formally recognised qualifications (either fully or partially completed) such as a degree, diploma, or certificate (this is referred to as credentialed study);
• short courses, offered by professional bodies, voluntary associations, workplaces, trade unions, government agencies and/or community groups, that do not lead to formal qualifications (or non-credentialed learning);
• work experience; and
• life experience.

Students are encouraged to think broadly about their experiences. In addition to providing entry into a course, students’ prior learning may enable them to be granted Recognition of Prior Learning or credits for subjects within that course.

Victoria University has established the following processes to facilitate the recognition of learning achieved outside the University: Pathways, Credit Transfer Process, and Recognition of Prior Learning. By recognising students’ past experiences and achievements, the University ensures that students do not have to repeat the skills and knowledge they have already achieved.

In this way students are able to shorten the length of their course, saving time and money. They study at the appropriate level, are encouraged to continue their education, and achieve their educational goals with maximum efficiency.

Pathways
Standardised pathways are formally approved links between courses in different sectors or within the same sector. They may move from:
• secondary schools to TAFE
• TAFE to TAFE
• TAFE to higher education
• higher education to TAFE
• higher education to higher education
• workplace to TAFE or higher education
• private training organisation to TAFE or higher education.

These pathways may involve:
• Credit/exemptions – for example students who have completed the Advanced Diploma of Business (Accounting) will receive credit for twelve subjects in the Bachelor of Business (Accounting), if they gain entry into that degree course;
• Entry only – for example students who have successfully completed Science for Nurses (Gateway to Nursing and the Health Sciences) automatically gain entry into the Certificate IV in Health (Nursing).

Pathways may also link courses in the same or different disciplines. Students who meet the conditions specified in the pathway will be automatically granted the benefits specified in the pathways (entry or credit). Students who have not completed their initial course may still obtain credit in recognition of the subjects/modules successfully completed.

‘Articulation’ describes the links or pathways between courses. Students who take advantage of pathways are sometimes called articulating students.

Victoria University is widely recognised as a national leader in developing credit transfer arrangements for students, particularly between the TAFE and higher education sectors.
Applications

Students should provide details of any prior study when they:
• apply to enter a course;
• are interviewed in the Centre for Commencing Students; or
• enrol.

Students eligible for entry or credit on the basis of a formally approved pathway will be identified at the time of enrolment. Any credit may be granted at the time of enrolment.

Credit Transfer/ Mutual Recognition

Students who have already successfully completed any of the subjects/modules in the course in which they are enrolling may be eligible for credit transfer. Under Mutual Recognition, Victoria University will recognise Qualifications and Statements of Attainment issued by any Australian Registered Training Organisation.

Applications

Students applying for Credit Transfer should approach their Faculty or Department Office for further information and an application form. Forms are also available from the Centre for Commencing Students and Student Administration. It is advisable for students to discuss their applications with their teacher/lecturer before submission.

The University will endeavours to process credit transfer applications as soon as possible.

Notification

Applicants will receive in writing the results of their application for credit or RPL/RCC assessment.

Right of Appeal

Applicants who are either denied credit or who wish to challenge the amount of credit granted on the basis of a formal pathway, a credit transfer application, or RPL/RCC assessment may request further consideration. Such appeals must be lodged with the Faculty Office or the Department of Student Affairs within 10 working days of the date the notification letter was issued.

Selection Criteria for Articulating Students - Faculty of Science, Engineering and Technology

The Faculty of Science, Engineering and Technology at Victoria University is supportive of the provision of articulation pathways for students entering one of the faculty's Bachelor award programs from a TAFE background.

When selecting articulating students, the Faculty of Science, Engineering and Technology takes into consideration the following criteria:

(i) merit;
(ii) relevant post-secondary qualifications:
   • some courses require a completed TAFE Associate Diploma or Diploma;
   • all departments require the completion of a relevant TAFE course;
   • students are required to supply appropriate documentation;
   • passes in all subjects relevant to exemptions are required;
   • adequate performance (generally 65 per cent average or equivalent);
(iii) work experience relevant to the field of study;
(iv) regionality; and
(v) gender.

How to Apply for Courses

Prospective articulating students already enrolled at Victoria University who wish to apply for all undergraduate courses offered by the Faculty of Science Engineering and Technology will need to complete a ‘Course Transfer Application’ form through the University's Centre for Commencing Students by October of the year before the course starts.

Prospective articulating students from other post-secondary institutions who wish to apply for all undergraduate courses offered by the Faculty of Science Engineering and Technology will need to complete an application through the Victorian Tertiary Admissions Centre (VTAC) by September of the year before the course starts.

Prospective articulating students for TAFE courses need to submit an application directly to the TAFE Division of the University.
Admission, Enrolment and Procedures and Regulations

Admission and Selection

The University is committed to achieving access, equity and excellence in tertiary education. Accordingly the University has adopted flexible admission and selection policies that take account of the wide range of educational backgrounds and experience of prospective students.

General

The primary objective of the University’s admission and selection policies is to ensure that students selected for admission to courses are capable of successfully completing the course in which they are to be offered a place. In considering students for admission there shall be no unlawful discrimination.

The University has, however, developed targeted programs designed to ensure a broader representation of students from currently under-represented groups in tertiary education (e.g. Aborigines and Torres Strait Islanders).

Admission to the University is conducted within a framework of minimum entry requirements coupled with selection criteria that relate to the demands that each course will place upon students. In addition, the University has a policy of giving special consideration to applicants who live in the western metropolitan region of Melbourne for courses that are not unique to the University.

The selection criteria for each course are reviewed each year and are finally determined annually by the Council of the University on the recommendation of the Academic Board or the Board of Technical and Further Education as appropriate. The selection criteria for each course, including specific prerequisites for admission, are included with the detailed descriptions of each course which appear in the relevant Faculty and TAFE Handbook.

Generally, selection is based on academic merit and by the recommendation of the selection authorities; the results of any interviews, auditions, tests or other assessment procedures determined by the particular course selection authorities; any illness, or serious hardship as a result of which, in the opinion of the selection authorities, the studies or performance of an applicant have been adversely affected; the presentation and depth of relevant supporting material as determined by the particular course selection authorities; the life experiences of the applicant; and previous study at tertiary level.

Intending applicants for places in University courses can obtain more detailed information about selection criteria and selection procedures for individual courses by contacting the relevant Faculty, School or Department, or the Centre for Commencing Students.

Course Pathways

Victoria University offers a broad range of courses from bridging and preparatory programs to PhDs. It is committed to establishing multiple entry and exit points enabling students to start in a program that best meets their needs and exit with the qualification that will assist them to realise their vocational and educational aspirations.

Victoria University has created many formally approved (or standardised) course pathways. Course pathways allow you to proceed from one course to another. In some cases course pathways may offer the student guaranteed entry or credit toward their preferred exit qualification.

Alternative Entry at Victoria University

The University offers alternative entry programs that will provide for selection on criteria other than the ENTER. The Portfolio Partnership Program will be available in 2003.

Portfolio Partnerships Program

Victoria University is committed to strengthening partnerships with schools and communities in its local region. The Portfolio Partnership Program is an alternative entry scheme available to students in participating secondary schools in the Western Metropolitan, Sunbury and Macedon regions and mature age applicants who live in this region. Selected courses are included in the program and provide opportunities for students with strong vocational commitment and the potential to succeed at university in their selected course to submit a portfolio of evidence. This gives the applicant an opportunity to provide additional information related to their goals and achievements, previous studies, work experience, skills, personal qualities as well as examples of work and other evidence that indicates a commitment to the proposed area of study.

To enquire about the Portfolio Partnerships Program contact the Centre for Commencing Students on (03) 9688 4110 or by email at ccs@vu.edu.au or visit the web site at www.vu.edu.au/ccs

Student Compact

Existing students of the University may request to have a Student Compact which will identify their learning pathway from their existing course of study to other courses to which they aspire. The Student Compact is a documented agreement between the student and the University that lists all negotiated conditions related to their chosen field of study.

The Student Compact is available to all students of the University, and can be renegotiated at any time by the student or the University, to reflect the changing requirements of the student.

For further information about the Student Compact contact the Centre for Commencing Students telephone: (03) 9688 4110.

233
Admission Requirements

Undergraduate Courses

Normal Entry

Any persons who have been granted the Victorian Certificate of Education or satisfactorily completed an equivalent Year 12 qualification recognised by the University (plus relevant course prerequisite studies) will be eligible to apply for admission to courses of the University leading to a higher education award or to a TAFE Diploma.

In general, therefore, applicants will be eligible for admission to higher education undergraduate and TAFE Diploma courses if they have:

• passed the VCE including the satisfactory completion of English Units 3 and 4 from 1992 onwards;
• passed four approved VCE (HSC) Group 1 subjects (including English) at one sitting prior to 1992;
• passed four approved Victorian Institute of Education, HSC, Group 1 subjects (including English) at one sitting since 1980;
• satisfied Victorian University Schools Examination Board or Victorian Institute of Education Year 12 requirements prior to 1980; or
• obtained an equivalent interstate or overseas qualification.

Entry requirements for admission to TAFE courses other than courses leading to a Diploma vary. Details of entry requirements are to be found in the TAFE Handbook.

In addition to meeting the entry requirements above, applicants may be required to satisfy other requirements specified by the Faculty/School conducting the course. Further information can be found on www.vu.edu.au/admissions

Special Entry

Applicants meeting the above requirements will be regarded as having satisfied the Normal Entry requirements. However, applicants wishing to undertake a University course who do not meet the Normal Entry requirements may still be eligible for admission under Special Entry (SE). Students admitted to a course under SE may be subject to special terms and conditions determined by the relevant Faculty or School. The three categories of Special Entry are as follows.

Age and Educational Background

A person will be eligible for admission to any course within the University if, at 1 January of the intended year of entry, he or she is 21 years of age or over.

Any person who, at the date of their proposed admission to a TAFE course (other than a course for Diploma), is 18 years or older, will be eligible to apply for admission to any such course. Australian residents who meet these criteria are guaranteed a place in a Government-funded course if they apply via the University's Personalised Access Study scheme.

There is currently a high demand for many award courses, and a number of mature-age applicants may not receive an offer of a place in the course of their choice. Other factors taken into account in selection, in addition to work and life experience, include education level achieved, evidence of aptitude for study, time elapsed since study was attempted, and whether the applicant resides in the western metropolitan region of Melbourne.

Mature-age applicants should be aware of the study difficulties they might face in a tertiary course. The University conducts a number of programs generally of short duration, aimed to help improve communication skills, study skills and confidence. Mature-age applicants may not need to do a preparatory program, but should consider the following:

• It is assumed that students of award courses know how to study. Study involves many skills - taking notes, using a library, organising your time effectively, essay writing, and so on.
• If it has been a long time since you last attended classes, or if your previous study experience was not very successful or enjoyable, it may be helpful to develop some confidence in your abilities before you begin.
• Communication skills are very important for award course students, and this can mean speaking (for example, participation in class discussions) as well as writing. Some practice in this area may be beneficial.
• The real work of any award course usually begins straight away: sometimes on the very first day. You may need some time to ease yourself into being a student.

By undertaking preparation for study, you can pay attention to the factors outlined above in an environment that is designed to minimise the pressure on you. If you move straight into a tertiary course, you might find that you are in fact trying to prepare yourself at the same time as trying to cope with the new material presented to you. This can result in failure to meet the required academic standard.

Courses conducted by the University to help you successfully return to study in an award course may include:

• English for Further Study - This course provides people of non-English-speaking background with the language and research/study skills necessary for study.
• English as a Second Language (ESL) - English as a second language classes are tailored to the needs of migrants who wish to improve their English for personal development, further study, or to improve their job prospects. Wherever possible, classes are tailored to suit the needs of the participants.
• Basic Education Program - The Basic Education program focuses on the development of students' communication skills, through writing and reading exercises, spelling, basic grammar and punctuation.
• Preparation for Tertiary Study - A preparatory course with two streams designed to improve access to Arts or Science courses.
• Gateway to Nursing - A preparatory course that provides access to nursing courses.
• VCE - The Victorian Certificate of Education is available by full-time and part-time study.

For more information, contact Further Education and Employment Services on (03) 9284 7225.

Continuing Difficulties During Schooling

A person will be eligible to apply for admission to any course within the University if his or her progress through secondary school was adversely affected by:

• economic hardship;
• illness;
• English language learning difficulties;
• family problems;
• geographical isolation; or
• disability.
Applicants whose difficulties occurred only during their last year of secondary studies must use the Victorian Tertiary Admission Centre ‘VTAC Chronic Circumstances Application Form for Current Year 12 Students’. Students who are not current year 12 applicants, but who meet any of the above criteria should complete the ‘VTAC Pi form for Non-Year 12 Applicants’. Applicants wishing to apply on the above basis should contact the relevant Faculty, or the Centre for Commencing Students for further information on individual course requirements. Some individual courses have supplementary information forms that can also be completed.

Applicants with a disability or chronic medical condition should also complete the above relevant forms and any individual course supplementary information forms. Persons with a disability or chronic medical condition are encouraged to contact the relevant Faculty, School, Department of the University, or the Centre for Commencing Students to discuss any potential difficulties, hazards and individual course requirements inherent in their proposed course. In these discussions, any special needs of applicants can be discussed and an indication given of the University’s capacity to meet those special needs.

Applicants with a disability or chronic medical condition are invited to discuss their specific needs and potential individual support requirements with Disability Services however Disability Services is not involved in selection or application processes. All applicants with a disability are encouraged to declare their disability on enrolment forms and should register with Disability Services as soon as possible after enrolling in their course. Phone (03) 9365 2193 or via email disability@vu.edu.au.

Aboriginals and Torres Strait Islanders
A person of Aboriginal or Torres Strait Islander descent is eligible to apply for admission to any course within the University and such applications will be assessed individually to determine the applicant's suitability and potential for academic success. Further advice may be obtained by contacting the Indigenous Services on (03) 9365 2228 or via email equity@vu.edu.au.

Later Year Entry
Both Normal Entry and Special Entry relate to admission to the University at the commencement of an undergraduate course. Persons who have already completed one or more years’ relevant post-secondary studies may be eligible for Later Year Entry to the second or subsequent years of a course.

Persons applying for Later Year Entry will be required to meet all normal selection criteria for the course as well as demonstrate that their prior studies are relevant to the course for which they have applied. In making selection decisions, applicants’ level of performance in all of their previous tertiary enrolments may be taken into account. Persons selected for Later Year Entry may be admitted on condition they undertake bridging course work, or complete a specially modified course plan, or both.

Deferred Entry (Commencing Students)
Prospective students should contact the relevant Faculty or School to clarify the deferment policy. A person to whom an offer of admission to a course has been made by the University may apply to defer his or her enrolment for a period of up to one year. An application for deferred entry must be made in writing and lodged within seven days of the date upon which the offer of admission was sent. The application must be forwarded to the Dean of the appropriate Faculty or the Head of the appropriate School. A Dean or Head may grant an application for deferred entry with or without conditions. Applications for deferment from a TAFE course are not normally granted.

A person who has been granted deferred entry has a right to enrol in their course for the semester following the end of the period of their approved deferment, providing they attend a scheduled enrolment session.

Postgraduate Courses
Normal Entry (PhD)
Doctor of Philosophy
To be eligible for admission a person must have:
• a masters degree; or
• a four-year bachelor degree with honours or honours degree with a superior performance at 1st Class or 2A honours level; or
• a three-year bachelor degree together with a postgraduate diploma that is an extension of the discipline contained in the undergraduate qualification and at a level considered to be equivalent to 1st Class or 2A honours, as determined by the Head; or
• been enrolled in a masters by research program and shown exceptional ability in the conduct of the first stages in a project and been approved for transfer into a PhD program by the Committee for Postgraduate Studies on the recommendation of the Head.

For admission to a PhD program a student must provide evidence acceptable to the Head of a capacity to undertake research in the discipline.

Masters Degree
To be eligible for admission applicants must have:
• qualified for a first degree of the University (or such other degree as the Department may deem equivalent for this purpose) at a standard considered by the Department to be sufficiently meritorious; or
• qualified for any other award judged by the Department to be of a relevant and appropriate standard; and
• produced evidence of professional experience through which they have developed their applied knowledge of the relevant field of study, and which satisfies the Department that they have the capacity to undertake study for the degree of masters; and
• fulfilled any other conditions relating to prerequisite study which the Department may have imposed in respect of their admission to candidature.

Graduate Diplomas/Graduate Certificates
To be eligible for admission applicants must normally have successfully completed a degree or diploma and may be required to attend an interview/selection test.

Application for Admission
Centre for Commencing Students
The Centre for Commencing Students (CCS) provides a central location for TAFE, undergraduate and postgraduate course information. Information sessions are conducted in the evenings and on weekends for prospective students that provide information and advice about return to study or career options, application procedures, alternative entry schemes and an overview of the University environment.
A resource area is provided where prospective students may browse through brochures of the many courses offered by the University. Advisers are always available to assist with enquiries, provide course information, and offer advice to individuals, schools and community groups. Group sessions can be arranged for local and community groups by contacting the Community Partnerships Officer at the Centre.

The Centre is located at Footscray Park Campus in Building C on ground level (level 3) facing Ballarat Road (adjacent to the pedestrian crossing). Contact the Centre for Commencing Students on telephone: (03) 9688 4110, fax: (03) 9688 4813 or email: ccs@vu.edu.au

Student Administration

The Recruitment and Student Success Branch and Enrolment Management Branch both seek to provide an integrated and professional service to students, staff, past students and prospective students of the University.

The Branches maintain constant telephone, email and over-counter contact with students by way of answering enquiries, advising on University requirements, issuing course information and providing services related to enrolment, certification and graduation.

A range of services is provided to staff of the University, including collation and cross checking of results, scheduling and invigilation of examinations and provision of student data and records services.

Staff within these branches work to facilitate the interaction of staff and students in accordance with Higher Education and TAFE administrative requirements, and to provide efficient services to organisational units of the University.

The student administrative services provided by Recruitment and Student Success include:

Student Administration at Offshore locations

The Centre for Graduating Students and Education Abroad provides the student administration services for all offshore programs for both sectors. The University has partnerships with several organisations to enable programs to be delivered in offshore teaching sites such as Bangladesh, China, Hong Kong, Korea, Malaysia, New Zealand, Singapore, Thailand, and Vietnam.

Centre for Graduating Students and Education Abroad

Telephone: 61 3 9365 2846
Fax: 61 3 9365 2853
Email: offshoreadmin@vu.edu.au
Website: www.vu.edu.au
Located: Room 4C, 141, St Albans Campus

Enrolment Management provides services in the following areas:

- **Admissions and Orientation** provides a comprehensive service to prospective students including distribution of course information, collection and processing of applications; and to the University in the coordination of the admissions process, procedures and information.

- **Client Services and Information** offers assistance with student administration enquiries including enrolment and fees information, cashier functions and switchboard services.

- **Enrolment** services entail the registration and administration of enrolment amendment for students on all onshore campuses and in both sectors, as well as Higher Education Contribution Scheme administration and TAFE fees.

Undergraduate Courses

**Normal Entry**

Persons applying for entry to higher education undergraduate courses (other than those listed below under Direct Application) to study either full-time or part-time must apply through the Victorian Tertiary Admissions Centre.

While the VTAC Guide and application form are available from newsagents, a convenient and comprehensive application service is available from their website at: www.vtac.edu.au.

Persons applying through VTAC should note that the VTAC rules, by which the University is bound, provide that no selection authority shall take into account the preference for that course as indicated by the applicant. This means that even if an applicant has indicated a lower preference for the course concerned than other applicants, there shall be no prejudice and each applicant will be considered equally.

**Prerequisites and Extra Requirements**

Some higher education undergraduate courses have special prerequisites for enrolment. Where this is the case, these requirements are published two years in advance in the Victorian Tertiary Education Requirements (this is published as a supplement in the press) and for the following year in the VTAC Guide to Undergraduate and TAFE Courses (available from newsagents and the web: www.vtac.edu.au).

For some higher education undergraduate courses, the application process requires applicants to complete a Supplementary Information Form available from the relevant Faculty Office, the Admissions Office or the University website: www.vu.edu.au/admissions. These courses are identified in the VTAC Guide.

**Special Entry**

Persons applying for admission to a University course under Special Entry (except those applying for re-admission) must complete an application form from the Centre for Commencing Students. However, persons seeking Special Entry must also apply to VTAC unless the course comes under the Direct Applications category.

Readmission to the University

Students who are currently enrolled in an award course at the University may apply directly to the University for admission to another course for the following semester. Students seeking readmission to the University should contact the Faculty or School administering the relevant course or Student Administration.

All other students who were previously enrolled at the University but whose enrolment has lapsed, or who have been excluded from their course because of unsatisfactory progress, may reapply for admission to the same or another course in any subsequent academic year. These students should apply using the standard procedures for that course. Such applicants for readmission to the University will have to meet the selection criteria applying to their intended course.

The selection process will take account of:

- the person's previous academic performance at the University and their commitment to complete the course; and

- whether the circumstances which led to the person's previous unsatisfactory progress or to their allowing their previous enrolment to lapse have changed or improved.

If selected for re-admission such students will be subject to the course requirements in effect at the time of re-entry and may have special conditions attached to their re-admission.
Part-time Admission
Persons applying for admission on a part-time basis to Higher Education undergraduate courses and TAFE courses should follow the application procedures set out above. Where a form is to be lodged with the University as well as with VTAC, applicants should indicate their intention to study part-time on the form.

Postgraduate Courses
Masters by Coursework, Graduate Certificates and Graduate Diplomas
All persons seeking admission to postgraduate studies in the University (except for the Graduate Diploma of Education) must apply direct to the University.
Application forms for graduate certificates, graduate diplomas and masters by coursework are available from the Student Administration Admissions Office at the St Albans Campus or Faculty offices on the campus where the course is offered.

Doctor of Business Administration
Prospective students should contact the Faculty of Business and Law office at either the Footscray or City campuses for application details.

Doctor of Philosophy and Masters Degrees by Research
Those persons interested in pursuing a research degree are advised to contact the Postgraduate Studies Officer in the Faculty or Department in which they wish to study to discuss research interests and to determine the availability of suitable supervisors and facilities relevant to the proposed research.
Once the Department has confirmed that the applicant is eligible to enrol, an Application for Enrolment Form must be completed and lodged along with the necessary enrolment forms at Student Administration.

Direct Applications
All direct applications for admission to award courses must be on appropriate University application forms, available from the University. Telephone (03)9365 2286 for details or via www.vu.edu.au/admissions.

Closing Dates for Applications
Applicants lodging direct applications should contact the relevant Faculty or School for closing dates. Direct applicants should note that the selection process will be facilitated by the applicant providing all relevant information when lodging an application.

Applicants who wish to study TAFE courses part-time must apply direct to the University using an application form available from the Admissions Office.

Selection Procedures
Applicants may be required to complete a literacy and/or numeracy exercise as part of the selection procedure and may be given the opportunity to attend an interview as part of the selection procedure.

Application Procedure
Applicants for admission to courses at Victoria University should indicate on their application form if they wish to apply for credit. Applicants applying for credit are also encouraged to complete an Application for Credit Transfer Form. All such applications must be lodged before the end of the second week of the relevant semester.
Processing of applications for subject credit may take several weeks. This process will be facilitated by the applicant providing all relevant information when lodging an application.
The following documents must be included in an application:
- a completed Application for Credit Transfer Form. This form is available from Student Administration or the relevant Faculty.
• a copy of the applicant's academic record from the previous institution(s);
• where available, a description of the subjects as published in the Handbook of the applicant's previous institution, e.g. if applying for an exemption in Economics 1 at Victoria University on the basis of a pass in Economics at Monash University in 1998, the applicant should attach a copy of the subject description of the unit from the 1998 Monash University Handbook; and
• any other material that applicants wish to submit in support of their application.

Time Lapse Between Studies
Normally, credits for studies in a previous course of study will not be considered if studies were undertaken more than 10 years prior to the application. Courses linked to fields in which there is rapid change in technology and/or knowledge may set a maximum time limit of less than ten years. In cases where it can be demonstrated that relevant skills have been maintained and, where appropriate, updated, the above time limit restrictions may be waived by the appropriate Dean or TAFE Deputy Director on the recommendation of the appropriate Head of School or Department.

Enrolment
Enrolment enquiries should be directed to StudentAdmin@vu.edu.au or to any Enrolment Management Branch office on campus. Enrolment enquiries from students studying offshore should be directed to offshoreadmin@vu.edu.au.

Enrolment for Assessment
A candidate becomes eligible for assessment in a subject only when enrolled in that subject. Candidates will be considered as having entered for assessment in all subjects for which they have enrolled.

A student will be deemed to have enrolled for assessment in a subject unless such enrolment has been formally withdrawn by the specified date. Application for timely subject withdrawals must be made on the appropriate University form. Total withdrawal from a course of study must be approved by the Faculty, School or Department responsible for administration of the student's course by the specified date.

All defined fee payments must be completed before any enrolment or assessment is validated and/or confirmed by the University. The enrolment of those students who do not complete the required timeframe will be cancelled. Students are notified of an enrolment cancellation by mail. A student will only be reinstated to the course where authorisation from the Faculty or TAFE School's Administration office has been obtained, a reinstatement fee and all outstanding fees have been paid.

When students enrol at the commencement of the academic year, a provisional enrolment for Semester Two is registered. It is important to note that the Faculty or TAFE School administering each course of study has the power to amend, restrict or cancel provisional semester enrolments.

Returning Students
Students who have been enrolled for the previous semester should comply with the re-enrolment requirements set down by the relevant Faculty, School or Department. Particular attention should be paid to University re-enrolment schedules.

Late Enrolment
Students must enrol in a course of study or for a subject during official enrolment periods. Where students are unable to attend the designated re-enrolment session, they should arrange for a proxy to enrol on their behalf. Students who do not comply with the enrolment and re-enrolment requirements, including the payment of relevant fees, will be required to pay a late enrolment fee and where appropriate, a reinstatement fee. Enrolment into a course of study or subject after the third week of a semester will only be permitted in exceptional circumstances and only with the approval of the relevant Head of School or Department, or nominee.

TAFE courses have various start week dates throughout the year. Variations should normally still occur within the first three weeks of the program.

Course Transfer
An enrolled student wishing to transfer to a course of study in another Faculty, School or Department must apply for admission to the intended course of study on the appropriate form. Where this course transfer is approved, the student will be withdrawn from the previous course and enrolled into the new course.

Lapsed Enrolment
Past students of the University who are not on approved Leave of Absence (or deferment) from the University and who have not enrolled at the University for the previous semester, automatically forfeit their student place at the University and must re-apply for admission according to the procedure set down for new students.

How to Enrol

Proof of Qualifications
Admission and enrolment are conditional upon proof of stated qualifications. All claims of qualifications that have been obtained outside the University should be supported by appropriate documentary evidence, certified copies of which should accompany the application for admission. These copies will be retained by the University.

Approval of Course of Study
All courses of study (i.e. individual student's subject selection) must be approved by the Faculty, School or Department responsible for administration of the student's course before enrolment registration will be accepted by the University. Students should take particular note of the administrative arrangements for enrolment.

Enrolment Registration and Validation
An enrolment is registered by the University when it is appropriately approved and entered onto the University's database by an authorised officer or by a student of the University in the case of self-enrolment. Registered enrolments are not validated until all requirements relating to verification of qualifications, payment of fees and acceptance of liability under the Higher Education Contribution Scheme are satisfied.

Enrolment Forms
Until student self-enrolment is fully implemented all students commencing or continuing studies at Victoria University must complete the relevant official enrolment and statistics form(s). These form(s) must be lodged for processing within two University working days from the date the form(s) is approved and signed by an authorised officer of the relevant School or Department. Failure to comply with this time limit may result in non-acceptance of the enrolment.
Victoria University is committed to protecting and maintaining the privacy, accuracy and security of your personal information and complies with the University’s published privacy policies, commitments, guidelines and procedures, which conform to and support all privacy obligations that bind the University. The University is compelled by law to supply some statistics - for example, it must supply statistics to the Bureau of Statistics. Statistics supplied to outside bodies will be in the form of aggregate figures only; the outside body concerned will be unable to identify any student by name. Only the Australian Taxation Office is supplied with the names, addresses, birth dates and HECS liability of relevant students of the University.

Confirmation of Enrolment

Confirmation of course and subject enrolment will be issued to higher education students each semester and to TAFE students, upon enrolment. Students should check their enrolment details carefully and notify Enrolment Management without delay of any errors or amendments using an Enrolment Amendment Form. Enrolment Amendment forms are available from Enrolment Management, Faculty, TAFE School and/or Campus offices. They may be lodged at the Enrolment Management Branch office at any campus.

Student Self-enrolment

The University is implementing a student self-enrolment system whereby students will enrol themselves in their course and subjects via a computer terminal. This self-enrolment system has been developed to determine the subjects into which a student may enrol and takes into account electives, majors, minors, streams and so on. This means that students are enrolled when they have selected their subjects through this method and paid their fees.

Student Identity Card

An identity card (ID) with your student number, photograph and signature will be issued to you at the time of your initial enrolment at the University. This card should be carried with you at all times, as you may be asked to produce it at any time.

Your card is required in the following instances:
• admission to examinations;
• re-enrolment;
• library services;
• computer centre services; and
• travel and other concessions.

Your ID number is a unique number and should be quoted on all correspondence with the University. Proof of identity is required prior to the issuing of your ID card. Cards can only be replaced by paying a fee to the Cashier and taking your receipt together with another form of photo identification to Enrolment Management Branch.

In addition, University ID cards may be used to operate photocopiers and access other services.

Complementary Enrolment

Students of Victoria University

Special arrangements can be negotiated whereby students studying towards a recognised higher education award may be given specific approval to undertake studies outside their awarding institution to count towards completion of course requirements. Such arrangements are termed ‘Complementary Enrolment’.

The Director Student Affairs or nominee may approve complementary enrolment, on the recommendation of the nominee of the Dean of the relevant faculty. Approval will not be given for more than one-half of a student’s course to be undertaken at another institution.

A student of the University who undertakes an approved complementary course is required on completion of the unit to provide Enrolment Management Branch with a certificate of results from the host institution, whereupon, if appropriate, a J result will be recorded to signify that the complementary studies have been satisfactorily completed.

Where the host institution administers a Higher Education Contribution Scheme liability in respect of a complementary enrolment that is approved by this University to count towards completion of a course, that part of the student’s subject enrolment at this University relating to the complementary studies will be exempt from HECS liability.

Students of Other Institutions

Students who have been admitted to higher education award courses at other tertiary institutions will, under certain circumstances, be permitted to undertake studies at the University to count towards completion of those courses. Admission of complementary students is subject to funding, timetabling and class size considerations, and requires the approval of the Head of School or Department responsible for teaching the subject(s) concerned.

Students of other institutions wishing to apply for complementary enrolment should obtain written approval from the Director Student Affairs (or equivalent) at their home institution, verifying their enrolment status, indicating the nature of the studies to be undertaken, and certifying that the studies, if successfully completed, will count towards the award.

Students who have produced documentation required in accordance with the previous paragraph will be exempted from payment of the General Service Fee normally required upon enrolment at the University, on the basis that they have already paid such a fee elsewhere.

Complementary students will normally be required to accept liability under the Higher Education Contribution Scheme in respect of subjects undertaken at this University. However, students should not be required to accept liability more than once in respect of any particular component of enrolment.

Enrolment Amendment and Course Withdrawal

Higher Education Students

Students wishing to reduce their study load should complete an Application for Enrolment Amendment Form. Students should lodge the form at an Enrolment Management Branch Office.

Students who withdraw from subjects before the census date do not incur a HECS liability for those subjects. Students who withdraw from subjects after the census date, but before the late withdrawal date, do incur a HECS liability but not an academic penalty for those subjects. Students who withdraw from subjects after the late amendment date incur a HECS and an ‘N2’ fail for the subject. Generally, students are not permitted to withdraw after the late withdrawal date.

Students wishing to totally withdraw from studies should complete an Application for Course Leave of Absence, Deferment or Withdrawal Form, obtain approval from the Faculty or Department responsible for administration of the course, and lodge the approved form at Enrolment Management. Withdrawal from
subjects or courses will not automatically be permitted after 31 March in Semester 1 and 31 August in Semester 2.

If a student withdraws from enrolment at the University during the year without being granted leave of absence, it will be necessary to re-apply for admission to the course to recommence studies at any later stage. In such circumstances, re-admission is not automatic.

**TAFE Students**

TAFE students wishing to reduce their load or withdraw from studies should complete the appropriate form within four weeks of the course start date.

**A Word of Warning**

Do not leave things to the last minute. You may receive little sympathy if you approach staff during the examination period regarding a problem that has affected your enrolment status or hampered your performance throughout the semester.

If circumstances force you to ‘drop’ a subject, make sure you apply to withdraw from that subject at the earliest possible time and at least before the deadline specified by Enrolment Management. If you do not complete the assessment for a subject for which you are enrolled you will receive a ‘Fail’ grade in that subject even if you have not attended classes in that subject. You will also incur a HECS liability for the subject.

**Conditional Enrolment**

A student, whether a commencing or a continuing student, may be permitted to enrol subject to special conditions, provisions or requirements.

Conditional enrolment means that special requirements apply for that student in addition to the normal progression regulations of the course, for a specified period of time (whether that time is measured in terms of course stages or in terms of calendar time).

Where the University attaches conditions, and where these have been formally notified to the student, the continued or subsequent enrolment by that student serves to confirm acceptance of the specified conditions.

If the University will not be bound by the proposed conditions unless students or potential students have notified the relevant University officer in writing within three working days of the meeting of their acceptance of the conditions.

**Leave of Absence**

(Continuing Students)

Leave of Absence, for periods of up to one year initially, may be granted by the Faculty or School responsible for the administration of a student’s award course. A student must submit an Application for Course Leave of Absence, Deferment or Withdrawal form available from Enrolment Management or the relevant Faculty, School or Campus offices.

**Undergraduate and Postgraduate Courses**

A completed Application for Course Leave of Absence, Deferment or Withdrawal form including a recommendation from the appropriate School or Department should be approved by the Faculty or School prior to the enrolment census date for the semester in which the leave is to commence.

The Faculty or School will advise students in writing regarding the outcome of their application.

Where leave of absence is approved for Higher Education students after the relevant enrolment census date, students will remain liable for HECS contributions in respect of their enrolment in that semester.

**Doctor of Philosophy and Masters by Research**

Students should approach the Postgraduate Studies Unit, Footscray Park Campus for advice regarding application for leave of absence. Application forms can be obtained from the Unit or the Enrolment Management Branch.

**Personal Details**

Students who change their name, address or emergency contact details should do this in writing by completing a Personal Data Amendment form available from Enrolment Management offices.

Students requiring a change of name must produce documentary evidence (e.g. marriage certificate, statutory declaration) in addition to completing a Personal Data Amendment form.

**Fees and Charges**

Fee enquiries may be directed to Student.Fees@vu.edu.au or to any Enrolment Management office.

Students are required to pay all the fees for which they have been assessed including the General Services Fee, Building Levy and TAFE tuition fees or accept HECS liabilities for courses they enrol in. Once payment is completed the University will validate the student’s enrolment.

Enrolment for any semester is not valid until all relevant payments have been made.

**General Services Fee**

In addition to tuition costs, students are required to pay student service and amenities fees. These fees are paid to the University to fund a variety of non-academic and general services, activities and facilities of benefit to all students.

In 2003 the General Services Fee (GSF) for students other than those in TAFE or enrolling in higher education subjects is:

- For enrolment in higher education subjects: $2.61 per 0.01 equivalent full-time student unit.
- For enrolment in technical and further education subjects: $0.362 per student contact hour (SCH).
The amount of the refund payable will be determined according to the date of lodgement.

- **Before 31 March** – full refund
- **After 31 March but before 31 August** – refund of second semester GSF paid only
- **After 31 August** – no refund is payable unless students can show there are special circumstances in their case.

A sum of $10.00 is retained from refunds of the General Services Fee.

**TAFE Students**

TAFE fees will be refunded to students who withdraw from the course within four weeks of commencement in order to take up a place at another tertiary institution.

Students who withdraw from a course within four weeks of commencement of classes for other reasons will be entitled to a refund, minus the $57.00 minimum TAFE fee.

When withdrawal of subjects takes place within four weeks of course commencement and results in a lower tuition fee, students will be entitled to a refund.

### Higher Education Contribution Scheme (HECS)

#### HECS Liability - To Whom Does It Apply?

A student enrolled in an accredited, non-exempt higher education course at the census dates of 31 March for Semester 1, 31 August for Semester 2, and 15 January for Semester 3, will incur a HECS liability. The liability is determined according to the study load undertaken expressed as a proportion of the normal full-time load for each students year of course.

#### HECS Up Front Payment Option

Students can pay all of their HECS liability up front and receive a 25% discount. Students selecting the up front payment option at enrolment for a given semester must pay their full current semester HECS liability less 25% within seven days of the enrolment registration invoice being produced.

#### HECS Partial Up Front Payments

Students can make a partial up front payment and defer the remainder of their HECS contribution. Students may make one payment of $500 or more towards their HECS liability for a given semester.

#### Deferred Payment Option

Non-exempt Higher Education students who do not wish to pay HECS up-front upon enrolment must complete and sign a Payment Declaration Form selecting the Deferred Payment method.

Under the Deferred Payment Option students must, at enrolment, either:

- provide a valid tax file number; or
- not having a tax file number or not having access to their tax file number, apply to the Australian Taxation Office (ATO) for a Tax File Number and provide it to the University before census date. Where the tax file number is not made available to the student by census date, the ATO will provide a Certificate of Application, which the University will accept in place of a Tax File Number.

### Reimbursement of Up Front HECS Payments

Students who made an up front payment and who then withdraw from part or all of their semester subject enrolment before the relevant census date will normally be entitled to a proportional HECS refund.

HECS refunds will not generally be paid by the University until the enrolment confirmation period is ended—that is, before 30 April in Semester 1 or before 30 September in Semester 2.

**Exemptions**

In cases of hardship, students can contact Student Services staff at your campus.

### Reimbursement of Fees

#### Higher Education Students

Upon application, refunds (full or partial) will be granted on any of the following grounds:

- A building levy of $40 for enrolment at one or more of the University's Australian campuses to a maximum of $40.00 per student.
- A building levy of $20 for students in receipt of a youth allowance at the time of enrolment.
- A building levy of $4 for students enrolled in Industrial Skills Training Centre part courses

Students enrolled in any following TAFE course classification are exempt from liability to pay that part of the GSF charge that exceeds the SCHs specified below:

- VCE Students, 338 SCHs;
- Student in Traineeship & Apprenticeship Programs, 242 SCHs;
- Tuition fee concession students (AUSTUDY), 375 SCHs;
- Students exempt from Tuition Fees, 48 SCHs;
- Students enrolled in Industrial Skills Training Centre part courses, 72 SCHs.

Student enrolled in either higher education or TAFE courses for delivery by off campus mode are exempt from liability to pay any part of the GSF above $17.

**Note that the 2003 fees quoted above are subject to Council approval and may change.**

**PAYMENT OF FEES IS REQUIRED ON THE DATE OF ENROLMENT.**

Students who are experiencing financial difficulties and are unable to complete payment of their fees on time should seek advice from Enrolment Management or the Student Services Branch.

TAFE tuition fees are levied in accordance with State Government Policy.

### Exemptions

In cases of hardship, students can contact Student Services staff at your campus.
Payment Options for New Zealand Citizens
New Zealand citizens who commenced their course of study on or after 1 January 1996 must pay their HECS contribution up front without a discount. New Zealand citizens continuing a course of study which began before 1 January 1996 must also pay their HECS contribution up front without a discount, unless they have been a resident in Australia for a continuous period of more than two years.

Differential HECS Contributions for Commencing Students Only
Differential HECS contributions apply to students commencing a new course of study after 1 January 1997. The HECS liability for each unit depends on which of three bands the unit is classified.

Further Information
The information booklet, HECS Your Questions Answered 2003, published by the Department of Education, Science and Training, contains more detailed information about the scheme. Copies are distributed at enrolment and are available from Student Administration offices. Further information is also available on the following website: www.hecs.gov.au or by calling the HECS enquiry line on 1800 020 108

Communication from the University to Higher Education Students on HECS Liability
The University will issue to each higher education student two documents about their HECS liability each semester, namely:

• An Enrolment Offer showing the student's personal details, the subjects the student is enrolled in for the current semester; the Effective Full Time Student Unit (EFTSU) value for each of the subjects, the aggregate EFTSU, the HECS liability amount and the up front payment amount for the current semester. The form will be sent or given to Higher Education students before 15 March in Semester 1, before 15 August in semester 2, in early January for Summer School and in early July for Winter School.

• A Tax Invoice and Final Statement of HECS Liability will be sent to all Higher Education students in early April (for Semester 1) and mid-September (for Semester 2). This notice will show: the aggregate EFTSU enrolment as at census date; the resulting semester HECS liability; the amount of HECS liability paid for the current semester; the amount of any HECS liability to be reported to the Australian Taxation Office; and where applicable, the amount of any refund due from the University.

• Students will have fourteen days from the date of issue of a 'Final Statement of HECS Liability' to lodge a written objection (giving reasons) at Enrolment Management. The only valid grounds for such an application are that the University has made an error in recording the students subject enrolment, in calculating the HECS liability, or in recording a HECS payment. Such applications for amendment will generally be considered before 1 May in Semester 1 and before 1 October in Semester 2. Students will be formally advised of the outcome.

Tax File Numbers
Handling of Tax File Numbers by University Staff
Tax File Numbers submitted by students or received from the Australian Taxation Office will be kept secure and confidential and no unauthorised person will be permitted access to this information.

Collection of Tax File Number Information by the University
If a student provides a Tax File Number that does not conform to the specifications provided by the Australian Taxation Office, the responsible University Officer has the authority not to accept or process the student's enrolment.
If a student fails to provide a Tax File Number or a Certificate of Application from the Australian Taxation Office by the enrolment census date, then the responsible University Officer has the authority to terminate the student's enrolment.

Postgraduate Education Loan Scheme (PELS)
The Postgraduate Education Loan Scheme is an interest free loan facility for fee-paying postgraduate students undertaking non-research courses. It is similar to the deferred payment arrangements available under HECS.

Eligibility
You are eligible for a PELS loan if you are:

• Enrolled in a fee-paying postgraduate non-research course and,
• An Australian citizen or holder of an Australian permanent visa (who meets eligibility requirements)

Loan Available
You can borrow up to the limit of your tuition fees being charged for your course each semester. You will begin repaying your loan through the taxation system once your repayment income reaches the minimum threshold for compulsory repayment.

Further Information
The information booklet, PELS Your Questions Answered 2003, published by the Department of Education, Science and Training, contains more detailed information about the scheme. Copies are distributed at enrolment and are available from the Enrolment Management offices.
Further information is also available on the following website: www.hecs.gov.au/ pels.htm or by calling the PELS enquiry line on 1800 020 108.

Bridging For Overseas-Trained Professionals Loan Scheme (BOTPLS)
The Bridging for Overseas-Trained Professionals Loan Scheme (BOTPLS) is an interest-free loan facility for overseas trained professionals who are seeking to work in regulated or self-regulated professions in Australia. It is similar to the deferred payment arrangements available under the Higher Education Contribution Scheme (HECS) and the Postgraduate Education Loans Scheme (PELS).

Eligible overseas-trained professionals who are citizens or permanent residents of Australia wishing to meet formal recognition requirements for their profession in Australia will be able to access these loans.

Further information can be found by reading BOTPLS, Your Questions Answered which is available on the following website: www.hecs.gov.au/botpls.htm or by calling the enquiry lines:1800 020 108 for student loan issues or 1800 020 086 for recognition issues, or by contacting Enrolment Management.
Assessment

All enrolled students are eligible for assessment in each of the subjects in which they are enrolled. In most subjects offered by the University there will be more than one assessment task or component of assessment during a semester.

The components of assessment for each subject will vary but may include attendance, examinations, tests, exercises, practical tasks, essays, assignments, articles, theses or other work.

More precise details of the assessment for each subject will be provided by the School or Department Examination Board for that subject not later than two weeks after commencement of teaching in the subject. These details will include:

- the nature of each component of assessment;
- the approximate length or extent of each of the components;
- the approximate due date for each component;
- the proportion of total marks assigned to each component; and
- the standard deduction of marks for late submission.

The Examination Board for each subject will consist usually of the Head of the relevant School or Department (as Chairperson) and the examiners for the subject. Usually there will only be one examiner for each subject who will be one of the members of staff teaching the subject. The examiner(s) will be appointed by the end of the second week in each semester. The examiners may be assisted in correcting work by assistant markers appointed by the Chairperson of the Examination Board.

The University has adopted rules in relation to assessment and the supervision of assessment. These rules form Part 1 of the Schedule to a Statute of the University (Statute 6.3.1—Assessment). A copy can be obtained from the Head Legal and Policy Secretariat, telephone (03) 9688 4022. These rules are normally reproduced by Student Affairs and displayed alongside the final examination timetable.

Assessment is available only to students of the University

Students cannot have results for an examination in a subject in which they have not formally enrolled; check carefully your Enrolment Registration and HECS Liability Statements to ensure that your enrolment is correct in every detail.

Examination Timetable

The final examination timetable is posted on University noticeboards and web site www.vu.edu.au approximately four weeks before the examination period begins. It is your responsibility to check this timetable for any clash, and to refer any clash to the either the Examinations Scheduling Officer of the Assessment & Progression Unit at Footscray Park Campus or to the Enrolment Management office on your campus.

You will not be given special consideration if you misread the examination timetable and miss an examination, nor will you be entitled to another examination.

No information about the examination timetable will be given by telephone.

Conduct of Examinations

Enquiries about examinations may be directed by email to examinations@vu.edu.au to the Enrolment Management office on campus.

Examination sessions will normally commence at:

- 9.30am morning examination sessions
- 2.00pm afternoon examination sessions
- 6.00pm evening examination sessions

unless otherwise indicated on the published timetable.

Students will be admitted to the examination room at those times and given fifteen minutes at the commencement of the session for the purpose of reading the paper. Any variation of this practice will be notified to students in the printed timetable. As a rule, no writing, note making or marking of the paper in any way is permitted in this reading time. A member of the academic or teaching staff will be present at the beginning of each examination session at the examination venues to answer any inquiries about the question paper.

Before entering the examination room, students must ascertain their seat numbers from lists posted on noticeboards at the examination venues and web site www.vu.edu.au. Lists are usually posted on the University website www.vu.edu.au two days prior to the commencement of examinations. Any student who has not been allocated a seat number should report immediately to the Enrolment Management office before the commencement of the examination session.

No student may enter the examination room more than half an hour after the commencement of the session or leave the examination room until half an hour after the commencement of the session or during the last quarter of an hour of the session.

You may bring into the examination room: pens, ink, pencils, rulers, erasers and mathematical instruments (see below for use of calculators and electronic devices).

You may not bring into the examination room any book, paper or other material that has not been specifically authorised for use at that particular examination: if, during an examination, you are found to be in possession of such material, you will be reported as having breached examination rules and may face disciplinary action.

You are strongly advised not to bring to examinations any unnecessary clothing, papers, books, bags, handbags, wallets, folders, valuables or other personal items. You will not be permitted to bring into the examination room any bag, handbag, folder, pencil case, calculator case, paper or similar item. You are warned of the possibility of theft. The University accepts no responsibility for loss of or damage to any item left outside of or brought into an examination room.

You must bring your student identity card or other photographic identification such as driver's license or passport to each of your examinations. Checks will be conducted in examination venues to verify the student's identity and any discrepancies will be dealt with University Statutes.

Further information about the conduct of the examinations is given in the Rules and Regulations published with the examination timetable and on the University's web site: www.vu.edu.au.
Academic Misconduct

Students should note that the University regards academic misconduct as a very serious matter. Students found guilty of academic misconduct could be excluded from the University. The period of exclusion will vary depending on the circumstance of individual cases.

The following are some of the actions which have resulted in students being found guilty of academic misconduct:

• taking unauthorised materials into an examination;
• submitting work for assessment knowing it to be the work of another person;
• improperly obtaining prior knowledge of an examination paper and using that knowledge in the examination;
• disobeying any reasonable instruction of a supervisor;
• directly or indirectly assisting other students or accepting assistance from any person other than a supervisor.

Possible penalties if found guilty of academic misconduct are referred to in Statute 2.7 and include:

• a formal reprimand;
• forfeiture of the whole or part of any assessment in the subject to which the misconduct relates;
• the imposition of a fine of not more than $500;
• suspension or exclusion from the course in which the student is enrolled.

Special Consideration

Students may apply for special consideration if their work during a teaching period or examination or other assessment has been gravely affected by illness or other serious cause.

Application must be made no later than three days after the date of submission of the assessment for which special consideration is sought. Applications seeking an extension of time to complete a component of assessment should be made to the relevant School or Department. All other applications should be made to the Executive Officer of the Faculty concerned or the TAFE Executive Officer.

Where students have been prevented by illness or other cause from making application within the three-day period they can make a late application setting out the reasons why the application could not be made earlier.

A successful application for special consideration may result in the student being allowed to undertake supplementary or further assessment.

Students will not be given special consideration for misreading the examination timetable.

Students with Disabilities - Alternative Assessment Arrangements

Students with an ongoing disability should immediately register with Disability Services in the Equity and Social Justice Branch of the University once enrolled in their course. Students with a temporary disability, which puts them at a disadvantage in written examinations, should advise the Faculty or TAFE Executive Officer and also register with Disability Services at the beginning of the semester of study or immediately after their disability is known to discuss alternative arrangements for examinations.

Alternative assessment arrangements could include extra time, a separate room or use of adaptive equipment in examinations.

Use of Linguistic Dictionaries

Students may apply to use an English language dictionary in an examination during the first two years of enrolment in the University if:

• the student has arrived from a non-English-speaking country within the last five years;
• the student has regularly attended an approved program designed to improve their language skills.

These are general guidelines only and criteria may vary with individual subject assessment requirements. An Application to Use a Dictionary Form is available from Enrolment Management offices and must be presented together with a dictionary registered with Enrolment Management. The concerned lecturer must then approve this form. After the completion of this process, students are required to bring this form along with the dictionary to the examination venue.

Use of Electronic Linguistic Dictionaries

The use of electronic linguistic dictionaries is not permitted.

Use of Computers and Electronic Calculators

Faculties, Schools and teaching Departments are responsible for determining which materials will be allowable for use in examinations. Students should refer to individual subject guides for details about the use of calculators and electronic devices. Generally, students will be allowed to bring into an examination room only pens, pencils and non-electronic mathematical instruments unless otherwise specified in the subject guide.

Further Assessment

Before the results of assessment for any component of assessment are published, the examiners may administer a further component of assessment to resolve any doubts as to whether a student has reached the required standards, or about the grade to be awarded to the student.

This means it is vital that students ensure they can be easily contacted between the time a component of assessment is completed and results are published.

Notification of Results

The final results for any subject will not be officially notified to students before the completion of assessment in that subject and their formal publication.

No information regarding results will be given by telephone.

A further component of assessment – oral, written or practical – may be administered by the examiners in any subject at short notice and before the publication of results. Students should therefore ensure that they can be easily contacted until the publication of results.

Review and Reports

Students may apply to have an assessment of any work re-marked or to be given a report on their assessed work. These applications may be subject to a fee.
Applications must be made to the Chairperson of the relevant Examination Board within seven days of the day upon which the results of assessment were published or become available for collection.

Students will be notified of the results of any review of their work.

**Subject Assessment and Grading**

Grades for Year 2003 are as follows.

### Division 1 - Grades For Assessed Subjects (including theses)

**A:** Grades for Honours subjects, theses and subjects taken in Postgraduate courses, Honours Years, Honours Degrees, Degrees with Honours and Degrees of Master, assessed as a whole.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>A:</td>
<td>Grades for Honours subjects, theses and subjects taken in Postgraduate courses, Honours Years, Honours Degrees, Degrees with Honours and Degrees of Master, assessed as a whole.</td>
</tr>
<tr>
<td>H1</td>
<td>First Class Honours, 80–100%</td>
</tr>
<tr>
<td>H2A</td>
<td>Second Class Honours, Upper, 70–79%</td>
</tr>
<tr>
<td>H2B</td>
<td>Second Class Honours, Lower, 60–69%</td>
</tr>
<tr>
<td>H3</td>
<td>Third Class Honours, 50–59%</td>
</tr>
<tr>
<td>N</td>
<td>Fail, 0–49%</td>
</tr>
<tr>
<td>S</td>
<td>Ungraded Pass</td>
</tr>
</tbody>
</table>

**B:** Grades for other subjects

<table>
<thead>
<tr>
<th>Grade</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>HD</td>
<td>High Distinction, 80–100%</td>
</tr>
<tr>
<td>D</td>
<td>Distinction, 70–79%</td>
</tr>
<tr>
<td>C</td>
<td>Credit, 60–69%</td>
</tr>
<tr>
<td>P</td>
<td>Pass, 50–59%</td>
</tr>
<tr>
<td>N1</td>
<td>Fail, 40–49%</td>
</tr>
<tr>
<td>N2</td>
<td>Low Fail, 0–39%</td>
</tr>
<tr>
<td>S</td>
<td>Ungraded Pass*</td>
</tr>
<tr>
<td>U</td>
<td>Ungraded Fail</td>
</tr>
</tbody>
</table>

### C: Competency Based Grades (TAFE)

<table>
<thead>
<tr>
<th>Grade</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>CC</td>
<td>Achieved Outstanding Competency</td>
</tr>
<tr>
<td>CP</td>
<td>Achieved Competency - Highest Grade Awarded</td>
</tr>
<tr>
<td>PP</td>
<td>Achieved Competency</td>
</tr>
<tr>
<td>NN</td>
<td>Competency Not Achieved</td>
</tr>
</tbody>
</table>

### D: Codes For Incomplete Assessment

<table>
<thead>
<tr>
<th>Code</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>Continuing Subject</td>
</tr>
<tr>
<td>L</td>
<td>Not yet Assessed – Special Cause**</td>
</tr>
<tr>
<td>RO</td>
<td>Result Outstanding</td>
</tr>
</tbody>
</table>

Note: *The grade 'Recognition of Prior Learning' also appears as 'S Ungraded Pass'.

**An L grade is required to be converted to a final result within one semester and prior to the commencement of the following academic year; otherwise the assessment automatically lapses to a fail - Higher Education subjects only.**

### E: Additional Codes

<table>
<thead>
<tr>
<th>Code</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC</td>
<td>Satisfactory Completion of Class Hours</td>
</tr>
<tr>
<td>UC</td>
<td>Unsatisfactory Completion of Class Hours</td>
</tr>
<tr>
<td>SE</td>
<td>Subject Exemption</td>
</tr>
<tr>
<td>E1</td>
<td>Exempt Semester 1 (full year subject)</td>
</tr>
</tbody>
</table>

**E2** Exempt Semester 2 (full year subject)

**CE** Joint Course/Complementary Enrolment (Result issued by other Institution)

**WT** Withdrew - Transferred

**WN** Withdrew - Failed

**WD** Withdrew - Without Academic Penalty

**WL** Withdrew - Late*

**VC** VCE

**TA** TAFE Preparatory Assistance

* The WL grade applies for Higher Education students who withdraw after week 7 of the relevant semester until the last day of the teaching period and requires faculty approval.

### Course Assessment and Grading

Special provisions are made on a course-by-course basis for students who encounter difficulties with academic progress. The provisions for Stage Completion and Faculty Passes detailed below should be read in conjunction with the course-specific progress regulations that appear in the Faculty Details of Courses.

#### Stage Completion

Some courses are formally divided into stages. These are identified in the details of courses.

Following final assessment in all subjects within a course semester, course year or other defined course stage, a student may receive a stage grading as follows:

- stage completed, all subjects passed;
- stage completed by compensation.

Stage completion by compensation will only be granted to a student who, though not passing all individual subjects, has aggregated grades above pass level and at a standard appropriate for progression to the subsequent course stage. Stage completion by compensation is not a pass in the subject and might not be recognised by all appropriate professional bodies.

Procedures for stage gradings in particular courses are as recommended by academic course departments or faculties and approved by the University.

#### Faculty Pass (Higher Education Courses Only)

Faculty passes are only available to students who were enrolled in the University in 1991 and who have not since then discontinued their studies (other than by taking approved leave) or changed their course.

A Faculty Pass may be awarded to a student who has passed (at P grade or better), all but one of the units (subjects) required to complete their higher education course and qualify for the relevant award.

The mark in the outstanding subject must not be less than N1.

The student must have gained sufficient marks in the subjects passed within the award to compensate for the shortfall of marks in the failed subject.

The award of a Faculty Pass shall not be interpreted as a pass in the given subject.

A Faculty Pass will not be awarded in respect of a subject that is a prerequisite for another subject.

Students who have passed all but one of the subjects required to gain an award, and who have been issued an N1 grade in the outstanding subject, may apply for a Faculty Pass by writing to the Faculty responsible for administering the course, clearly stating the basis of their entitlement to such a Pass.
The Pass is awarded at the discretion of the Dean of the Faculty administering the course in which the student is enrolled.

**Requirements for Granting of Awards**

The policies set out below represent the basic rules relating to the granting of a University award. Additional rules or requirements set by the Faculty are included in the Faculty section of this Handbook.

**Partially Completed Courses**

Where a student enters a University course by transfer from incomplete studies at another institution, that student must complete at least the final full-time year (or equivalent) of the course to qualify for the University award. This applies to all courses that are longer than one year of equivalent full-time study in duration.

This means, for example, that a student entering a three-year course having previously completed over two years of a comparable award at another institution can receive, at a maximum, two years’ advanced standing in the Victoria University course.

**Completed Courses - Maximum Advanced Standing**

A student with a completed award must complete, at a minimum, the equivalent of at least one year's full-time study in order to qualify for any subsequent University qualification at a comparable level.

**Maximum Time for the Completion of Awards**

To be eligible for the award of a Degree, Diploma, Associate Diploma, Advanced Certificate or Certificate, a student is required to complete all course requirements within the course progression regulations within the University. Maximum periods of time, unless such provision is specifically waived for that student by the University.

Maximum times for completion of awards are as follows:

- Certificate: 5 years
- Advanced Certificate: 5 years
- Associate Diploma: 8 years
- Undergraduate Diploma: 10 years
- Undergraduate Degree of 3-years duration full-time: 10 years
- Undergraduate Degree of 4 years duration full-time: 10 years
- Graduate Diploma: 6 years
- Graduate Certificate: 3 years

*Including time taken to complete preliminary Advanced Certificate year where applicable.

The time periods are taken from the beginning of the first semester for which the student was enrolled in the course, until the completion of all course requirements, and may include time elapsed due to deferment, suspension or voluntary withdrawal from the course.

Note: The maximum completion times apply in the absence of specific course requirements. For specific courses, shorter maximum time periods can be specified, and where this is the case, the shorter time limit will apply.

**Academic Progression**

**Unsatisfactory Progress**

The demand for tertiary study places exceeds the number of places available. Every year a considerable number of applicants fail to gain entry to the University. It is assumed that every person selected into an award course has the capacity to succeed. However, if students do not progress satisfactorily, they will be asked to show cause as to why they should be permitted to continue in the course.

An important aim of the University is to assist its students to succeed. Therefore, students should make use of the free counselling services provided if they are encountering problems or difficulties that are affecting their studies. These difficulties could include problems in organising time, financial difficulties, personal problems or difficulties in writing and presenting assignments and essays.

On the recommendation of the relevant Faculty or School, the University may specify academic progression rules for each individual course. Students should carefully read the progression rules relating to their course of study as detailed in the relevant section of the Handbook or in course regulations.

A student who fails to make satisfactory progress in a course of study is liable for exclusion from that course. This applies where a student does not achieve a satisfactory performance on a component of assessment, fails to attend without good reason for the performance of a component of assessment, or does not perform a component of assessment. In these cases, the relevant Faculty, School or Department, after investigating the circumstances and allowing the student to be heard, either personally or through a representative, may notify the student in writing that he or she has made unsatisfactory progress in a subject.

In addition to notifying the student of unsatisfactory progress, the relevant Faculty or School may also notify the student that it intends to make a recommendation to the Academic Board or the Board of TAFE that the student be excluded or suspended from the course or only be allowed to continue under certain specified conditions. As a general policy, the following will form part of all award course progression regulations within the University.

Students may not:

- enrol in any sequential subject without having passed all prerequisite subjects; or
- enrol in any unit with a co-requisite subject without having either previously passed the co-requisite subject or enrolling simultaneously in the co-requisite subject.

In reaching its decision about what action should be recommended with respect to unsatisfactory progress by a student, the faculty or school may establish one or more committees to consider the circumstances and hear any submission that a student wishes to make.

After receiving a recommendation from a faculty or school, the Academic Board or the Board of TAFE, as appropriate, may exclude or suspend the student from a course.

Alternatively, the relevant Board may specify the conditions under which the student may continue in a course.

Special arrangements will apply to doctoral students and students undertaking masters degrees by research who should seek advice on those arrangements from their supervisors.

Any student who is notified of unsatisfactory progress should seek assistance from Student Services staff or the Student Union at the earliest opportunity.
Discipline
The University will act to protect good order and the rights of individuals within its confines. To this end, a formal process will be followed to deal with any alleged breach of discipline or misconduct.

The University operates within the provisions of a Statute dealing with discipline (Statute 4.1—Discipline). The full text of this Statute is printed in the Calendar.

Plagiarism
Paragraph 11(3)(d) of the Schedule to Statute 6.3.1—Assessment states that a student shall not, during or in connection with the performance of any component of assessment, submit, or represent the whole or part of published or unpublished material, written or prepared by some person or persons other than that student, as being the work of that student.

Any student committing a breach of this rule shall be guilty of a disciplinary offence and all further proceedings will be conducted in accordance with Statute 4.1—Discipline, and Statute 2.7—The Discipline Committee.

Procedures Relating to the Graduation of Students from Award Courses
This information relates to graduation from Certificate, Advanced Certificate, Associate Diploma, Diploma, Advanced Diploma, Bachelors, Graduate Certificate, Graduate Diploma, Masters and Doctoral awards of the University.

Upon satisfying all the requirements of an award course a student is regarded as a graduand and is eligible to become a graduate. When you have completed or nearly completed a course you are required to submit an Application for an Award form. You can apply online through myVU at http://myvu.vu.edu.au. Alternatively, forms can be collected from and handed in at the Enrolment Management office at any campus of Victoria University or downloaded from the University website and sent directly to:

Centre for Graduating Students and Education Abroad
Telephone: 61 3 9365 2846
Fax: 61 3 9365 2853
Email: graduate@vu.edu.au
Website: www.vu.edu.au/graduation
Located Room 4C, 141, St Albans Campus.

Forms must be submitted before the set closing date.

Graduation ceremonies in 2004 are scheduled as follows:
- 18 February 2004 Hong Kong
- 21 February 2004 Malaysia
- 24 February 2004 Singapore

Applications close 24 October 2003
Attendance closes 17 January 2004
7 to 11 June 2004
Melbourne Convention Centre
Applications close 17 January 2004
Attendance closes 7 May 2004
3 to 5 November 2004
Melbourne Convention Centre
Applications close 20 August 2004
Attendance closes 1 October 2004

A graduation fee and guest ticket charge applies if you decide to attend a graduation ceremony.

Academic Dress
The wearing of academic dress on ceremonial occasions is one of the traditions that is attached to universities. Victoria University has based its academic dress on the basic style of Oxford. It consists of a gown, a cap or bonnet, and a hood which represents the discipline of the degree.

Certificants: A black gown and black cap together with a black stole faced in tangerine.

Diplomates and graduate certificants: A black gown and black cap together with a black stole faced in the discipline colour.

Bachelors: A black gown and black cap with a black hood half lined with the discipline colour. The hood for the honors degree also has a white band on the edge of the hood.

Masters: A black gown and black cap with a black hood fully lined with the discipline colour.

Doctorates: A black bonnet with a gold cord and scarlet gown with a facing of the discipline colour and black hood fully lined in the discipline colour as follows:

- Adonis Blue Doctor of Business
- Cherry Doctor of Education
- Graphite Doctor of Engineering
- Pearl White Doctor of Laws
- Ruby Doctor of Letters
- Sapphire Doctor of Philosophy
- Old Gold Doctor of Psychology
- Spectrum Green Doctor of Science
- Ultramarine Doctor of Science or Applied Science
- Silver Grey Social Work
- Pansy Music

The academic dress for indigenous Australians is the habit of their award together with a calf length black and red silk stole that has gold tassels, a map of Victoria in gold silk and 'Ngaga Jindi Woraback' embroidered in gold on the right end of the stole.

Credit Points
The credit point system provides a uniform basis for establishing subject relativities and values within a course. The objectives of the credit point system are to:

- simplify and standardise the relativities and values within a course in relation to EFTSU and Higher Education Contribution Scheme (HECS) calculations;
- provide a uniform measure of total student workload across all higher education programs; and
- allow students to make informed judgements on their likely workload in subjects across various disciplines.
What is a credit point value?
The value of a credit point is determined by the total student effort involved in the completion of a subject and includes private study hours, tutorial or laboratory work, library and research work together with formal class contact hours. The credit point value of a subject reflects its academic weight and the total amount of effort relative to other subjects within a course. There is no link between credit points and contact hours.

What type of credit point system?
The University has introduced a standard course value system of credit points. This means that all courses within the higher education sector of the University will have the same number of credit points for each year of a course.

How many credit points?
The University has adopted a system of 120 credit points for each year of a course. Thus a three-year degree program will equal 360 credit points, a four-year degree 480 credit points and so on.

How can I identify my enrolment load?

- 0–44 credit points per semester will equal a part-time load
- 45–60 credit points per semester will equal a full-time load
- 0–90 credit points per year will equal a part-time load
- 91–120 credit points per year will equal a full-time load.

EFTSU

All universities are required to calculate individual student enrolment load per year of a course. The Department of Education, Training and Youth Affairs expresses the value of an enrolment load as a percentage of 1, which is considered to be the total value of a standard, full-time course load. This unit of measurement is referred to as an Equivalent Full-Time Student Unit or EFTSU.

For example, a part-time student may record an EFTSU value of 5, indicating that the load for which the student is enrolled carries a value equivalent to half the standard student load for that course.
Services Available to Students

Student Career Development

Student Career Development provides an innovative range of services to students of Victoria University. These services include:

- Careers Counselling
- Careers Education Programs
- Employment Services
- Careers Resource Centres
- Online Careers Resources - website: www.vu.edu.au/careers
- Web based job vacancy service - www.vu.edu.au/careers/employment

Careers Counselling appointments are available for students from all campuses by phoning (03) 9688 4944

Careers Education Programs

These include job seeking skills workshops, Employability Skills Challenge, Young Achievement Australia, mentor programs, in-class programs, Student Portfolios. Visit www.vu.edu.au/careers to see what's on this month!

Employment Services

The online jobs board is accessed through www.vu.edu.au/careers/employment. Register on the site now for automatic notification of jobs in areas that you specify.

The Graduate Employment Stakes is a careers fair for final year students held in March each year. It's free, it's easy, and the employers come to you! Some employers also arrange campus visits. Watch the website for details

Resume checking by email

Email your resume to careers@vu.edu.au for feedback.

Where are we?

Footscray Park: Building M, level 4
All other campuses: co-located with Student Services.

Children’s Services

Victoria University has Children's Centres located on five campuses - Footscray Nicholson, Footscray Park, Newport, St Albans (Jindi Woraback) and Werribee. In addition, there is a preschool located on the Melton Campus.

Each Centre provides educational programs which respond to the children's social, emotional, physical, cognitive and creative needs. Nutritious meals and snacks are provided for the children throughout the day. All of the University Children's Centres have been assessed as providing the highest level of care by the National Childcare Accreditation Council.

All Centres provide a funded and integrated preschool program with a qualified Early Childhood (Kindergarten) teacher.

Families using the University's Children's Centres are eligible to apply for Child Care Benefit (CCB) through the Family Assistance Office (FAO) - formerly Centrelink. The FAO is responsible for assessing family income and determining the percentage of Child Care Benefit families receive. For further information please contact your local Family Assistance Office.

City Flinders, City King and City South Melbourne Campuses

Telephone: (03) 9688 4098
For further information on finding suitable childcare, telephone the Director, Children's Services, on 9284 8801.

Footscray Nicholson Campus

Telephone: (03) 9284 8698

The Footscray Nicholson Campus Children's Centre is located on the Ground Floor, Hoadley Building, Albert Street, Footscray. The Centre caters for a maximum of 39 children aged 6 weeks to 6 years on a full-time (weekly), daily, sessional (half-day) and occasional care basis. The Centre is open from 7:45am to 5:45pm, Monday to Friday.

Footscray Park Campus

Telephone: (03) 9688 4578

The Footscray Park Campus Children's Centre is located at 8 Geelong Road, Footscray. The Centre caters for a maximum of 37 children aged 6 weeks to 6 years on a full-time (weekly), daily, sessional (half-day) and occasional care basis. The Centre is open from 7:45am to 5:45pm, Monday to Friday.

Jindi Woraback Children's Centre (St Albans Campus)

Telephone: (03) 9364 6855

The Jindi Woraback Children's Centre is located at the Willis Street entrance of the St Albans Campus and is operated by a Management Committee consisting of representatives from the University and parents. The Centre caters for a maximum of 115 children aged from 2 weeks to 6 years on a full-time (weekly), daily, sessional (half-day) basis. The Centre is open from 7.00am to 6.00pm, Monday to Friday.
Melton Campus
Telephone: (03) 9747 7500
The Brookfield Preschool operates from the Melton Campus Children's Centre and is located at the Wilson Road entrance of the Campus. The Centre offers sessional kindergarten programs for three and four-year-old children.

Newport Campus
Telephone: (03) 9284 8476
The Newport Campus Children's Centre is located in Building K, Champion Road, Newport. The Centre caters for a maximum of 40 children aged 6 weeks to 6 years on a full-time (weekly), daily, sessional (half day) and occasional care basis. The Centre is open from 7:45am to 5:45pm, Monday to Friday. The Centre provides a funded preschool program incorporated within the educational program.

Werribee Campus
Telephone: (03) 9748 9568 or (03) 9216 8098
The Werribee Campus Children's Centre is located in Hoppers Lane, Entrance Gate 1, Building 9, Werribee. The Centre caters for a maximum of 45 children aged 6 weeks to 6 years on a full-time (weekly), daily, sessional (half day) and occasional care basis. The Centre is open from 7:15am to 6.15pm, Monday to Friday and offers a funded preschool program incorporated within the educational program.

Graduating Students
The Centre for Graduating Students and Education Abroad processes all sealed awards for the University. When you have completed or nearly completed a course, you are required to submit an Application for an Award. You can apply online through myVU at http://myvu.vu.edu.au. Alternatively, forms can be collected from and handed into the Enrolment Management Office at any campus of Victoria University or downloaded from the University website. The organisation of graduation ceremonies, both onshore and offshore, is also the responsibility of this centre.

Centre for Graduating Students and Education Abroad
Telephone: 61 3 9365 2846
Fax: 61 3 9365 2853
Email: graduate@vu.edu.au
Website: www.vu.edu.au
Located: Room 4C, 141, St Albans Campus

Optometry and Dentistry
The Student Union operates optometry and dental services through local agencies. All enquiries should be directed to the Victoria University Student Union Resource Centre Building M, Level 2, Footscray Park Campus. Telephone: (03) 9688 4065.

Health Practice Units
The Faculty of Human Development operates Health Practice Units at the St Albans and King St. Campuses and at CERES in East Brunswick. These Units offer acupuncture, massage and herbal medicines to the university community and general public. Low fee structure. Phone (03) 9365 2625.

Independent Access: Students with Disabilities
Counselling, support and information for students with disabilities is available on all campuses. Assistance is available for day to day issues of personal, academic, housing, career and financial matters which is provided by contacting Students Services on 03 9365 2399 or any campus Student Service office.

Orientation
Orientation Week (O-Week) is an annual event which is held at the beginning of Semester 1. During this week, a wide range of events are organised by the individual Faculties and Student Union to provide opportunities for students to meet each other and also to gain an awareness of the activities and services provided by the various University departments.

The Student Union distributes Orientation Information. The Survival Guide is published annually and includes information about the Student Union, Clubs and Societies, services available to students and a range of extracurricular activities. Further information can be obtained from the Resource Centre or the Student Union office on the City Flinders, City King, Footscray Nicholson, Footscray Park, Melton, Newport, St Albans, Sunbury, Sunshine and Werribee Campuses. (Refer to Student Union section for Campus phone numbers).

Indigenous Services
Support for Aboriginal and Torres Strait Islander people is available through the Equity & Social Justice Branch. The two main aims of Indigenous Services is to fully support self determination and self management for Aboriginal and Torres Strait Islander people, families and community organizations; and to increase the access, participation, success and retention rates for Australian Indigenous people in the University's programs.

Indigenous Services staff can assist students with course advice, Abstudy, academic support, employment and careers advice, social support, housing, counselling and discrimination advice.

Further information can be obtained by contacting Indigenous Services on (03) 9365 2228 or via email equity@vu.edu.au.

Student Services
Student Services provides support to students in a variety of ways. Staff provide academic support, personal and vocational counselling, financial counselling, housing and health services.

Student Services offices are located on most campuses and are open Monday to Friday during normal working hours, or after hours by appointment. For further information contact Footscray Nicholson campus on (03) 9284 8801, Footscray Park campus on (03) 9688 4418, St Albans campus on (03) 9365 2399 or visit our webpage: www.vu.edu.au/ss.
Accommodation
The University Student Housing Service provides students with a free and confidential service to assist with locating, securing and maintaining suitable accommodation. The Student Housing Database, including current accommodation listings, is on the Internet to improve accessibility. The ‘Housing Web’ can be located at http://www.vu.edu.au/hs/housing/ and holds a current listing of all accommodation offered to the University. The Housing Web also provides a wide range of tenancy rights information and also other information such as Real Estate Agent lists and Student Village information. It provides links to a wide range of appropriate housing-related services including Share Accommodation, Public Transport and Emergency Housing Services. Accommodation offers can be placed directly onto the Housing Web.
The Housing Officer is based at Footscray Park Campus and can provide tenancy advice, referral and case management as well as assistance with general housing information. At other campuses, Student Services staff can assist with accommodation inquiries. For further information, contact the Housing Officer on telephone: (03) 9688 4420 or e-mail housing@vu.edu.au

Chaplaincy
Contact Student Services for information about spiritual support in the community.

Counselling - Personal
Personal counselling is available at many of the campuses. Counselling can help students optimise their emotional, social and academic well being. Students are invited to discuss any personal, family or relationship matter with one of the counsellors. Some examples of issues discussed include loneliness, difficulty adjusting to life at the University, relationships, sexuality, family difficulties, grief and loss, self-confidence and anxiety. Counselling can be contacted by telephoning (03) 9688 4418 or (03) 9365 2399.

Financial Advice
Financial advice is available to students experiencing financial difficulties. As well as helping students to work out ways of budgeting and planning, the financial advisor/counsellor can assist with claims for Centrelink payments and fee extensions.

Other assistance includes emergency relief, rent assistance and various forms of Centrelink benefits.

Youth Allowance/ Austudy/ PES Applications
The Youth Allowance/ Austudy Abstudy schemes provide assistance to Australian citizens and permanent residents who are enrolled in approved courses at universities, TAFE institutes and other approved institutions in Australia. (Generally, Youth Allowance is for persons up to age 25, Austudy for students over 25). Abstudy is a payment for Aboriginal and Torres Strait Islander students. The Pensioner Education Supplement (PES) is an additional payment available to students on certain Centrelink payments.

Assistance is subject to a means test and to certain conditions, including a minimum study load. Part time students under 21 years of age should note there is a provision for the payment of Youth Allowance for the sum of other approved activities such as job seeking, volunteer work, or training in addition to part time study. Ask the financial advisor/counsellor or seek a Centrelink interview.

A student who is eligible and qualifies for assistance may receive a living allowance and under special circumstances a fares allowance and rental assistance. Students may also apply for a Centrelink Advance Loan - an amount of up to $500.00 advance on future instalments, recovered over 6 months; this can only be done once in a calendar year.

Loan forms for Centrelink student payments are available on Campus, at secondary schools and Centrelink offices. Students are advised to lodge their initial claim with the nearest Centrelink office as soon as they enrol or re-enrol. Payees continuing in their current course will not have to submit another claim, but should return the Review Form sent to them within the stipulated time. Note that there is no provision for back pay if a student is not currently receiving benefits. It is important that an application for Austudy/ Youth Allowance/ Abstudy be lodged as soon as possible.

Loans
Student Services administers a loan scheme for enrolled students of the University who can demonstrate a genuine need. Loans are available for the purchase of books, computers and other course related materials, medical expenses, housing expenses and other purposes in accordance with the Student Loan Fund Policy.

Application forms and information sheets are available on campus from Student Services on most campuses.

Prayer Rooms
Prayer rooms are available on most campuses. Visit our web site for room locations: www.vu.edu.au/hs

International Student Support
Two International Student Advisers provide services and programs such as Orientation and Return Home for international students in Higher Education. They are also available to provide individual assistance and support.

TAFE International services are available at the Footscray Nicholson Street Campus, telephone: (03) 9284 8517.

Services for AusAid sponsored students are available through Footscray Park Campus, telephone: (03) 9688 4780

Further information is available at Footscray Park Campus, telephone: (03) 9688 4777, St Albans Campus, telephone: (03) 9365 2399 or City Flinders Campus, telephone: (03) 9248 1159.

Further information relevant to International students is available from the International Branch at City Flinders Campus, telephone: +61 3 9248 1164.

Health Advice
There are two health advisors (nurses) at the University. Typical issues that people consult the health advisors about include:
- General health and wellbeing
- Lifestyle issues
- Women's health
- Drug use issues
- Men's health
- Nutrition
- Chronic illnesses
- Family planning and sexual health
- Pregnancy testing
- Assistance with injuries and dressings
- Referrals to community agencies
- Vaccinations (at Footscray Park Campus)

The health advisors can also be contacted through Student Services on (03) 9688 4418.
Medical Centre
A Medical Centre is located at Student Services at the Footscray Park Campus in Building M, Level 2. Doctors consult on a sessional basis Monday to Thursday during Higher Education teaching time. All consultations are bulk billed on presentation of a Medicare card. For international students the Medical Centre bills Medibank Private direct. This means international students do not have to pay after their consultation provided they have their current Medibank Private card with them and they fill out a claim form at the Medical Centre. For appointments phone Student Services on (03) 9688 4418 or drop in to Student Services.

Discrimination and Harassment
The University has a network of Equity Advisers available to assist students who think they may have been discriminated against or harassed. The list is available from the Equity and Social Justice Branch on ph (03) 9365 2193, on the internet at www.vu.edu.au/ equity or via email equity@vu.edu.au.

Drug Education
Substance use and abuse is an issue of considerable concern in the general community. The University has a drug education officer who can provide information on drug related issues and provide advice on how to find treatment and counselling services in the community. Education sessions on these issues can be organised for groups of students by contacting the drug education officer on (03) 9284 8886.

First Aid
There are first aiders on all campuses of the University. Lists of first aiders can be found on University intranet Homepage: http://intranet.vu.edu.au. First aiders are only to be contacted in more urgent or emergency situations. Examples of the sorts of things you might contact a first aider for include:
- bleeding cuts
- burns
- joint injuries
- suspected fractures
- sudden illness
- collapse

If a situation is life threatening, contact the Ambulance (0) 000 first. Be careful to state your location and the nature of the emergency. If possible have someone meet the paramedics at an easily accessible point. Health and emergency centres close to each campus are also listed.

Student Learning Unit
The Student Learning Unit (SLU) forms part of the Centre for Educational Development and Support (CEDS).

The CEDS SLU provides free English language, Maths, Science and academic skills support for students at Degree level and above.

Support is provided in the ways described in the following paragraphs.

Subject-Linked Classes
Certain subjects seem to present students with particular difficulties in the area of researching, academic reading and writing, oral presentation and/or other academic skills.

CEDS SLU staff conduct support classes linked to these subjects which focus on the academic skills needed for successful completion of the assessment tasks in that subject. Classes are also offered on a similar basis in some areas of Maths such as Business Statistics, and in certain science subjects.

Further information about these classes is available from subject guides, subject lecturers, the CEDS SLU web site or directly from the SLU main office.

Email Consultations
Students may consult a CEDS SLU lecturer about their work using email. However students should discuss this with the lecturer involved before sending work. Lecturers will comment on work, but not correct it.

Further Information
Contact Kim Borg or Bernadette Trickey CEDS Administrative Officers, on (03) 9688 4744.

Student Organisations
The peak student body for the University is the Victoria University Student Union Inc (VUSU Inc). Under this umbrella there are a number of sections including the International Students Association, the Victoria University Postgraduate Association as well as many clubs and societies.

The VUSU provides a range of services through the Resource Centres and officers on each campus. These services are designed to make students’ time at the University smoother and more enjoyable, and include recreation, sports, activities, advice, representation, advocacy and campaign organising.

Further information can be obtained from the Union Diary and the Survival Guide or by contacting the Student Offices at the following campuses:

City Flinders:
Student Union Office: (03) 9248 1427

City King:
Student Union Office: (03) 9284 7831

Footscray Nicholson:
Recreation Office: (03) 9284 8774
Recreation Centre: (03) 9284 8761
Student Union Office: (03) 9284 8534

Footscray Park:
Union Reception/ General Enquiries (03) 9688 4360
Resource Centre: (03) 9688 4302

Melton:
Recreation Office: (03) 9747 7552
Resource Centre: (03) 9747 7551
Alumni Association
Alumni of the University include staff, graduates, current students, and members of the community who have a connection with Victoria University. Membership of the University’s Alumni Association enhances the opportunities of members to achieve their professional aspirations. Students, graduates and staff maintain contact with one another and organise reunions, networks and business functions.

Staff of the Alumni office provide support in developing member networks and Alumni Chapters. Chapters focus on a particular discipline and draw together graduates to form a network in a related field. There are currently Chapters in Graphic Arts, MBA, Recreation/Fitness Leadership, Arts and Traditional Chinese Medicine.

Members of the Alumni Association are sent regular information on social activities, professional seminars, mentoring programs, activities within the University and activities organised by the various Alumni Chapters. Members also receive quarterly a copy of the University newspaper Nexus containing the Alumni supplement bulletin, and receive invitations to specifically targeted events organised by the Alumni Chapter in their field of study.

The Association also offers many complimentary member benefits. These include continuing use of the University’s library facilities after student members graduate, and discounts to a range of services such as car rental, travel, sporting goods, the University bookshop, newspaper subscriptions and hotel accommodation.

There are also several International Chapters of the Alumni Association for those graduates who return home overseas. To date, Chapters and/or networks have been developed in Hong Kong, India, Malaysia, Singapore, Taiwan and Thailand.

Membership for current students and first-year graduates is $11.00. The Alumni office is at the City Flinders Campus and is situated on the Ground Floor, 301 Flinders Lane, Melbourne.

Telephone: +613 9248 1017
Fax: +613 9248 1007
Email: alumni@vu.edu.au

Travel Concessions
Rail and bus concession application forms are available at the start of each academic year from VU Student Union (Resource Centres).
Courses at Victoria University in 2004

This section lists all the courses offered by Victoria University in higher education and TAFE.

Note: All courses are offered subject to confirmation of funding and authority to conduct, and minimum enrolment levels. List correct as at October 2003.

### Undergraduate Courses and Programs

**Campus codes:**
- B=Sunbury
- C=City Flinders
- D=China
- E=Echuca
- F=Footscray Park
- G=Renmin University of China
- H=Hong Kong
- I=Internet
- J=City King
- K=Kuala Lumpur
- M=Melton
- O=Off campus
- P=Singapore
- Q=Queen Street
- S=St Albans
- W=Werribee
- 3=Bangladesh
- D8=Tianjin, The People's Republic of China
- D7=Renmin University, Beijing, China

**Faculty of Science, Engineering and Technology**

<table>
<thead>
<tr>
<th>Faculty Courses</th>
<th>Campus</th>
<th>Full-time</th>
<th>Part-time</th>
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</thead>
<tbody>
<tr>
<td>Bachelor</td>
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<tr>
<td>- Business/Science</td>
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<td>- Engineering/Science</td>
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<tr>
<td>- Foundation Studies</td>
<td>F/S</td>
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<td>Y</td>
</tr>
</tbody>
</table>

**School of Architectural, Civil and Mechanical Engineering**

Bachelor of Engineering
- Architectural Engineering | F | Y | Y |
- Building Engineering | F | Y | Y |
- Civil Engineering | F | Y | Y |
- Mechanical Engineering | F | Y | Y |
- Robotic Engineering | F | Y | Y |

Bachelor of Science
- Engineering and Business | F | Y | Y |
- Environmental Engineering | F | Y | Y |

**School of Computer Science and Mathematics**

Bachelor of Science
- Computer Science | F/H/D7 | Y | Y |
- Computer and Mathematical Sciences | F | Y | Y |

Bachelor of Science (Honours)
- Computer Science | F | Y | Y |
- Computer and Mathematical Sciences | F | Y | Y |

**School of Electrical Engineering**

Bachelor of Engineering
- Computer Engineering | F | Y | Y |
- Electrical and Electronic Engineering | F | Y | Y |
- Microelectronic Systems | F | Y | Y |
- Telecommunication Engineering | F | Y | Y |
- Photonics | F | Y | Y |

Bachelor of Engineering Science
- Photonics | F | Y | Y |

Bachelor of Science
- Computer Technology | F | Y | Y |
- Applied Physics and Computing | F | Y | Y |
- Optoelectronics | F | Y | Y |

Bachelor of Science (Honours)
School of Molecular Sciences
Bachelor of Applied Science
- Chemistry F N Y
- Biotechnology W Y Y
- Medical, Forensic and Analytical Chemistry W Y Y
- Nutrition, Food and Health Science W Y Y
- Biomedical Sciences S Y Y
Bachelor of Science (Honours)
- Biologi (Biotechnology) W Y Y
- Nutrition and Food Science W Y Y

School of Biomedical Sciences
Bachelor of Science
- Biomedical Sciences S Y Y
- Occupational Health and Safety W Y Y
Bachelor of Science (Honours)
- Biomedical Sciences S Y Y
- Chemical and Environmental Sciences W Y Y

School of Biomedical Sciences
Bachelor of Science
Bachelor of Science (Honours)
- Ecology and Sustainability W Y Y

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Faculty of Arts

Generalist Degree Programs
Bachelor of Arts – Footscray F Y Y
Bachelor of Arts – St Albans S Y Y

Specialist Degree Programs
Bachelor of Arts (Advocacy & Mediation) F Y Y
Bachelor of Arts (Community Development) – Asia-Pacific Stream S Y Y
Bachelor of Arts (Computer Mediated Art) S Y Y
Bachelor of Arts (Criminal Justice Studies) F Y Y
Bachelor of Arts (Human Services) S Y Y
Bachelor of Arts (International Studies) F Y Y
Bachelor of Arts (Legal Studies) F Y Y
Bachelor of Arts (Multimedia) S Y Y
Bachelor of Arts (Performance and Multimedia) F Y Y
Bachelor of Arts (Professional Writing) S Y Y
Bachelor of Communication (Public Relations) S Y Y
Bachelor of Multimedia Systems K Y Y
Bachelor of Psychology (Arts stream) F Y Y
Bachelor of Psychology (Interpersonal & Organisational) S Y Y
Bachelor of Social Work (Preliminary Year) S Y Y
Bachelor of Social Work S Y Y
Bachelor of Science(Psychology) S Y Y

Combined Degree Programs
Bachelor of Arts/ Bachelor of Business (Information Systems) S Y Y
Bachelor of Arts/ Bachelor of Business (International Trade) F Y Y
Bachelor of Arts (Psychology)
Bachelor of Business (Human Resource Management) F Y Y
Bachelor of Arts/ Diploma of Liberal Arts F Y Y
Bachelor of Business (Marketing)/ Bachelor of Psychology F Y Y
Bachelor of Business (Electronic Commerce)/
Bachelor of Arts (Multimedia) F Y Y
Bachelor of Laws/ Bachelor of Arts

Campus Full-time Part-time
 Bachelor of Applied Science (Human Movement)/
Bachelor of Psychology                  F    Y    Y
Bachelor of Science / Bachelor of Psychology S    Y    Y

Honours Programs
Bachelor of Arts (Honours)                 SF   Y    Y
Bachelor of Arts (Honours) Computer Mediated Art and Multimedia S    Y    Y
Bachelor of Arts (Honours - Psychology)   F    Y    Y
Bachelor of Multimedia Systems (Honours)  F    Y    N
Bachelor of Psychology (Honours)          F    Y    Y
Bachelor of Science (Honours – Psychology) F    Y    Y

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Faculty of Business and Law

School of Accounting and Finance
Bachelor of Business
- Accounting                  F,K1,H1,D3,D8,K1 Y    Y
- Banking and Finance        F,K1,H1 Y    Y
- Strategic and Financial Management    F,K1 Y    Y
- Accounting/ Financial Management    W,K1 Y    N
- Accounting/ Banking and Finance     F    Y    Y
- Accounting/ Information Systems     F    Y    Y
- Accounting/ Electronic Commerce     W    Y    N
- Accounting/ Small Enterprise Management     W,F Y    Y
- Accounting/ Hospitality Management     F    Y    Y
- Accounting/ Commercial Law         F    Y    Y
- Accounting/ Transport and Logistics     W    Y    N
- Banking and Finance/ International Trade     F    Y    Y

Bachelor of Business Combined Degrees
- Bachelor of Business Accounting/ Certificate IV in Information Technology (Dual Award) W    Y    Y
- Fasttrack BBus Accounting/ TAFE Accounting W    Y

School of Applied Economics
Bachelor of Business
- Retail Management            F,K1 Y    Y
- International Trade          F,K1,D6,D3,22,H1 Y    Y
- Transport and Logistics      W    Y    Y
- Global Logistics and Transport W,H1 Y    Y
- Applied Economics            F    Y    Y
- Financial Risk Management    F,K1,H1,D B Y    Y
- Music Industry               F,K1 Y    Y
- Applied Economics/ International Trade     F    Y    Y
- Financial Risk Management/ International Trade     F, DB, H1 Y    Y
- Financial Risk Management/ Electronic Commerce     F    Y    Y
- Financial Risk Management/ Banking and Finance     H1,D3 Y    Y
- Financial Risk Management/ Accounting     H1 Y    Y
- Financial Risk Management/ Global Logistics and Transport     H1,D B Y    Y
- International Trade/ Retail Management     F    Y    Y
- International Trade/ Electronic Commerce     F    Y    Y
- Marketing/ Applied Economics     F    Y    Y
- Marketing/ International Trade     F,K1 Y    Y
- Music Industry/ Marketing     F    Y    Y
- International Business        W    Y    Y
- International Commerce        D3 Y
- Music Industry/ Electronic Commerce     F    Y    Y
- Retail Management/ Marketing     F    Y    Y
- Retail Management/ Electronic Commerce     F    Y    Y
- Transport and Logistics/ Accounting     W    Y    Y
- Transport and Logistics/ Electronic Commerce     W    Y    Y
- Global Logistics and Transport/ International Trade     H1 Y    N
- Global Logistics and Transport/ Accounting     H1 Y    N
- Bachelor of Business (Honours) International Trade     C    Y    Y
- Bachelor of Business (Honours) Applied Economics     C    Y    Y
School of Business

Bachelor of Business
- Hospitality Management F,K1,H1 Y Y
- Tourism Management F,K1,H1 Y Y
- Marketing F,B,K1 Y Y
- Event Management B Y
- Hospitality/ Tourism Management F,H1 Y Y
- Hospitality/ Event Management F Y Y
- Hospitality Management/ Human Resource Management F Y Y
- Marketing/ Hospitality Management F Y Y
- Marketing/ Tourism Management F Y Y
- Marketing/ Event Management B Y
- Marketing/ Electronic Commerce F Y Y
- Hotel, Restaurant and Catering Management F Y Y
- Tourism Management/ Information Systems F Y Y
- Tourism Management/ Event Management F Y Y
- Bachelor of Business (Honours) - Marketing C Y Y

Bachelor of Business Combined Degrees
- BBus Tourism Management/ BA Asian Studies F Y Y
- BA Recreation Management/ BBus Tourism Management F Y Y
- BA Sports Administration/ BBus Marketing B Y Y
- Bachelor of Business Marketing/ Bachelor of Psychology F Y Y
- Bachelor of Business Marketing/ Advanced Diploma of B Y

School of Information Systems

Bachelor of Business
- Information Systems F,K1 Y Y
- Computer Systems Support W,H Y Y
- Computer Systems Management W,H3 Y Y
- Electronic Commerce W,K1 Y Y
- Electronic Commerce/ Transport and Logistics W Y Y
- Bachelor of Business (Honours) Information Systems C Y Y
- Bachelor of Business Engineering/ Electronic Commerce F Y

Bachelor of Business Combined Degrees
- Bachelor of Art/ BBus Information Systems F Y Y
- BA Multimedia/ BBus Electronic Commerce F Y Y
- B.Bus. Electronic Commerce/ Bachelor of Science W Y

School of Law

Bachelor of Laws
- Law F,Q Y Y
- Graduate Entry F,Q Y Y
- Legal Practice Management F,Q Y Y

Bachelor of Business
- Commercial Law F Y Y

Bachelor of Laws Combined Degrees
- Bachelor of Laws/ Bachelor of Arts F,Q Y Y
- Bachelor of Laws/ BBus Accounting F Y Y
- Bachelor of Laws/ BBus Applied Economics F Y Y
- Bachelor of Laws/ BBus Electronic Commerce F Y Y
- Bachelor of Laws/ BBus International Trade F Y Y
- Bachelor of Laws/ BBus Music Industry F Y Y
- Bachelor of Laws/ BBus Marketing F Y Y
- Bachelor of Laws/ BBus Tourism Management F Y Y
- Bachelor of Laws/ Bachelor of Science F Y Y
- Bachelor of Law/ B.Bus, Human Resource Management F Y Y
- Bachelor of Law/ B.BusManagement F Y Y
- Bachelor of Law/ B.BusBanking and Finance F Y
School of Management

**Bachelor of Business**
- Management  
  F,R,D,A,K1  
  Y  
  Y  
- Human Resource Management  
  F,B,K1  
  Y  
  Y  
- Service and Operations Management  
  F,K1  
  Y  
  Y  
- Strategic and Financial Management  
  F  
  Y  
  Y  
- Service and Human Resource Management  
  B  
  Y  
  Y  
- Management/Marketing  
  B,P1  
  Y  
  Y  
- Bachelor of Business (Honours) Management  
  C  
  Y  
  Y  

**Bachelor of Business Combined Degrees**
- BA Psychology/BBus Human Resource Management  
  F  
  Y  
  Y  
- BA Sports Administration/BBus Management  
  B  
  Y  
  Y  

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Faculty of Human Development

**School of Education**

**Bachelor of Arts**
- Computer Mediated Art  
  S  
  Y  
  Y  
- Computer Mediated Art & Multimedia  
  S  
  Y  
  Y  
- Early Childhood Education  
  M  
  Y  
  n/a  
- Youth Studies  
  FP  
  Y  
  Y  

**Bachelor of Education**
- Four-Year Pre-Service Program P-12  
  F,M,B  
  Y  
  n/a  
- Post-Registration (Year 4)  
  F,M,B  
  Y  
  Y  

**Bachelor of Education (Nyerna Studies)**
- Bachelor of Education (Nyerna Studies)  
  E  
  Y  
  Y  
- Bachelor of Arts (Nyerna Studies)  
- Diploma of Community Services – Youth Work  
- Associate Diploma of Arts – Recreation/fitness Leadership  
- Certificate in Occupational Studies – Social and Community Services

**School of Health Sciences**

**Non-Award Courses**
- First Aid in the Workplace Certificate: Level 1 & 2  
  S,I  
  Y  
  Y  
- Certificate of Advanced Airway Management (Pre-hospital)  
  S,I  
  Y  
  Y  
- Certificate in Advanced Airway Management  
  S,I  
  Y  
  Y  
- Certificate in Emergency Intravenous Therapy (Pre-hospital)  
  S,I  
  Y  
  Y  
- Certificate in Venipuncture and Venous Cannulation  
  S,I  
  Y  
  Y  
- Certificate in Emergency Intravenous Therapy  
  S,I  
  Y  
  Y  
- Certificate in Advanced Life Support (Pre-hospital)  
- Certificate in Advanced Life Support  
- Certificate in Semi Automatic External Defibrillation  

**Award Courses**
- Bachelor of Health Science  
- Clinical Dermal Therapies  
  J  
  Y  
  n/a  
- Natural Medicine  
  S,I  
  Y  
  Y  
- Paramedic (3-Year Pre-service)  
  S,I  
  Y  
  Y  
- Paramedic (1-Year Conversion)  
  I  
  Y  
  Y  
- Chinese Medicine (Acupuncture)/ (Chinese Herbal Medicine)  
  S  
  Y  
  n/a  

**Bachelor of Science**
- Clinical Sciences  
  C  
  Y  
  n/a  

**School of Human Movement, Recreation and Performance**

**Non-Award Courses**
- Fitness Instructor Module  
  F  
  n/a  
  Y  
- Aerobic Module  
  F  
  n/a  
  Y  
- Core Unit (Vic Fit)  
  F  
  n/a  
  Y  
- Aqua Module  
  F  
  n/a  
  Y  
- Personal Trainers Module  
  F  
  n/a  
  Y
Children and Adolescent Exercise Module\(^\wedge\) F n/a Y
Exercise to Music\(^\wedge\) F n/a Y

**Award Courses**

**Bachelor of Applied Science**
- Human Movement F Y Y
- Human Movement/ Bachelor of Psychology F Y Y
- Physical Education (Secondary) F Y Y
- Physical Education and Physics\(^\#\) F Y Y

**Bachelor of Arts**
- Performance Studies F Y n/a
- Performance and Multimedia F Y n/a
- Fitness Leadership\(^*\) M Y Y
- Recreation Leadership M F Y Y
- Recreation Management FP Y n/a
- Recreation Management/ Bachelor of Business - Tourism Management FP Y Y
- Sports Administration B Y Y
- Sports Administration/ Bachelor of Business - Management B Y Y
- Sports Administration/ Bachelor of Business - Marketing B Y Y

**Bachelor of Applied Science (Honours)**
- Human Movement F Y n/a

**Bachelor of Arts (Honours)**
- Performance Studies F Y Y
- Recreation Management F Y Y
- Sport Administration B Y Y

**School of Nursing**

**Award Courses**

**Bachelor of Nursing (Pre-Registration)** S Y Y
**Bachelor of Health Science**
- Nursing (Post-Registration) S Y Y
- Nursing (Honours) S Y Y

**Bachelor of Midwifery\(^\#\)** S Y n/a

\(^*\)Continuing Education Courses
\(^\#\)Offered to continuing students only
\(^\#\)Subject to final accreditation

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Postgraduate Courses

Faculty of Science, Engineering and Technology

Centre for Environmental Safety and Risk Engineering

Doctor of Philosophy
Master of Engineering (Research)
Master of Engineering (Coursework)
- Building Fire Safety and Risk Engineering
  Graduate Diploma
- Building Fire Safety and Risk Engineering
  Graduate Certificate
  - Performance-based Building and Fire Codes

Centre for Packaging, Transportation and Storage

Doctor of Philosophy
Master of Engineering (Research)
Graduate Diploma
- Intermodal Freight Systems Management
  Graduate Certificate
  - Intermodal Freight Systems Management

School of Computer Science and Mathematics

Doctor of Philosophy
Master of Engineering (Research)
Master of Science
- Computer Science
- Computer and Mathematical Sciences
- Software Engineering
Graduate Diploma
- Computer Science
- Computer and Mathematical Sciences
- Multimedia Information Networking
- Software Engineering

School of Electrical Engineering

Doctor of Philosophy
Master of Engineering (Research)
Master of Science (Research)
- Microelectronic Engineering
Master of Engineering Science (Coursework)
- Telecommunication Engineering
  Graduate Diploma
- Microelectronic Engineering
- Telecommunication Engineering
  Graduate Certificate
- Microelectronic Engineering

School of Molecular Sciences

Doctor of Philosophy
Master of Science (Research)
Master of Science (Coursework)
- Food Science and Technology

School of Biomedical Sciences

Master of Science
Doctor of Philosophy
# School of Architectural, Civil and Mechanical Engineering

<table>
<thead>
<tr>
<th>Program</th>
<th>Campus</th>
<th>Full-time</th>
<th>Part-time</th>
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</thead>
<tbody>
<tr>
<td>Doctor of Philosophy</td>
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<td>Y</td>
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<tr>
<td>Master of Engineering (Research)</td>
<td>F</td>
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<td>Y</td>
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<tr>
<td>Master of Engineering (Coursework)</td>
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<tr>
<td>- Project Management</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Graduate Diploma</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>- Project Management</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>Graduate Certificate</td>
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</table>

# Sustainability Group

<table>
<thead>
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<th>Program</th>
<th>Campus</th>
<th>Full-time</th>
<th>Part-time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Master of Science (Coursework)</td>
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<td>Y</td>
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<tr>
<td>- Environmental Management</td>
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<tr>
<td>Graduate Diploma</td>
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<td>Y</td>
<td>Y</td>
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<tr>
<td>- Environmental Management</td>
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# Faculty of Arts

## Higher Degrees by Research

<table>
<thead>
<tr>
<th>Program</th>
<th>Campus</th>
<th>Full-time</th>
<th>Part-time</th>
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</thead>
<tbody>
<tr>
<td>Master of Arts by Research</td>
<td>S,F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Doctor of Philosophy by Research</td>
<td>S,F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Master of Social Work by Research</td>
<td>S</td>
<td>Y</td>
<td>Y</td>
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## Postgraduate Programs by Coursework

<table>
<thead>
<tr>
<th>Program</th>
<th>Campus</th>
<th>Full-time</th>
<th>Part-time</th>
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</thead>
<tbody>
<tr>
<td>Graduate Certificate in Asian and Pacific Studies (General Stream)</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Graduate Certificate in Asian and Pacific Studies (Community Development Stream)</td>
<td>S</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Graduate Certificate in Communication and Professional Writing</td>
<td>C</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Graduate Certificate in Arts (History)</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Graduate Certificate in Arts (Politics and International Studies)</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Graduate Certificate of Public Advocacy and Action</td>
<td>S</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>Graduate Diploma in Women's Studies</td>
<td>C</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>Graduate Diploma in Applied Psychology</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Graduate Diploma in Asian and Pacific Studies (Community Development Stream)</td>
<td>S</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Graduate Diploma in Communication and Professional Writing</td>
<td>C</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Graduate Diploma in Counselling</td>
<td>S</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>Graduate Diploma in Arts (History)</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Graduate Diploma in Modern Languages</td>
<td>S,F</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>Graduate Diploma in Arts (Politics and International Studies)</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Graduate Diploma in Psychological Studies</td>
<td>S</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>Graduate Diploma of Public Advocacy and Action</td>
<td>S</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>Graduate Diploma in Women's Studies</td>
<td>C</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>Master in Counselling</td>
<td>S</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>Master of Arts in Asian and Pacific Studies (General Stream)</td>
<td>F</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>Master of Arts in Asian and Pacific Studies (Community Development Stream)</td>
<td>S</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>Master of Arts in Communication and Professional Writing</td>
<td>C</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Master of Arts in Women's Studies</td>
<td>C</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>Master of Applied Psychology</td>
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<td></td>
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</tr>
<tr>
<td>- Community Psychology Stream</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>- Sport Psychology Stream</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Master of Psychoanalysis</td>
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</tr>
<tr>
<td>- Clinical Psychology Stream</td>
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<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>- Clinical Neuropsychology Stream</td>
<td>S</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Master of Public Advocacy and Action</td>
<td>S</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Doctor of Psychology</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Clinical Psychology Stream</td>
<td>S</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>- Clinical Neuropsychology Stream</td>
<td>S</td>
<td>Y</td>
<td>Y</td>
</tr>
</tbody>
</table>
COURSES AT VICTORIA UNIVERSITY IN 2004

Campus Full-time Part-time

Doctor of Applied Psychology

- Community Psychology Stream F Y Y
- Sport Psychology Stream F Y Y
- Health Psychology Stream F Y Y

Note: The details of the programs, courses and subjects set out in this Handbook might change after publication. To ensure that the information about Faculty of Arts courses is still accurate, contact the Faculty of Arts Executive Officer on (03) 9365 2369.

Faculty of Business and Law

Victoria Graduate School of Business

Master of Business Administration C,P1,K1,31 Y Y
Master of Business Administration (International) C
Doctor of Business Administration C,D1,K1,P1 Y Y
Master of Business by Research C Y Y
Doctor of Philosophy C Y Y

School of Accounting and Finance

Graduate Certificate in Accounting C Y Y
Master of Business in Accounting C Y Y
Master of Business in Finance C Y Y
Master of Business in Professional Accounting C,P2,K1 Y Y
Master of Business by Research C Y Y
Doctor of Philosophy C Y Y

School of Applied Economics

Master of Business in Business Economics C Y Y
Master of Business in International Trade C Y Y
Master of Business in International Music & Entertainment Business C Y Y
Graduate Certificate in Statistics C Y Y
Graduate Diploma in Global Logistics and Transport C Y Y
Graduate Certificate in Retail Management (Offshore) P1
Graduate Diploma in Retail Management (Offshore) P1
Master of Business Global Logistics and Transport C,H1 Y Y
Master of Business in Retail Management (Offshore) P1
Master of Business by Research C Y Y
Doctor of Philosophy C Y Y

School of Hospitality, Tourism and Marketing

Master of Business in Hospitality Management C Y Y
Master of Business in Hospitality Management (Professional Practice) C Y Y
Master of Business in Marketing C Y Y
Master of Business in Tourism Management C Y Y
Master of Business in Hospitality and Tourism Marketing C Y Y
Master of Business in Hospitality and Tourism Education C Y Y
Master of Business in Sports Tourism Y Y
Master of Business by Research C Y Y
Doctor of Philosophy C Y Y

School of Information Systems

Graduate Certificate in Enterprise Resource Planning Systems C Y Y
Master of Business, Enterprise Resource Planning Systems C,P,D1 Y Y
Graduate Diploma in Business Computing C,R Y Y
Master of Business in Information Systems C,R Y Y
Master of Information Systems C
Master of Business E-Commerce/Marketing C Y Y
Master of Business by Research C Y Y
Doctor of Philosophy C Y Y

School of Law

Graduate Certificate in Australian Immigration Law C Y Y
Graduate Diploma in Notarial Practice Q Y
Masters in Comparative Commercial Law C Y Y
Masters of Laws C Y Y
Campus  Full-time  Part-time
Master of Regulatory and Criminological Studies  C  Y  Y
Master of Business by Research  C  Y  Y
Doctor of Juridical Science  C,Q  Y  Y
Doctor of Philosophy  C  Y  Y

School of Management
Graduate Diploma in Industrial Relations/HRM  C  Y  Y
Master of Business in Management Practice  C  Y  Y
Master of Business in Event Management  C  Y  Y
Master of Business in Industrial Relations/HRM  C  Y  Y
Master of Business by Research  C  Y  Y
Doctor of Philosophy  C  Y  Y

Sir Zelman Cowan Centre
Graduate Diploma in Notarial Practice  C  Y  Y

Note: The details of the programs, courses and subjects set out in this Handbook might change after publication. To ensure that the information about Faculty of Business and Law courses is still accurate, contact the Faculty of Business and Law Executive Officer on (03) 9688 4471.

Faculty of Human Development

Faculty Courses
Graduate Diploma in Dementia Care and Service  C,Z  Y  Y
Graduate Program in Aged Services Management
- Graduate Diploma in Aged Services Management  C,Z  Y  Y
- Master of Health Science – Aged Services Management  C  Y  Y

School of Education
Graduate Certificate in Teaching Studies of Asia  F  Y  Y
Graduate Diploma in Secondary Education  F  Y  Y
Graduate Program in Education for Professional Development
- Graduate Certificate in Education for Professional Development  F  n/a  Y
- Graduate Diploma in Education for Professional Development  F  n/a  Y
Graduate Program in Education and Training
- Graduate Certificate in Education and Training  F  n/a  Y
- Graduate Diploma in Education and Training  F  Y  Y
- Master of Education – Education and Training  F  Y  Y
Graduate Program in TESOL & Literacy
- Graduate Certificate in TESOL  F  Y  Y
- Graduate Certificate in Literacy  F  Y  Y
- Graduate Diploma in TESOL  F,V  Y  Y
- Graduate Diploma in TESOL and Literacy  F  Y  Y
- Master of TESOL  F,V  Y  Y
- Master of TESOL and Literacy  F  Y  Y
Graduate Program in Tertiary Education
- Graduate Certificate in Tertiary Education  F  n/a  Y
- Graduate Diploma in Tertiary Education  F  Y  Y
Graduate Program in Experiential Learning & Development
- Graduate Certificate in Experiential Learning & Development  F  n/a  Y
- Graduate Diploma in Experiential Learning & Development  F  Y  Y
- Master of Education – Experiential Learning & Development  F  Y  Y
Master of Education (by Research)
- Doctor of Education  F  Y  Y
- Doctor of Philosophy  F  Y  Y

School of Health Sciences
Graduate Diploma in Clinical Chinese Medicine  S  Y  Y
Graduate Diploma in Complementary Therapies  S  Y  Y
Graduate Diploma in Prepared Chinese Medicine  C,S  Y  Y
Graduate Diploma in Western Herbal Medicine  C  Y  Y
Graduate Program in Paramedicine and Pre Hospital Care
<table>
<thead>
<tr>
<th>Course Title</th>
<th>Campus</th>
<th>Full-time</th>
<th>Part-time</th>
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<td><strong>COURSES AT VICTORIA UNIVERSITY IN 2004</strong></td>
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<tr>
<td>- Graduate Certificate in Aeromedical Care</td>
<td>Z,I</td>
<td>Y</td>
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<tr>
<td>- Graduate Certificate in Aeromedical Rescue &amp; Retrieval</td>
<td>Z,I</td>
<td>Y</td>
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<tr>
<td>- Graduate Certificate in Emergency Service Education#</td>
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<tr>
<td>- Graduate Certificate in Emergency Service Management#</td>
<td>Z,I</td>
<td>Y</td>
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<tr>
<td>- Graduate Certificate in Hyperbaric Medicine</td>
<td>Z,I</td>
<td>Y</td>
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<tr>
<td>- Graduate Certificate in Intensive Care Paramedic</td>
<td>Z,I</td>
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<td>- Graduate Certificate in Paramedic Emergency Management#</td>
<td>Z,I</td>
<td>Y</td>
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<tr>
<td>- Graduate Certificate in Pre-Hospital Care</td>
<td>Z,I</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>- Graduate Diploma in Paramedics</td>
<td>Z,I</td>
<td>Y</td>
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<tr>
<td>- Graduate Diploma in Pre-Hospital Care</td>
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<td><strong>Master of Health Science</strong></td>
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<tr>
<td>- Osteopathy</td>
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<td>- Osteopathy (for medical practitioners)</td>
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<tr>
<td>- (by Coursework)</td>
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<tr>
<td>- (by Research)</td>
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<td>Y</td>
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<tr>
<td><strong>School of Human Movement, Recreation and Performance</strong></td>
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<tr>
<td>Graduation Program in Exercise and Sport Sciences</td>
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<tr>
<td><strong>Graduate Program in Ageing, Disability and Recreation Management</strong></td>
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<tr>
<td>- Graduate Certificate in Ageing, Disability &amp; Leisure</td>
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<tr>
<td>- Graduate Certificate in Ageing, Disability &amp; Recreation Management</td>
<td>F</td>
<td>Y</td>
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<tr>
<td>- Graduate Diploma in Ageing, Disability &amp; Recreation Management</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>- Master of Arts - Ageing, Disability &amp; Recreation Management</td>
<td>F</td>
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<tr>
<td><strong>Graduate Program in Loss and Grief</strong></td>
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<tr>
<td>- Graduate Certificate in Loss and Grief Education</td>
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<tr>
<td>- Graduate Certificate in Loss and Grief Counselling</td>
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<tr>
<td>- Graduate Diploma in Loss and Grief Counselling</td>
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<tr>
<td><strong>Graduate Program in Sport and Recreation Management</strong></td>
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<tr>
<td>- Graduate Certificate in Sport &amp; Recreation Management</td>
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<td>Y</td>
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<tr>
<td>- Graduate Certificate in Sport &amp; Recreation Management/Operations</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>- Graduate Diploma in Sport &amp; Recreation Management</td>
<td>F</td>
<td>Y</td>
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</tr>
<tr>
<td>- Master of Arts - Sport &amp; Recreation Management (by coursework)</td>
<td>F</td>
<td>Y</td>
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<tr>
<td><strong>Graduate Program in Sport Business</strong></td>
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<tr>
<td>- Graduate Diploma in Sport Business</td>
<td>C</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>- Master of Sport Business</td>
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<td>Y</td>
<td>Y</td>
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<tr>
<td><strong>Graduate Program in Exercise Rehabilitation</strong></td>
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<tr>
<td><strong>Graduate Diploma in Exercise for Rehabilitation</strong></td>
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<tr>
<td><strong>Master of Applied Science - Exercise Rehabilitation</strong></td>
<td>F</td>
<td>Y</td>
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<tr>
<td><strong>Master of Applied Science</strong></td>
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<tr>
<td>- Human Performance (by coursework)</td>
<td>F</td>
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<tr>
<td>- (by Research)</td>
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<tr>
<td><strong>Master of Arts (by Research)</strong></td>
<td>FP</td>
<td>Y</td>
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<tr>
<td><strong>Doctor of Philosophy</strong></td>
<td>C,F</td>
<td>Y</td>
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*Two subjects will be taught at the St Albans Campus.

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<tr>
<th>School of Nursing</th>
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<tbody>
<tr>
<td>Graduation Diploma in Substance Abuse Studies</td>
<td>S</td>
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<tr>
<td><strong>Master of Nursing</strong></td>
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<tr>
<td>- Graduate Certificate in Cardiothoracic Nursing</td>
<td>S</td>
<td>Y</td>
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<tr>
<td>- Graduate Certificate in Cancer Nursing</td>
<td>S</td>
<td>Y</td>
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<tr>
<td>- Graduate Certificate in Emergency Nursing</td>
<td>S</td>
<td>Y</td>
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<tr>
<td>- Graduate Certificate in Geriatric Nursing#</td>
<td>S</td>
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<tr>
<td>- Graduate Certificate in Neuroscience Nursing</td>
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<tr>
<td>- Graduate Certificate in Orthopaedic Nursing</td>
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<tr>
<td>- Graduate Certificate in Paediatric Nursing</td>
<td>S</td>
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<tr>
<td>- Graduate Certificate in Palliative Care Nursing</td>
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<tr>
<td>- Graduate Diploma in Cardiothoracic Nursing</td>
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<tr>
<td>- Graduate Diploma in Cancer Nursing</td>
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<td>Y</td>
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<tr>
<td>- Graduate Diploma in Emergency Nursing</td>
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<td>Y</td>
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</table>

*Campus: F = Footscray, S = Southbank, C = St Albans, n/a = Not Available.
- Graduate Diploma in Gerontic Nursing#  S  Y  Y  Y
- Graduate Diploma in Neuroscience Nursing  S  Y  Y
- Graduate Diploma in Orthopaedic Nursing  S  Y  Y
- Graduate Diploma in Paediatric Nursing  S  Y  Y
- Graduate Diploma in Palliative Care Nursing  S  Y  Y
Master of Midwifery
  incorporating
- Graduate Diploma in Midwifery  S  Y  Y
Master of Nursing (by Research)  S  Y  Y
Doctor of Philosophy  S  Y  Y
#Subject to final accreditation

**Note:** The details of the programs, courses and subjects set out in this Handbook might change after the date of publication. To ensure that information about Faculty of Human Development courses is still accurate, contact the Faculty of Human Development Executive Officer on (03) 9688 4164.
TAFE Courses at Victoria University in 2004

Strategic Development
Centre for Curriculum, Innovation and Development
Course in ICT Skills for Teachers (21335VIC)
Certificate IV in Assessment and Workplace Training (BSZ40198)
Diploma in Training and Assessment Systems (BSZ50198)
Certificate IV in Vocational Education and Training (15550VIC)
Diploma of Vocational Education and Training (15560VIC)
Graduate Certificate in Vocational Education and Training (21205VIC)
Graduate Certificate in VET in Schools Implementation (21102VIC)

School of Business, Hospitality and Personal Services

Administrative and Legal Studies Department
Certificate III in Business (Legal Administration) (BSA30200)
Certificate IV in Business (Legal Services) (BSA40200)
Advanced Diploma of Business (Legal Practice) (20025VIC)
Diploma of Business Administration (BSB50201)
Certificate IV in Business Administration (BSB40201)
Certificate III in Business Administration (BSB30201)
Certificate II in Business (BSB20101)
Certificate III in Business (BSB30101)
Certificate IV in Business (BSB40101)
Diploma of Business (BSB50101)
Certificate III in Business (Recordkeeping) (BSB30401)
Certificate IV in Business (Recordkeeping) (BSB40301)
Diploma of Business (Recordkeeping) (BSB50301)
Certificate III in Government (PSP30199)

Financial Services Department
Advanced Diploma of Accounting (FNB60202)
Diploma of Accounting (FNB50202)
Certificate in Real Estate for Agents’ Representatives (2004AAA)
The Certificate IV in Business (Estate Agency Practice) (2404ADA)

Hospitality and Tourism Department
Certificate I in Hospitality (Operations) (THH11002)
Certificate I in Hospitality (Kitchen Operations) (THH11102)
Certificate II in Hospitality (Operations) (THH21002)
Certificate II in Hospitality (Kitchen Operations) (THH21102)
Certificate III in Hospitality (Commercial Cookery) (THH31002)
Certificate III in Hospitality (Catering Operations) (THH32002)
Certificate III in Hospitality (Operations) (THH33002)
Certificate IV in Hospitality (Superior) (THH43002)
Diploma of Hospitality Management (THH51002)
Advanced Diploma of Hospitality Management (THH60202)
Certificate II in Tourism (Operations) (THT20502)
Certificate III in Tourism (Retail Travel Sales) (THT30202)
Certificate III in Tourism (Visitor Information Services) (THT30602)
Certificate III in Tourism (Guiding) (THT30902)
Certificate III in Tourism (Operations) (THT31002)
Certificate IV in Tourism (Sales and Marketing) (THT40102)
Certificate IV in Tourism (Operations) (THT40202)
Certificate IV in Tourism (Guiding) (THT40302)
Certificate IV in Tourism (Natural and Cultural Heritage) (THT40402)
Diploma of Tourism (Marketing and Product Development) (THT50102)
Diploma of Tourism (Operations Management) (THT50202)
Advanced Diploma of Tourism Management (THT60102)

Management and Marketing Department
Certificate III in Business (Frontline Management) (BSB30501)
Certificate IV in Business (Frontline Management) (BSB41001)
Diploma of Business (Frontline Management) (BSB51001)
Certificate IV in Business (Human Resources) (BSB40801)
Diploma of Business (Human Resources) (BSB50801)
Advanced Diploma of Business (Human Resources) (BSB60301)
Certificate IV in Business Management (BSB41101)
Graduate Certificate in Management (21365VIC)
Diploma of Business Management (BSB50401)
Advanced Diploma of Business Management (BSB60201)
Advanced Diploma of Business (Operations Management) (20055VIC)
Diploma of Business (Operations Management) (20053VIC)
Certificate IV in Business (Operations Management) (20051VIC)
Certificate IV in Business (Advertising) (BSB40601)
Diploma of Business (Advertising) (BSB50601)
Advanced Diploma of Business (Advertising) (BSB60501)
Certificate III in Business (Sales) (BSB30301)
Certificate IV in Business (Marketing) (BSB40701)
Diploma of Business (Marketing) (BSB50701)
Advanced Diploma of Business (Marketing) (BSB60601)
Advanced Diploma of Business (International Business) (20055VIC)
Diploma of Business (International Trade) (20053VIC)
Certificate IV in Business (International Trade) (20051VIC)
Advanced Diploma of Business (Public Relations) (20055VIC)
Certificate IV in Business (BSB40101)
Diploma of Business (BSB50101)
Certificate IV in Business Development (BSB40501)
Diploma of Business Development (BSB50501)
Advanced Diploma of Business Development (BSB60401)
Graduate Certificate in Management Development (Education and Training) (2804ABB)

Personal Services Department
Certificate II in Modelling (21456VIC)
Certificate II in Nail Technology (WRB20199)
Certificate III in Beauty (WRB30199)
Diploma of Beauty Therapy (WRB30199)
Diploma of Entertainment (Make-Up) (CUE50798)
Certificate IV in Entertainment Make-Up (CUE40898)
Diploma of Remedial Massage (HLT50302)
Certificate II in Hairdressing (WRH20100) (Pre-Apprenticeship)
Certificate III in Hairdressing (WRH30100)
Certificate IV in Hairdressing (WRH40100)
Diploma of Hairdressing Salon Management (WRH50100)
Advanced Diploma of Naturopathy (HLT60502)

Western Business Enterprise Centre
Certificate II in Security (Guarding) (PRS20198)
Certificate III in Security (Guarding) (PRS30198)
Certificate IV in Business (Small Business Management) (BSB40401)
Certificate II in Wholesale Operations (WRW20101)
Certificate III in Wholesale Operations (WRW30101)
Certificate IV in Wholesale Management (WRW40101)
Diploma of Wholesale Management (WRW50101)
Diploma of Retail Management (WRW50102)
Certificate IV in Retail Management (WRW40102)
Certificate III in Retail Supervision (WRW30102)
Certificate III in Retail Operations (WRW30202)
Certificate II in Retail Operations (WRW20102)
Certificate II in Retail Cosmetic Assistant (WRW20399)

School of Engineering, Construction and Industrial Skills

Automotive Technology Unit
Certificate II in automotive Technology (21110VIC)
Certificate I in Automotive (AUR10199)
Certificate II in Automotive (Administration - Clerical) (AUR20199)
Certificate II in Automotive (Mechanical) (AUR20799 – AUR21699)
Certificate II in Automotive (Vehicle Body) (AUR22499 – AUR22999)
Certificate II in Automotive (Sales) (AUR21999 – AUR22399)
Certificate II in Marine (AUR23199 – AUR23299)
Certificate II in Bicycles (Services) (AUR23099)
Certificate II in Outdoor Power Equipment (Services) (AUR23399)
Certificate III in Automotive (Sales) (AUR31399 – AUR31499)
Certificate III in Automotive (Vehicle Body) (AUR31699 – AUR31899)
Certificate III in Automotive (Mechanical) (AUR30299 – AUR31299)
Certificate IV in Automotive (AUR40199)

Building and Construction Department
Certificate I in Building (15562VIC) (Pre-Apprenticeship)
Certificate II in Building (15563VIC) (Traineeship)
Certificate III in Building (15564VIC) (Apprenticeship)
Certificate I in Construction (Off-site) (BCF10100)
Certificate II in Off-Site Construction (BCF20100)
Certificate III in Off-Site Construction (Joinery-Timber/Aluminium/Glass) (BCF30200)
Certificate I in Construction (Off-Site) (BCG10198)
Certificate in Building and Construction (21303VIC) (Bricklaying - Pre-Apprenticeship)
Certificate III in General Construction (Bricklaying/Blocklaying) (BCG30698) (Apprenticeship)
Certificate II in Building and Construction (21304VIC) (Carpentry - Pre-Apprenticeship)
Certificate III in General Construction (Carpentry - Framework/Finishing) (BCG30798) (Apprenticeship)
Certificate II in Furnishing (Furniture Manufacturing Pre-Apprenticeship) (12905VIC) (Cabinet Making)
Certificate III in Furnishing (Wood Machining, Cabinet Making & Furniture Polishing) (21279VIC)
Certificate III in Furniture Making (Cabinet Making) (LMF30402)
Certificate III in Furniture Making (Wood Machining) (LMF30502)
Certificate II in Furniture Making (LMF20302)
Course in Building and Engineering Trades Orientation (3113TNWB)
Certificate IV in Building (SA3477)
Diplomas of Building (SA3475)
Certificate IV in Residential Drafting (40357SA)
COURSES AT VICTORIA UNIVERSITY IN 2004

Diploma of the Built Environment (SA3472)
Diploma of Building Surveying (SA3473)
Diploma of Building Design and Technology (40356SA)
Advanced Diploma of Building Design and Project Administration (40355SA)

Building Services and Special Trades Department
Certificate II in Building and Construction (21390VIC) [Painting & Decorating Pre-apprenticeship]
Certificate III in General Construction (Painting & Decorating)(BCG 30498)
Certificate I in Building & Construction (Plumbing)(2102ABC)
Certificate III in Plumbing and Gasfitting (20065VIC)
Certificate IV in Plumbing (Services Design) (2402AD)
Certificate II in Sign Industry (21398VIC)
Certificate III in Off-Site Construction (Sign Writing/Computer Operations)(BCF30700)
Certificate IV in Sign Technology (21399VIC)
Course in Building and Engineering Trades Orientation (3113TNWB)
Certificate III in Electrotechnology Systems Electrician (UIT11599)
Certificate IV in Electrical (2406ANC) [Motor Control]

Computer Systems and Electronics Department
Certificate II in Electrotechnology Servicing (UTE20502)
Certificate III in Electrotechnology Communications (UTE30402)
Certificate III in Electrotechnology Communications (UTE30499)
Certificate III in Electrotechnology Computer Systems (UTE30599)
Certificate III in Electrotechnology Entertainment and Servicing (UTE30702)
Certificate III in Electrotechnology Entertainment and Servicing (UTE30799)
Advanced Diploma of Computer Systems Engineering (UTE60109)
Advanced Diploma of Electronic Engineering (UTE60399)

Engineering Technology Department
Advanced Diploma of Engineering Technology (Principal Technical Officer) (14309VIC) [Civil]
Advanced Diploma of Engineering Technology (20020VIC) [Civil]
Diploma of Engineering Technology (20019VIC) [Civil]
Certificate I in Engineering Technology (11409VIC)
Certificate II in Engineering (Production) (MEM20198)
Certificate II in Engineering (Production Technology) (MEM20298)
Certificate III in Engineering (Production Systems) (MEM30198)
Certificate III in Engineering (Technician) (MEM30598)
Certificate III in Engineering (Mechanical Trade) (MEM30298)
Certificate IV in Engineering Technology (20018VIC)
Advanced Diploma of Engineering Technology (20020VIC)
Diploma of Engineering Technology (20019VIC) [Streams in Mechanical, Manufacturing & Mechatronics]
Advanced Diploma of Engineering Technology (Principal Technical Officer) (14309VIC) [Streams in Mechanical, Manufacturing & Mechatronics]
Certificate II in Automotive Manufacturing (AUM20100)
Certificate III in Automotive Manufacturing – Frontline Management (AUM30100)
Certificate IV in Automotive Manufacturing – Frontline Management (AUM40100)
Certificate I in Engineering (METI0198)
Certificate II in Engineering – Production (MEM20198F)
Certificate II in Engineering – Production Technology (MEM20298F)
Certificate III in Engineering – Production (MEM30198F)
Certificate III in Engineering – Fabrication Trade (MEM30398) [Light & Heavy]
Certificate IV in Engineering Technology (20018VICF)
Diploma of Engineering Technology (20019VICF) [Fabrication/Supervision, Inspection]
Advanced Diploma of Engineering Technology (20020VICF) [Fabrication/Supervision, Inspection]

Industrial Skills Training Centre
Certificate III in Civil Construction (Plants) (BCC30198)
Certificate III in General Construction (BCG31398)
Certificate I in Transport and Distribution (Administration) (TDT11102)
Certificate II in Transport and Distribution (Administration) (TDT21102)
Certificate III in Transport and Distribution (Administration) (TDT31102)
Certificate IV in Transport and Distribution (Administration) (TDT41102)
Certificate I in Transport and Distribution (Warehousing and Storage) (TDT10102)
Certificate II in Transport and Distribution (Warehousing and Storage) (TDT20102)
Certificate III in Transport and Distribution (Warehousing and Storage) (TDT30102)
Certificate IV in Transport and Distribution (Warehousing and Storage) (TDT40102)
Course in Taxi Driving (21387VIC)
Certificate I in Transport and Distribution (Road Transport) (TDT10202)
Certificate II in Transport and Distribution (Road Transport) (TDT20202)
Certificate III in Transport and Distribution (Road Transport) (TDT30202)
Certificate IV in Transport and Distribution (Road Transport) (TDT40202)

Diploma of Logistics Management (TDT51002)
Advanced Diploma of Logistics Management (TDT61002)
Certificate I in Transport and Distribution (Mobile Crane Operations) (TDT30902)
Certificate IV in Transport and Distribution (Mobile Crane Operations) (TDT40902)
Certificate III Motor Vehicle Driver Trainer (Car) (21370VIC)
Certificate III in Motor Vehicle Driver Trainer (Heavy Vehicles) (21381VIC)
Certificate I in Transport and Distribution (Rail Infrastructure) (TDT10702)
Certificate II in Transport and Distribution (Rail Infrastructure) (TDT20702)
Certificate III in Transport and Distribution (Rail Infrastructure) (TDT30702)
Certificate IV in Transport and Distribution (Rail Infrastructure) (TDT40702)
Certificate I in Transport and Distribution (Rail Operations)(TDT10402)
Certificate II in Transport and Distribution (Rail Operations)(TDT20402)
Certificate III in Transport and Distribution (Rail Operations)(TDT30402)
Certificate IV in Transport and Distribution (Rail Operations)(TDT40202)
Certificate I in Transport and Distribution (Stevedoring) (TDT10302)
Certificate II in Transport and Distribution (Stevedoring) (TDT20302)
Certificate III in Transport and Distribution (Stevedoring) (TDT30302)
Certificate IV in Transport and Distribution (Administrative)(TDT41102)
Certificate I in Funeral Services (WFS10202)
Certificate II in Funeral Services (Gravedigging, Grounds & Maintenance) (WFS20402)
Certificate III in Funeral Services (Gravedigging, Grounds & Maintenance) (WFS30402)
Course in Rigging - Basic
Course in Rigging - Intermediate
Course in Rigging - Advanced
Course in Scaffolding - Basic
Course in Scaffolding - Limited Height
Course in Scaffolding - Intermediate
Course in Scaffolding - Advanced
Course in Dogging
Course in Safe Lifting (load slinging)
Course in Elevating Work Platform
Course in Mobil Cranes (Slewing & Non Slewing); Vehicle Loading
Course in Overhead Travelling Crane
Course in Earthmoving - Earthmoving Equipment Operator; Front-End Loader; Backhoe; Excavator; Skid Steer Loader
Course in Basic Grading
Course in Trench Shoring and Safety
Courses in Forklift Operating
Course in Order Picker
Course in Light Rigid Truck
Course in Medium Rigid Truck
Course in Heavy Rigid Truck
Course in Heavy Combination Truck
Course in Multi-Combination Truck
Dangerous Goods Licence Training
School Driver Education Program
Defensive/Advanced Driving
VicRoads Heavy Vehicle Administration Course
VicRoads Interception Techniques

School of Further Education, Arts and Employment Services

Adult Literacy and Work Education Department
Certificate I in General Education for Adults (Introductory) (21249VIC)
Certificate I in General Education for Adults (21250VIC)
Certificate II in General Education for Adults (21251VIC)
Certificate III in General Education for Adults (21252VIC)
Victorian Certificate of Applied Learning (Foundation) (21352VIC)
Victorian Certificate of Applied Learning (Intermediate) (21353VIC)
Victorian Certificate of Applied Learning (Themed) (21353VICA)
Certificate I in Media (CUF10101)
Certificate I in Vocational Studies (Media)(21263VIC)
Certificate I in Vocational Studies (Transport and Distribution)(15598VIC)
Diploma of Further Education (21015VIC)
Certificate IV in Further Education (21014VIC)
Certificate I in Work Education (21108VIC)
Certificate II in Workplace Practices (300640LD)
Certificate I in Transition Education(15494VIC)
Course in Concurrent Study(21204VIC)
Certificate I in Laundry Operations (LMT10800)
Certificate II in Laundry Operations (LMT21400)
Certificate III in Laundry Operations (LMT31100)
Certificate I in Dry Cleaning Operations (LMT11000)
Certificate II in Dry Cleaning Operations (LMT21500)
Certificate III in Dry Cleaning Operations (LMT31200)

Arts, VCE and Preparatory Programs
Certificate IV in Professional Writing and Editing (21123VIC)
Diploma of Arts (Professional Writing and Editing) (21124VIC)
Certificate I in English Language Literacies (21047VIC)
Certificate II in English Language Literacies (21048VIC)
Course in Women’s Access (14795VIC)
Course in Gateway to Nursing and the Health Sciences (21379VIC)
Course in Preparation for Tertiary Studies (Arts)(21380VIC)
Certificate I in ESL Access (14376VIC)
Certificate II in ESL Access (14379VIC)
COURSES AT VICTORIA UNIVERSITY IN 2004

**Certificate I in General Education for Adults (Introductory) (21249VIC)**
**Certificate I in General Education for Adults (21250VIC)**
**Certificate II in General Education for Adults (21251VIC)**
**Diploma of Liberal Arts (21220VIC)**
**Certificate IV in Liberal Arts (21219VIC)**
**Victorian Certificate of Applied Learning (Foundation) (21352VIC)**
**Victorian Certificate of Applied Learning (Intermediate) (21353VIC)**
**Victorian Certificate of Applied Learning (Themed) (21353VICA)**
**Victorian Certificate of Education (2200LZV)**

**Language Studies Department**
Certificate II in ESL (Academic Purposes)(14372VIC)
Certificate III in ESL (Academic Purposes)(14373VIC)
Certificate IV in ESL (Academic Purposes)(14374VIC)
Certificate II in ESL (Vocational Purposes)(14375VIC)
Certificate III in ESL (Vocational Purposes)(14376VIC)
Certificate III in ESL (Vocational Purposes)(14377VIC) [Aged Care Work]
Certificate IV in ESL (Vocational Purposes)(14378VIC)
Certificate I in ESL Access (14379VIC)
Certificate II in ESL Access (14380VIC)
Certificate IV in ESL Access (14381VIC)
Course in Concurrent Study(21204VIC)
Course in Preliminary Spoken and Written English (90989NSW)
Certificate I in Spoken and Written English (90994NSW)
Certificate II in Spoken and Written English (90993NSW)
Certificate III in Spoken and Written English (90992NSW)

**Library and Cultural Studies Unit**
Diploma of Library and Information Services (CUL50199)
Certificate III in Library and Information Services (CUL30199)
Certificate II in Museum Practice (CUL20299)

**Music Department**
Certificate IV in Music(CUS40101)
Certificate IV in Music Industry (Technical Production)(CUS40201)
Certificate IV in Music Industry (Business) (CUS40301)
Diploma of Music (CUS50101)
Diploma of Music Industry (Technical Production) (CUS50201)
Diploma of Music Industry (Business)(CUS50301)

**Visual Arts, Design and Multimedia Department**
Advanced Diploma of Arts (Graphic Design) (12862VIC)
Diploma of Arts (Graphic Arts) (12863VIC)
Certificate IV in Arts (Applied Design) (15727VIC)
Advanced Diploma of Multimedia (CUF60501)
Diploma of Multimedia (CUF50701)
Certificate IV in Multimedia (CUF40801)
Certificate III in Multimedia (CUF30601)
Certificate II in Multimedia (CUF20601)
Diploma of Arts (Visual Art) (12857VIC)

**School of Human Services, Science and Technology**

**Child Studies Department**
Advanced Diploma of Community Services (Children’s Services)(CHC50399)
Certificate IV in Community Services (Children’s Services)(CHC40399)
Certificate III in Community Services (Children’s Services)(CHC30399)
Certificate II in Community Services (Children’s Services)(CHC20399)

**Health Services Department**
Certificate IV in Health (Nursing) (21358VIC)
Course in Cardiopulmonary Resuscitation (20003VIC)
Course in Emergency First Aid (20004VIC)
Course in Basic First Aid (20005VIC)
Course in Paediatric Aid (20006VIC)

**Information Technology Department**
Certificate I in Information Technology (ICA10101)
Certificate III in Information Technology (Software Applications)(ICA30199)[Web Pages]
Certificate III in Information Technology (General) (ICA30299)
Certificate III in Information Technology (Network Administration)(ICA30399)
Certificate IV in Information Technology (21103VIC)
Certificate IV in Information Technology (Network Management) (ICA40399)
Certificate IV in Information Technology (Client Support) (ICA40199)
Certificate IV in Information Technology (Database Administration) (ICA40299)
Certificate IV in Information Technology (Programming) (ICA40699)
Certificate IV in Information Technology (Technical Support) (ICA40599)
Certificate IV in Information Technology (Website Administration) (ICA41001)
Certificate IV in Information Technology (Website Design) (ICA41101)
Diploma of Information Technology (Computer Science) (21378VIC)
Diploma of Information Technology (Software Development) (ICA50299)
Diploma of Information Technology (Specialising in Multimedia) (21104VIC)
Dual Diploma – Diploma of Information Technology (Website Development) (ICA50601) and Diploma of Information Technology (Internetworking) (ICA50701)

Science and Biotechnology Department
Certificate III in Science (21238VIC)
Certificate IV in Science (21239VIC)
Certificate III in Animal Technology (QLD3757)
Certificate IV in Animal Technology (2411ARC)
Diploma of Applied Science (Animal Technology) (QLD3522)
Certificate II in Animal Studies (RUV20198)
Certificate III in Animal Studies (RUV30198)
Certificate IV in Veterinary Nursing (RUV40198)
Certificate I in Conservation and Land Management (RTD10102)
Certificate II in Conservation and Land Management (RTD20102)
Certificate III in Conservation and Land Management (RTD30102)
Certificate IV in Conservation and Land Management (RTD40102)
Diploma of Conservation and Land Management (RTD50102)
Advanced Diploma of Conservation and Land Management (RTD60102)
Certificate III in Laboratory Skills (PML30199)
Certificate IV in Laboratory Techniques (PML40199)
Diploma of Laboratory Technology (PML50199)
Diploma of Laboratory Technology (Process Manufacturing Testing) (PML50199)
Diploma of Laboratory Technology (Pathology Testing) (PML50199)
Diploma of Laboratory Technology (Biological and Environmental Testing) (PML50199)
Diploma of Laboratory Technology (Food Testing) (PML50199)
Advanced Diploma of Laboratory Operations (PML60199)
Certificate I in Horticulture (RUH10198)
Certificate II in Horticulture (Arboriculture) (RUH20298)
Certificate II in Horticulture (Floriculture) (RUH20398)
Certificate II in Horticulture (Landscape) (RUH20498)
Certificate II in Horticulture (Nursery) (RUH20598)
Certificate II in Horticulture (Parks & Gardens) (RUH20698)
Certificate II in Horticulture (Production) (RUH20898)
Certificate II in Horticulture (Turf Management) (RUH20798)
Certificate III in Horticulture (RUH30198)
Certificate III in Occupational Health & Safety (QLD1891)
Certificate IV in Occupational Health & Safety (QLD1892)
Diploma of Occupational Health & Safety (QLD1891)
Certificate IV in Meat Processing (Leadership) (MTM40100)
Certificate IV in Meat Processing (Quality Assurance) (MTM40300)
Diploma of Meat Processing (MTM50100)
Advanced Diploma of Meat Processing (MTM60100)
Certificate II in Local Government (Environmental Health and Regulation) (LGA20200)
Certificate III in Local Government (Environmental Health and Regulation) (LGA30200)
Diploma of Local Government (Environmental Health and Regulation) (LGA50300)
Advanced Diploma of Local Government (Environmental Health and Regulation) (LGA60300)
Certificate I in Food Processing (Plant Baking) (FD10398)
Certificate II in Food Processing (Plant Baking) (FD20398)
Certificate III in Food Processing (Plant Baking) (FD30398)
Certificate I in Process Plant Skills (PMA10198)
Certificate II in Process Plant Operations (PMA20198)
Certificate III in Process Plant Operations (PMA30198)
Certificate I in Food Processing (FD10198)
Certificate III in Food Processing (FD30198)
Certificate IV in Food Technology (11893VIC)
Diploma of Food Technology (2506ACK)
Certificate I in Pharmaceutical Manufacturing (FD10298)
Certificate II in Pharmaceutical Manufacturing (FD20298)
Certificate III in Pharmaceutical Manufacturing (FD30298)
Certificate III in Health Service Assistance (Hospital/Community Health Pharmacy Assistance) (HLT31402)
Courses in Lubrication (21010VIC)
Certificate IV in Assessment and Workplace Training (BSZ40198)

Social and Community Studies Department
Certificate III in Community Services (Disability Work) (CHC30799)
Certificate IV in Community Services (Disability Work) (CHC40799)
Advanced Diploma of Community Services (Disability Work) (CHC30899)
Certificate II in Community Services (Community Work) (CHC20499)
Certificate III in Community Services (Community Work) (CHC30699)
Diploma of Community Services (Community Work) (CHC30999)
Certificate III in Community Services (Aged Care Work) (CHC30199)
Certificate IV in Community Services (Aged Care Work) (CHC40199)
Diploma of Community Services (Welfare Studies) (2507ABC)
Advanced Diploma of Justice (21214VIC)
Diploma of Justice (21212VIC)
Certificate IV in Justice (21212VIC)
Diploma of Community Services (Youth Work) (CHC50999)
Diploma of Community Services (Alcohol and Other Drugs Work) (CHC50299)
Certificate II in Home Support Cleaning (21186VIC)
Course in Palliative Care Awareness (3113GWD50)
Certificate II in Asset Maintenance (Cleaning Operations) (PRM20198)

**Sport, Recreation and Performance Department**
- Certificate II in Fitness (SRF20201)
- Certificate III in Fitness (SRF30201)
- Certificate IV in Fitness (SRF40201)
- Certificate II in Outdoor Recreation (SRO20299)
- Certificate II in Sport (Career Oriented Participation) (SRS20299)
- Certificate II in Sport and Recreation (SRO20199)
- Certificate III in Sport and Recreation (SRO30199)
- Certificate III in Sport and Recreation (SRO30103)
- Certificate IV in Sport and Recreation (SRO40103)
- Diploma of Sport and Recreation (SRO50103)
- S Advanced Diploma of Sport and Recreation (SRO60103)
- Certificate II in Community Recreation (SRC20201)
- Certificate III in Community Recreation (SRC30201)
- Certificate IV in Community Recreation (SRC40201)
- Diploma of Community Recreation (SRC50201)
- S Certificate IV in Sport and Recreation (SRO40199)
- Diploma of Sport and Recreation (SRO50199)
- Certificate IV in Sports (Development) (SRS40399)
- Diploma of Sport (Development) (SRS50399)
- S Certificate IV in Sports (Development) (SRS40503)
- Diploma of Sports (Development) (SRS50503)
- Graduate Certificate in Career Counselling for Elite Performers (Dance, Music, Sport) (21237VIC)
- Diploma of Arts (Small Companies and Community Theatre) (21052VIC)