Contents

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

Faculty of Science, Engineering and Technology ................................................................. 7
Research ........................................................................................................................................ 7
The Facilities of the Faculty ......................................................................................................... 9
Secondary School Programs ......................................................................................................... 10
Dean’s Scholarships ...................................................................................................................... 10
Postgraduate Scholarships ......................................................................................................... 10
Alternative Entry ......................................................................................................................... 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

Undergraduate Studies .............................................................................................................. 17
Faculty of Science, Engineering and Technology ........................................................................ 17
Courses Offered ........................................................................................................................... 17
Certificate in Foundation Studies ................................................................................................ 17
Bachelor of Business Electronic Commerce .............................................................................. 18
Bachelor of Engineering/Bachelor of Business Electronic Commerce ................................... 18
Bachelor of Engineering/Bachelor of Science ......................................................................... 19
Bachelor of Engineering/Bachelor of Laws .............................................................................. 20
Bachelor of Engineering/Bachelor of Arts .............................................................................. 20
Bachelor of Science/Bachelor of Laws ..................................................................................... 21
Bachelor of Science/Bachelor of Arts ....................................................................................... 22

School of Architectural, Civil and Mechanical Engineering ...................................................... 25
Bachelor of Engineering in Architectural Engineering ............................................................. 28
Bachelor of Engineering in Civil Engineering ......................................................................... 30
Bachelor of Engineering in Mechanical Engineering ............................................................. 32
Bachelor of Engineering in Robotic Engineering ..................................................................... 34
Bachelor of Technology in Building Surveying ....................................................................... 35

School of Computer Science and Mathematics ....................................................................... 39
Bachelor of Science in Computer Science .............................................................................. 40
Bachelor of Science in Computer and Mathematical Sciences .............................................. 40
Bachelor of Science in Internet Technologies and Applications ........................................... 41
Bachelor of Science in Information Technology ..................................................................... 42
Bachelor of Science in Computational Financial Mathematics ............................................ 43
Bachelor of Science in Computer Science and Aviation ......................................................... 43
Bachelor of Science (Honours) in Computer Science ............................................................... 45
Bachelor of Science (Honours) in Computer and Mathematical Sciences ............................ 45
International Programs: Offshore Program Conducted in Hong Kong ...................................... 45
Bachelor of Science in Computer Science .............................................................................. 45
Offshore Program Conducted in China .................................................................................... 46
Bachelor of Science in Computer Science .............................................................................. 46
Bachelor of Science in Computer Science .............................................................................. 46
Bachelor of Science in Computer Science .............................................................................. 46

School of Electrical Engineering ............................................................................................... 47
Bachelor of Engineering in Electrical and Electronic Engineering ......................................... 48
Bachelor of Engineering in Computer Engineering .................................................................. 49
Bachelor of Engineering in Software Engineering .................................................................. 50
Bachelor of Engineering in Microelectronic Systems ............................................................. 51
Bachelor of Engineering in Telecommunication Engineering ............................................... 52
Bachelor of Engineering in Photonics ...................................................................................... 52
Bachelor of Engineering in Science in Photonics .................................................................... 53
Bachelor of Science in Computer Technology ......................................................................... 54
Bachelor of Science in Applied Physics and Computing .......................................................... 54
Bachelor of Science in Optoelectronics .................................................................................... 55
Bachelor of Science (Honours) in Computer Technology ....................................................... 55
Bachelor of Science (Honours) in Physics .............................................................................. 56

School of Biomedical Sciences ............................................................................................... 57
Bachelor of Science in Biomedical Sciences ........................................................................... 58
Bachelor of Science in Nutritional Therapy ............................................................................ 60
Bachelor of Science in Occupational Health and Safety ......................................................... 61
Bachelor of Science (Honours) in Biomedical Sciences .......................................................... 61
Double Degree: Bachelor of Science/Bachelor of Psychology .............................................. 62

School of Molecular Sciences ................................................................................................. 63
Bachelor of Applied Science in Chemistry .............................................................................. 64
Bachelor of Science in Biotechnology ..................................................................................... 65
Bachelor of Science in Medical, Forensic and Analytical Chemistry ...................................... 65
Bachelor of Science in Nutrition, Food and Health Science .................................................... 66
Bachelor of Science (Honours) in Biology (Biotechnology) .................................................... 67
Bachelor of Science (Honours) in Nutrition and Food Science .............................................. 67
Bachelor of Science (Honours) in Chemical and Environmental Sciences ............................ 67

Sustainability Group .................................................................................................................. 69
Bachelor of Science in Ecology and Sustainability ................................................................. 70
Bachelor of Science (Honours) in Ecology and Sustainability .............................................. 72

Undergraduate Subject Details ............................................................................................... 73

Postgraduate Studies ............................................................................................................... 173
Faculty of Science, Engineering and Technology .................................................................... 173
Master’s Qualifying Program ...................................................................................................... 173
Centre for Environmental Safety and Risk Engineering ....................................................... 173
Graduate Certificate in Performance-Based Building and Fire Codes ................................... 175
Graduate Diploma in Building Fire Safety and Risk Engineering ........................................... 175
Master of Engineering in Building Fire Safety and Risk Engineering (Coursework) .............. 176
Masters (by Research) .............................................................................................................. 176
Doctor of Philosophy ................................................................................................................ 176
Centre for Telecommunication and Micro-Electronics ........................................................... 176
Integrated Freight Systems Research Unit ............................................................................... 178
Graduate Certificate in Intermodal Freight Systems Management ........................................ 178
Graduate Certificate in Bulk Freight Systems Management .................................................. 178
Graduate Diploma in Intermodal Freight Systems Management ........................................... 179
Food Safety, Authenticity and Quality Unit .............................................................................. 180
Food Marketing Research Unit .................................................................................................. 180
School of Architectural, Civil and Mechanical Engineering ................................................ 180
Graduate Certificate in Project Management ........................................................................... 183
Graduate Diploma in Project Management ............................................................................. 184
Master of Engineering (Project Management) (Coursework) .................................................. 184
Master of Engineering in Mechanical Engineering (Coursework) .......................................... 185

School of Computer Science and Mathematics ................................................................... 186
Postgraduate Programs by Research ....................................................................................... 186
Doctor of Philosophy ................................................................................................................ 186
Master of Science (Research) .................................................................................................... 186
Graduate Diploma in Computer Science .................................................................................. 187
Graduate Diploma in Computer and Mathematical Sciences ................................................. 187
Graduate Diploma in Multimedia Information Networking .................................................... 188
Graduate Diploma in Software Engineering ............................................................................ 188
School of Electrical Engineering .......................................................... 191
Postgraduate Programs by Research ............................................. 191
Doctor of Philosophy ....................................................................... 192
Master of Engineering (Research) ................................................. 192
Master of Science (Research) .......................................................... 192
Postgraduate Programs by Coursework ......................................... 192
Graduate Certificate in Microelectronics Engineering ..................... 192
Graduate Diploma in Microelectronics Engineering ....................... 192
Master of Engineering in Microelectronics Engineering .................. 192
Graduate Certificate in Systems and Control Engineering .............. 194
Graduate Diploma in Systems and Control Engineering ................. 194
Master of Engineering in Systems and Control Engineering .......... 194
Graduate Certificate in Telecommunication Engineering .............. 194
Graduate Diploma in Telecommunication Engineering ................... 194
Master of Engineering in Telecommunication Engineering ............. 194
Master of Engineering in Electrical and Electronic Engineering ....... 195
Master of Engineering Science in Computer & Microelectronics Engineering (Coursework) ........................................... 196
Double Degree ............................................................................. 197
Master of Engineering in Microelectronics Engineering/ Master of Engineering Science in Computer and Microelectronics Engineering .................................................. 197
School of Biomedical Sciences .......................................................... 198
Postgraduate Programs by Research ............................................. 199
Biototechnology Research Group .................................................... 199
Chemical Synthesis and Analytical Science Research Unit ............. 199
Food Science Research Group ....................................................... 200
Master of Science - Food Science and Technology ....................... 200
Master of Science – Biotechnology (Biototechnology and Bioinformatics Streams) .................................................. 201
Packaging and Polymer Research Unit ......................................... 202
Sustainability Group ................................................................. 202
Graduate Diploma in Environmental Management ......................... 202
Master of Science in Environmental Management ......................... 203
Postgraduate Subject Details ............................................................ 205
Recognition of Learning – Pathways, Credit Transfer and RPL/RCC ...................................................................................... 247
Recognition of Prior Learning (RPL) or Recognition of Current Competency (RCC) .............................................................. 248
Selection Criteria for Articulating Students – Faculty of Science, Engineering & Technology ......................................................... 248
Admission, Enrolment and Academic Procedures and Regulations ......................................................................................... 249
Admission and Selection ................................................................ 249
Admission Requirements ................................................................ 250
Application for Admission .............................................................. 251
Selection Procedures ....................................................................... 253
Enrolment ........................................................................................ 254
Fees and Charges ........................................................................... 256
Higher Education Contribution Scheme (HECS) ............................ 257
Postgraduate Education Loan Scheme (PELS) ............................... 258
Bridging For Overseas-Trained Professionals Loan Scheme (BOTPLS) .................................................................................. 258
Assessment .................................................................................... 258
Academic Misconduct .................................................................... 259
Special Consideration .................................................................... 260
Subject Assessment and Grading .................................................... 260
Academic Progression .................................................................... 262
Procedures Relating to the Graduation of Students from Award Courses .............................................................. 262
Credit Points ................................................................................... 263
EFTSUs ....................................................................................... 263
Services Available to Students .......................................................... 265
Student Career Development ......................................................... 265
Children’s Services ......................................................................... 265
Graduating Students ....................................................................... 266
Optometry and Dentistry ................................................................. 266
Health Practice Units ........................................................................ 266
Independent Access: Students with Disabilities ............................. 266
Orientation ..................................................................................... 266
Moondani Balluk (Indigenous Services) ........................................... 266
Student Support ............................................................................ 266
International Student Support ....................................................... 267
Student Learning Unit ................................................................... 268
Sport and Recreation Facilities and Services .................................... 268
Student Organisations .................................................................... 269
Travel Concessions ........................................................................ 269
Courses at Victoria University in 2005 ................................................ 271
Undergraduate Courses and Programs ........................................... 271
Faculty of Science, Engineering and Technology ............................ 271
Faculty of Arts ............................................................................. 273
Faculty of Business and Law ......................................................... 274
Faculty of Human Development ................................................... 276
Postgraduate Courses .................................................................... 277
Faculty of Science, Engineering and Technology ............................ 277
Faculty of Arts ............................................................................. 278
Faculty of Business and Law ......................................................... 279
Faculty of Human Development ................................................... 280
TAFE Courses at Victoria University in 2005 .................................... 283

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School of Electrical Engineering

- Master of Science in Computer Science
- Master of Science in Computer and Mathematical Sciences
- Master of Science in Software Engineering

School of Biomedical Sciences

- Master of Science in Environmental Management
- Graduate Diploma in Environmental Management

School of Electrical Engineering

- Master of Engineering in Electrical and Electronic Engineering
- Master of Engineering Science in Computer & Microelectronics Engineering

School of Molecule Sciences

- Master of Science in Computer and Mathematical Sciences
- Master of Science in Computer Science

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Postgraduate Programs by Research

- Doctor of Philosophy
- Master of Engineering (Research)
- Master of Science (Research)

Postgraduate Programs by Coursework

- Graduate Certificate in Microelectronics Engineering
- Graduate Diploma in Microelectronics Engineering
- Master of Engineering in Microelectronics Engineering
- Graduate Certificate in Systems and Control Engineering
- Graduate Diploma in Systems and Control Engineering
- Master of Engineering in Systems and Control Engineering
- Graduate Certificate in Telecommunication Engineering
- Graduate Diploma in Telecommunication Engineering
- Master of Engineering in Telecommunication Engineering

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Recognition of Learning – Pathways, Credit Transfer and RPL/RCC

- Recognition of Prior Learning (RPL) or Recognition of Current Competency (RCC)

Selection Criteria for Articulating Students – Faculty of Science, Engineering & Technology

Admission, Enrolment and Academic Procedures and Regulations

- Admission and Selection
- Admission Requirements
- Application for Admission
- Selection Procedures
- Enrolment
- Fees and Charges
- Higher Education Contribution Scheme (HECS)
- Postgraduate Education Loan Scheme (PELS)
- Bridging For Overseas-Trained Professionals Loan Scheme (BOTPLS)
- Assessment
- Academic Misconduct
- Special Consideration
- Subject Assessment and Grading
- Academic Progression
- Procedures Relating to the Graduation of Students from Award Courses
- Credit Points
- EFTSUs

Services Available to Students

- Student Career Development
- Children’s Services
- Graduating Students
- Optometry and Dentistry
- Health Practice Units
- Independent Access: Students with Disabilities
- Orientation
- Moondani Balluk (Indigenous Services)
- Student Support
- International Student Support
- Student Learning Unit
- Sport and Recreation Facilities and Services
- Student Organisations
- Travel Concessions

Courses at Victoria University in 2005

- Undergraduate Courses and Programs
  - Faculty of Science, Engineering and Technology
  - Faculty of Arts
  - Faculty of Business and Law
  - Faculty of Human Development
- Postgraduate Courses
  - Faculty of Science, Engineering and Technology
  - Faculty of Arts
  - Faculty of Business and Law
  - Faculty of Human Development
- TAFE Courses at Victoria University in 2005
How to use this book
Welcome to the Faculty of Science, Engineering and Technology Handbook 2005. 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) 9919 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 made up of five Schools, two Research Centres, four Research Units and a Group which all operate at the forefront of knowledge.

Schools
- Architectural, Civil and Mechanical Engineering
- Computer Science and Mathematics
- Electrical Engineering
- Biomedical Sciences
- Molecular Sciences

Research Centres
- Telecommunication and Micro-Electronics
- Environmental Safety and Risk Engineering

Research Units
- Food Marketing Research Unit
- Food Safety, Authenticity and Quality Unit
- Packaging and Polymer Research Unit
- Integrated Freight Systems Research Unit
- Sustainability Group

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 Reproduction 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 incorporated with 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.

Building Services
Building services systems are the hidden ‘architecture’ behind every building providing air conditioning, ventilation, light and power distribution, fire safety, sanitary plumbing and drainage. Research in building services at the University is carried out in the areas of optimisation of air conditioning systems, computational fluid dynamics of air movement in buildings, and the supply and internal distribution of water.

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 engineer phenomena. For details, see http://rgmia.vu.edu.au and http://jipam.vu.edu.au.

In statistics, key 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 predicated on the arts, science and technology of multimedia. 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 servers, 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: multiprocessors; multimedia platforms, graphics; parallel computing 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/Unit/Groups established within the Faculty. These are:

- the University’s Research Centre for Environmental Safety and Risk Engineering;
- the Centre for Telecommunication and Micro-Electronics;
- Communication and Optical Technology;
- Industrial Automation and Power Systems;
- Internet Technologies and Applications;
- Packaging and Polymer Research Unit;
- Vibration and Modal Analysis Group;
- Computer Imaging Group;
- Sustainability Group.

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

Testing Facilities
The Centre for Environmental Safety and Risk Engineering operates an Experimental Building-Fire Facility. The three-storey 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 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. 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 Packaging and Polymer Research Unit 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 dynamics laboratory which represents a total investment of more than $2 million, is not only used for research experiments but is also available for testing and consulting work for industry. The facility is the only one in Australia accredited by NATA to perform certification testing for all types of packaging suppliers as well as packaging users, have already found their way to these facilities. Full scale performance testing, fragility analysis, simulation of transport and storage conditions, determining of cushioning and other material properties are just examples of experimental work that can be performed.

Victoria University High Voltage Theatre provides a unique, internationally renowned, education and research facility for high voltage electricity. The high voltage equipment was donated to Scienceworks by Telstra and is accessible daily, all year round. Access to the equipment is essential for VU to be able to develop courses in this field. The impulse generators produce very short pulses of electrical energy with a voltage of 1.4 million volts and currents up to 5000 amps. Impulse generators are used to test materials (such as power cables or insulators) for cracks and faults. Electrical Engineering and Science students will use the High Voltage Theatre for doctoral research, post graduate research, lectures and practical activities and for undergraduate lectures and demonstrations.

National Networked TeleTest Facility for Integrated Systems
National Networked TeleTest Facility (NNTTF) was created in 2002 as a Major National Research Facility (MNRF) with funding support from the Federal and State Governments. The facility operates as a virtual centre spanning Australia and accessible internationally.

NNTTF provides fabric houses and design companies with engineering, pre-production test and characterisation services. NNTTF is accessible through the web with leading edge capabilities addressing the most complex testing and IP validation challenges such as mixed-signal and high-end digital integrated circuit (IC) technologies as well as other emerging technologies.

NNTTF’s charter is to enable start-ups, fabric houses and integrated device manufacturers to access specialized capabilities without making a huge investment in very expensive capital equipment. Because Intellectual Property protection is crucial in today's market, NNTTF offers users the chance to 'own' a $1.5M state of the art testing facility for the duration of an IP validation project.

The TeleTest Network provides state of the art environment for the electronics and microelectronics research and the industry community around Australia and internationally to test and prototype very large scale integrated (VLSI) circuits and other System-On-Chip (SOC) devices, prior to moving to the manufacturing stage.

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) 9919 4241.

Dean’s Scholarships
(ISCumbing Grant code 41431)
There are a number of Faculty scholarships ($2000 per semester for the duration of the course) available to VCE students entering the first year of our courses.

Prerequisites for Dean’s Scholarships: ENTER of at least 90. In addition, applicants must refer to the specific prerequisites for their specific preference.

The Dean's Scholarships are also available for the following Double Degrees that the Faculty of Science, Engineering and Technology manage:

- Engineering/Arts
- Engineering/Business
- Engineering/Science
- Science/Law
- Science/Psychology

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.

Alternative Entry
Engineering (VTAC code 41441) Science (VTAC code 41451)
Alternative entry program for students who have:
- successfully completed year 12 with the required prerequisites, but may not have achieved the required study score in all prerequisites or
- have not studied the required mathematics prerequisite.

All admissions are on an individual basis.

Prerequisites: Units 3 and 4 - English (any) and Mathematics (any).

Extra Requirements: All applicants offered a place will be required to attend an appropriate summer bridging program or enrol in one or more subjects from the Foundation Year or undertake part or all of an appropriate TAFE program.

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) 9919 4516 or by facsimile on (03) 9919 4513.
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University Officers

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Governor of Victoria

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The Hon Justice Frank Vincent QC

Deputy Chancellor
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Distinguished Professorial Fellow
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(Leadership&Mgt)W/MIT, MEdLdrship&MgtRMIT

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GradDipEdHealthInst, CPA

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MEd, MBAECouran

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Professorial Fellow
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Deputy Dean
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GradDipEdAdmin&HealthInstEd

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Josephine Georgakopoulos
Shirley Herrewyn
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Patrick Lambert BEdMonash
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Katherine McGehee
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Wendy Yu BSc (SocialWork)(Hons), MSc (Mktg)HongKong

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Pushpa Richards
External Relations Unit
Nicholas Bulley BEngVcMell
Santa Giordano BSc, DipEdMell

Mayette Mendoza BSc(Actvty)Manila

Glenda Norwood

Centre for Environmental Safety and Risk Engineering (CESARE)

Director
Professor Ian Thomas BEngMonash, PhDMonash

Senior Advisor
Professor Vaughan Beck DipMechEngFTC, BEngMell,
MEngScMell, PhDUNiW, CPEng, FIEAust, FAIB

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BSc(Hons)(Mathematics)Tas, BSc, PhDTas
Emeritus Professor John Steerue BSc(Hons)Adelaide,
PhDAdelaide, GradDipOcc.Hyg.Deakin

Visiting Fellow [from Tarbiat Modarres University, Tehran, Iran]
Associate Professor Abdolsamad Zarringhalam Moghaddam
BScTebirizIran, PhDGlamorganWales, MPhilGlamorgan

Academic Associate
Associate Professor Paula Beaver BSc(Hons)UBirmUK,
PhDLondUK, CEng, CPhys, MInstP, MIF, MSFPE, AMIFEE,
Principal Fire Engineer, NZ Fire Service

Associate Professor G Caird Ramsay BSc,PhDAdel, Scientific Services Laboratory

Research Staff
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Technical Officer

**Heather Altimari** AssocDipApplSci(LabTech), Cert IV Workplace Training, DipApplSci(BiolSci)

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
  - Engineering and Arts
  - Science and Business E-Commerce
  - Science and Law
  - Science and Arts
  - 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 one of the undergraduate core subjects within 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 asterisk 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 9919 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 9919 4516

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### 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.

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

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### Bachelor of Engineering/Bachelor of Business Electronic Commerce

**Course Code**: EEBE

**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:

**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 Macroeconomic Principles
- BEO1104 Microeconomic 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

Other Specialisation Subjects – Electronic Commerce

(Applications Stream)
- BCO2500 Electronic Commerce Technologies
- BCO2501 Electronic Commerce Business Interfaces
- 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.
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
EEL1611 Engineering in Society
SMA1201 Mathematics 1AP
SMA1202 Mathematics 1AQ
SPH1601 Physics 1SA
SPH1602 Physics 1SB

Year 2
BLB1101 Aust Legal System in Context
BLB1102 Contracts 1
BLB1114 Legal Research Methods
BLB1117 Contracts 2
EEA2001 Circuits and Control 2.1
EEA2002 Circuits and Control 2.2
EEED2002 Design A 2.2
EED2001 Electronics 2.1
EED2002 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
EEH2001 Digital Electronics 2.1
EEH2002 Digital Electronics 2.2
EEL2001 Computer Systems 2.1
EEL2002 Computer Systems 2.2
EET3101 Communication Engineering 3.1
EET3102 Communication Engineering 3.2

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 Engineering/Bachelor of Arts

Course Code: EBEA
Campus: Footscray Park

Course Description
The double degree structure of the Bachelor of Engineering / Bachelor of Arts integrates education, training and research. With the increasing globalisation of industry, Australia's close proximity to Asia and the increasing reliance on technology and in particular multimedia, there is need for professionally qualified engineers to be offered the opportunity to be exposed to international studies and develop more skills in the field of multimedia communications. The course will give students access to a broad curriculum and to a program, which transcends disciplinary boundaries.

Course Objectives
The combined Bachelor of Engineering/Bachelor of Arts course will prepare professionally trained engineers to have a broader outlook than just the purely technical skills of the engineering program; enhance their professional engineering skills with LOTE and cultural studies; and produce graduates capable of performing their professional functions in culturally diverse settings.

Course Duration
The course is offered over 5 years on a full-time basis or part time equivalent.

Course Structure
Year 1
Four subjects from two selected Arts majors
EPP1001 Physics 1.1
SMA1201 Mathematics 1AP
EES1001 Programming 1
EPP1002 Physics 1.2
SMA1202 Mathematics 1AQ

Year 2
Four subjects from two selected Arts majors
EEL1001 Circuit Theory & Applications 1
SMA2201 Mathematics B
EEH1001 Digital Electronics
EEL1002 Circuit Theory & Applications 2
SMA2321 Mathematics 2Q

Year 3
Four subjects from two selected Arts majors
EEL2001 Electronics 2.1
EEL2002 Digital Systems 2.1
EEL2001 Linear Systems & Applications 1
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
BLB1101 Aust Legal System in Context
BLB1114 Legal Research Methods
SBM1514 Functional Anatomy 1
SBM1518 Human Physiology
SBM1524 Functional Anatomy 2
SCS1110 Chemistry for Biological Sciences A
SCS1120 Chemistry for Biological Sciences B

Year 2
BLB1102 Contracts 1
BLB1117 Contracts 2
SBM2260 Diet and Nutrition OR

SBM2560 Biochemistry
SBM2530 Pathophysiology 1
SBM2540 Pathophysiology 2
SBM2800 Cardiorespiratory & Renal Physiology

Year 3
BLB1113 Australian Administrative Law
BLB1115 Torts
BLB1116 Law, Discrimination and Society
BLB1118 Constitutional Law
SBM2810 Pharmacology
SBM3590 Advanced Histological Techniques
SBM3660 Developmental and Clinical Genetics
SBM3720 Immunology

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
- Telecommunication 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 Arts

Course Code: ABPS

Course Objectives
The combined Bachelor of Science/Bachelor of Arts course will prepare professionally trained scientists to take their place in industrial and government employment; enhance the professional scientific skills with LOTE and cultural studies; and produce graduates capable of performing their professional functions in a culturally diverse setting.

Course Duration
Four years of full-time study.

Course Structure
This double degree structure of the Bachelor of Arts/Bachelor of Science is designed to provide the student with a choice of two majors, consisting of eight subjects each, from the Faculty of Arts and one of four streams chosen from the Bachelor of Science course currently offered. The course structure below illustrates the degree with a combination of 3 Arts Majors (Multimedia, Community Development and Psychology) and a Bachelor of Science in Ecology and Sustainability.

Students however may choose from any of the majors available in the Bachelor of Arts Degree, notwithstanding timetabling constraints.

The majors currently offered at St Albans campus include: Communication Studies; Community Development; Gender Studies; Literary Studies; Media Studies; Multimedia; Organisational Studies; Professional Writing: Psychology; Psychosocial Studies; Social Research Methods; Sociology; Sociology of the Global South; Policy Studies; and Spanish and Spanish Studies.

The majors currently offered at Footscray Park include: Advanced English for Speakers of Languages other than English; Advocacy and Mediation; Asian Studies; Chinese; Communication Studies; Cultural Studies; Histories of the Present; History; Japanese; Literary Studies; Multimedia; Political Science; Social Research Methods; International Communication and Culture; Psychology; Sociology; and Spanish and Spanish Studies.

The Bachelor of Science in Ecology and Sustainability has four streams defined by prescribed electives – Ecology and Natural Resource Management; Ecology and Community Development; Ecology and Tourism/Business; and, Ecology and Human Bioscience.

Credit Points
Year 1
Semester One
SBF1310 Biology 1 12
SBF1150 Global Environmental Issues 12
Plus two subjects chosen from 2 Arts majors, for example:

Arts Major (Multimedia)
ACM1001 Multimedia 1A 12
ACM1004 Design for Multimedia 12

Arts Major (Community Development)
ASA1021 Community Development Theory & Practice 1 12
ASS3010 Sociology 3A 12

Arts Major (Psychology)
APP1012 Psychology 1A 12

Semester Two
SBF1320 Biology 2 12
SBF1160 Australian Landscapes and Biota 12
Plus two subjects chosen from 2 Arts majors, for example:

Arts Major (Multimedia)
ACM1002 Multimedia 1B 12
ACM1003 Animation for Multimedia 12

Arts Major (Community Development)
ASA1022 Community Development Theory & Practice 2 12
ASS3013 Sociology 3B 12

Arts Major (Psychology)
APP1013 Psychology 1B 12

Year 2
Semester One
SBF2610 Fundamentals of Ecology 12
SBF2640 Australian Animals 12
Plus two subjects chosen from 2 Arts majors, for example:

Arts Major (Multimedia)
ACM2002 Multimedia 2A 12
ACC1047 Culture and Communication 12

Arts Major (Community Development)
ASA2021 Community Development Theory & Practice 3 12
ASS3035 Sociology 2.3E (Environmental Policy) 12

Arts Major (Psychology)
APP2013 Psychology 2A 12

Semester Two
SBF2630 Community and Environment 12
SBF2620 Australian Plants 12
Plus two subjects chosen from 2 Arts majors, for example:

Arts Major (Multimedia)
ACM2002 Multimedia 2B 12
ACC1048 Media, Culture and Society 12

Arts Major (Community Development)
ASA2022 Community Development Theory & Practice 4 12
ASC3095 Conflict Resolution in Groups & Communities 12

Arts Major (Psychology)
APP2014 Psychology 2B 12

Year 3
Semester One
SMA1110 Maths 1 or elective 12
Prescribed elective 12
Plus two subjects chosen from 2 Arts majors, for example:

Arts Major (Multimedia)
ACM3001 Multimedia 3A 12

Arts Major (Community Development)
SBS3411 Environmental Legislation 12
1 elective from Arts approved by course coordinator 12

Arts Major (Psychology)
APP3011 Psychology 3A (Year long subject) 12
1 Psychology 3 elective 12

Semester Two
SMA1120 Maths 2 or elective 12
Prescribed elective 12
Plus two subjects chosen from 2 Arts majors, for example:

Arts Major (Multimedia)
ACM3002 Multimedia 3B 12
1 elective from the Communications Studies major 12

Arts Major (Community Development)
ACC1047 Culture and Communication 12
1 elective from Arts approved by the course coordinator 12

Arts Major (Psychology)
APP3011 Psychology 3A (Year long subject) 12
1 Psychology 3 elective 12

Year 4
Semester One
2 Electives from a prescribed list (Sc.) 12 x 2
Plus two subjects chosen from an Arts major, for example:
<table>
<thead>
<tr>
<th>Arts Major (Multimedia)</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication Studies elective (1)</td>
<td>12</td>
</tr>
<tr>
<td>ACP 2062 Editing &amp; Publishing</td>
<td>12</td>
</tr>
<tr>
<td>(or an approved Arts elective)</td>
<td>12</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Arts Major (Community Development)</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC1048 Media Culture and Society</td>
<td>12</td>
</tr>
<tr>
<td>1 elective from Arts approved by course coordinator</td>
<td>12</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Arts Major (Psychology)</th>
<th>2 x 12</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 x Psychology 3 electives</td>
<td>2 x 12</td>
</tr>
</tbody>
</table>

**Semester Two**

<table>
<thead>
<tr>
<th>Arts Major (Multimedia)</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Communications Studies elective</td>
<td>12</td>
</tr>
<tr>
<td>1 Arts elective</td>
<td>12</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Arts Major (Community Development)</th>
<th>2 x 12</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 electives from Arts approved by course coordinator</td>
<td>2 x 12</td>
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<table>
<thead>
<tr>
<th>Arts Major (Psychology)</th>
<th>2 x 12</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Psychology 3 electives</td>
<td>2 x 12</td>
</tr>
</tbody>
</table>
Courses Offered
The School of Architectural, Civil and Mechanical Engineering offers undergraduate courses leading to the award of:

Bachelor of Engineering –
- Architectural Engineering
- Building Engineering
- Civil Engineering
- Mechanical Engineering
- Robotic Engineering
- Bachelor of Technology
- Building Surveying

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 1–3.

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 for graduates with a broad yet integrated set of skills in this area, both locally and overseas.

Employment opportunities 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

The degree in Building Engineering has been offered for 25 years and whilst it covers the entire building process, from planning and financial feasibility studies, to design of structures and services systems, and site preparation and construction, it focuses on the skills needed for project managing the planning and construction process of buildings to achieve completion on time within budget.

Building engineers require multi-disciplinary training that including building construction technology, construction and project management, legal and economic processes, basic structures, and thermo-fluid and electromagnetic systems. 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 public and private sector (consulting, contracting, construction and project management firms specialising in multi-billion dollar national and international building industry);
- diverse areas such as urban planning; risk assessment and management; and the operation of buildings.

The Scope of Building Surveying

Graduates of the Bachelor of Technology in Building Surveying course at Victoria University will have gained valuable qualifications for employment within the building and construction industry where, as building practitioners or potential building practitioners, they are likely to be involved in the administration of acts, regulations, codes and standards relevant to the design, construction, occupation and maintenance of a wide range of buildings used for residential, office, retail, storage, industrial, public, etc purposes.

Basic functions that Building Surveyors are authorized (by State legislation) to perform include the issuing of building permits, the carrying out of inspections of buildings and building work and the issuing of occupancy permits and temporary approvals. Building Surveyors must be sufficiently knowledgeable and experienced to competently perform the range of professional duties that they are appointed to carry out.

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 early last century, has developed into an extremely diverse and complex profession.

Mechanical engineers find employment in government instrumentalties 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 Architectural, Civil and Mechanical Engineering 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.

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 110 Pentium PCs all connected to a central file server and printing facilities. 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 Architectural, Civil and Mechanical Engineering. 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, CivilCAD, EPANET2, MDSolids, Camel, Primavera, Strand7, Space GASS, Statics 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 then 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. Thereafter 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.
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 life safety 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 the design of building environmental and life 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 life 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 is 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;
- building structures design;
- 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 a Mechanical or Electrical Engineer, or as a Civil Engineer (Structures) as defined by the responsibilities of these categories of 'Engineer' in the Victorian Building Control Act. The degree will satisfy the requirements for accreditation by The Institution of Engineers, Australia and be submitted for accreditation by the Australian Institute of Building.

USA Exchange Program
A 'study abroad' student exchange program is being developed with the Department of Architectural Engineering at the University of Nebraska at Omaha, Nebraska, USA. Each year, students at third year level will be invited to participate in this program. University 'study abroad' scholarships are 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

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACE1801 Engineering Communication</td>
<td>10</td>
</tr>
<tr>
<td>ENC1812 Computing for Engineers</td>
<td>-</td>
</tr>
<tr>
<td>END1832 Engineering Graphics</td>
<td>10</td>
</tr>
<tr>
<td>ENM1851 Engineering in Society</td>
<td>10</td>
</tr>
<tr>
<td>ENS1822 Solid Mechanics 1</td>
<td>-</td>
</tr>
<tr>
<td>ENW1861 Principles of Materials Science 1</td>
<td>10</td>
</tr>
<tr>
<td>ENW1862 Principles of Materials Science 2</td>
<td>-</td>
</tr>
<tr>
<td>ENX1831 Engineering Experimentation</td>
<td>10</td>
</tr>
<tr>
<td>SMA1201 Mathematics 1AP</td>
<td>-</td>
</tr>
<tr>
<td>SMA1202 Mathematics 1AQ</td>
<td>10</td>
</tr>
<tr>
<td>SPH1601 Physics 1SA</td>
<td>-</td>
</tr>
<tr>
<td>SPH1602 Physics 1SB</td>
<td>10</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 2</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>EAH2831 Architectural History &amp; Design 1</td>
<td>10</td>
</tr>
<tr>
<td>ECF2842 Hydraulics</td>
<td>-</td>
</tr>
<tr>
<td>EEP2882 Electrical Engineering 1</td>
<td>-</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>-</td>
</tr>
<tr>
<td>ENF2841 Fluid Mechanics 1</td>
<td>-</td>
</tr>
<tr>
<td>ENM2852 Engineering Management 1</td>
<td>-</td>
</tr>
<tr>
<td>ENS2821 Solid Mechanics 2</td>
<td>10</td>
</tr>
<tr>
<td>ENS2822 Solid Mechanics 3</td>
<td>-</td>
</tr>
<tr>
<td>ENT2881 Thermodynamics 1</td>
<td>10</td>
</tr>
<tr>
<td>SMA2801 Engineering Mathematics</td>
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</table>

<table>
<thead>
<tr>
<th>Year 3</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMO3851 Engineering Management 2</td>
<td>10</td>
</tr>
<tr>
<td>EAB3841 Air Conditioning &amp; Hydraulic Services 1</td>
<td>-</td>
</tr>
<tr>
<td>EAB3842 Air Conditioning &amp; Hydraulic Services 2</td>
<td>-</td>
</tr>
<tr>
<td>EAB3871 Electrical Power Distribution 1</td>
<td>10</td>
</tr>
<tr>
<td>EAB3872 Electrical Power Distribution 2</td>
<td>-</td>
</tr>
<tr>
<td>EAB3892 Fire Services</td>
<td>-</td>
</tr>
<tr>
<td>EAD3832 Architectural Engineering Design 1</td>
<td>-</td>
</tr>
<tr>
<td>EAH3831 Architectural History &amp; Design 2</td>
<td>-</td>
</tr>
<tr>
<td>EBK3881 Building Construction &amp; Legislation</td>
<td>10</td>
</tr>
<tr>
<td>ECS3821 Structural Analysis 1</td>
<td>10</td>
</tr>
<tr>
<td>ECD3892 Structural Design 1</td>
<td>-</td>
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<tr>
<td>ECS3822 Structural Analysis 2 or Legislation 3</td>
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<tr>
<td>EAP3803 Industrial Placement</td>
<td>(Summer Semester) -</td>
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<table>
<thead>
<tr>
<th>Year 4</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>EAB4831 Services Engineering Design &amp; Construction</td>
<td>10</td>
</tr>
<tr>
<td>EAB4841 Air Conditioning Systems 1</td>
<td>10</td>
</tr>
<tr>
<td>EAB4842 Air Conditioning Systems 2</td>
<td>-</td>
</tr>
<tr>
<td>EAD4831 Architectural Engineering Design 2</td>
<td>-</td>
</tr>
<tr>
<td>EAB4872 Architectural Lighting Design</td>
<td>-</td>
</tr>
<tr>
<td>EAB4892 Communications Services</td>
<td>-</td>
</tr>
<tr>
<td>EBK4881 Building Construction &amp; Legislation 2</td>
<td>-</td>
</tr>
<tr>
<td>EBK4882 Building Construction &amp; Legislation 3</td>
<td>-</td>
</tr>
<tr>
<td>EBM4851 Quantities and Costs</td>
<td>10</td>
</tr>
<tr>
<td>ECP4810 Engineering Project</td>
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</tr>
<tr>
<td>ENM4852 Engineering Project Management</td>
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</table>

<table>
<thead>
<tr>
<th>Year 3</th>
<th>Structures Option</th>
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<tbody>
<tr>
<td>BMO3851 Engineering Management 2</td>
<td>10</td>
</tr>
<tr>
<td>EAB3841 Air Conditioning &amp; Hydraulic Services 1 or</td>
<td>10*</td>
</tr>
<tr>
<td>EAB3871 Electrical Power Distribution 1 or</td>
<td>10*</td>
</tr>
<tr>
<td>EAB3842 Air Conditioning &amp; Hydraulic Services 2 or</td>
<td>-</td>
</tr>
<tr>
<td>EAB3872 Electrical Power Distribution 2 or</td>
<td>-</td>
</tr>
<tr>
<td>EAP3803 Industrial Placement</td>
<td>(Summer Semester) -</td>
</tr>
<tr>
<td>EAB3892 Fire Services</td>
<td>-</td>
</tr>
<tr>
<td>EAD3832 Architectural Engineering Design 1</td>
<td>-</td>
</tr>
<tr>
<td>EAH3831 Architectural History &amp; Design 2</td>
<td>-</td>
</tr>
<tr>
<td>ECD3892 Structural Design 1</td>
<td>-</td>
</tr>
<tr>
<td>EMB4851 Quantities and Costs</td>
<td>10</td>
</tr>
<tr>
<td>ECP4810 Engineering Project</td>
<td>10</td>
</tr>
<tr>
<td>ENM4852 Engineering Project Management</td>
<td>-</td>
</tr>
</tbody>
</table>

29
### 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 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.

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 study areas commence in the second and third years of the course and are building structures, building services and building construction and project management. In the final year, the focus for the course becomes planning and project management of the building construction process.

### 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 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

Students are required to undertake a 12 week industrial work experience period during their course. At the end of third year, students will have to undertake a 12 week (minimum) integrated industry placement program. It is intended that this program will meet the 12 week industrial work experience requirements imposed upon all accredited Engineering degree courses by the Institution of Engineers, Australia.

**Course Code:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBCB</td>
<td>Bachelor of Engineering in Building Engineering</td>
<td></td>
</tr>
</tbody>
</table>

**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.

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. 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

<table>
<thead>
<tr>
<th>Year</th>
<th>Semester</th>
<th>One</th>
<th>Two</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACE1801</td>
<td>Engineering Communication</td>
<td>10</td>
<td>-</td>
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<tr>
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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% 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
Students are required to undertake a 12 week industrial work experience period during their course. At the end of third year, students will have an option to undertake a 12 week (minimum) integrated industry placement program. It is intended that this program will meet the 12 week industrial work experience requirements imposed upon all accredited Engineering degree courses by the Institution of Engineers, Australia.
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 under investigation with the Department of Civil Engineering at the University of Nebraska at Omaha, Nebraska, USA.

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 other entrance qualifications of at least equivalent standard to those listed above, should apply for admission in the normal manner. A preliminary interview with the Head of School concerned is advisable for such applicants.

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 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

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32
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*Exemptions in a maximum of three semester 2 subjects in final year (i.e., 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-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 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

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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% 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: EBRE

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.
Course Structure

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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.

**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.

**Bachelor of Technology in Building Surveying**

This course provides a tertiary degree in Building Surveying with exit points at Diploma of Building Surveying qualification level and Advanced Diploma of Building Surveying qualification level. The first three years of the course (at Sunshine campus) focus on building technology and statutory control of building. This involves completion of twenty-four units of competency learning over 18 months leading to the Diploma of Building Surveying, followed by completion of an additional nineteen units of competency learning leading to the Advanced Diploma of Building Surveying. Concurrent studies (at Footscray Park campus) provide students with basic professional literacy and numeracy. Subjects prescribed for this purpose are ACE1801 Engineering Communication, ENN1851 Engineering in Society, SMA1201 Mathematics 1AP and SMA1202 Mathematics 1AQ.

In the final (fourth) year of the course (spread over Footscray Park and Werribee campuses) the focus is on professional practice primarily in the areas of building design, building approval and building construction.
Graduates of this course will have completed studies equivalent to the Graduate Certificate in Performance-Based Building and Fire Codes (Course Code: ETQB) at Werribee campus.

Graduates of this course will be granted advanced standing if they choose to further their qualifications by completion of studies for the Graduate Diploma in Project Management (Course Code: EGPM) at Footscray Park campus and/or the Graduate Diploma in Building Safety and Risk Engineering (Course Code: EGQB) at Werribee campus.

Course Objectives

Course objectives are to produce graduates who have acquired a strong technological base for professional practice in the area of Building Surveying and exhibit valuable graduate attributes as follows:

- A sound knowledge of the structure and practices of Australian building (design and construction) regulatory systems; An understanding and appreciation of building design and approval, and building construction and inspection, as it is influenced by a variety of political, social, economic, cultural, industrial and technological factors; A broad range of vocational skills that can be used to manage and operate a building surveying business, within either the private sector or public sector, and meet the needs of developers, practitioners, authorities, manufacturers, tradespeople and other significant stakeholders; Specific skills that will lead to employment in the fields of design consultancy; certification, approvals and permits, construction management, detailed hydraulic, electrical and mechanical services installations, inspection and maintenance, and facility management; An ability to work independently, ethically and professionally in the provision of building surveying services to clients and/or employers, whether as a sole practitioner or within larger organizations including engineering and building surveying consultancies, building contractors, manufacturers, statutory authorities, local government and state government departments; An ability to adapt to the changing needs of industry, commerce and community, as well as the ability to take a leadership role in promoting institutional and social change with social justice initiatives.

Graduates of this course will have had the opportunity to experience learning in a dual sector environment that assists them in both finding employment and becoming lifelong learners in the broader context. Successful graduates of the Bachelor of Technology in Building Surveying course should be able to demonstrate valuable capabilities as follows: Be effective problem solvers in a range of settings including professional practice; Locate, evaluate, manage and use information effectively, including critical thinking, information technology skills, information gathering skills, and carrying out statistical and other calculations; Communicate effectively in oral and written form as a professional and as a citizen; Work as a professional both autonomously and collaboratively.

Admission at Other Levels

Admission at other levels may be approved, e.g., in the case of an applicant having commenced or completed studies leading to a Diploma or Advanced Diploma at an Institute of TAFE or in the case of a mature-age applicant.

Course Duration

Four years full-time. Part-time enrolment may also be approved.

Course Structure

<table>
<thead>
<tr>
<th>Year 1 and Year 2</th>
<th>Credit points</th>
<th>Semester</th>
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<tbody>
<tr>
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<tr>
<td>Diploma of Building Surveying comprising 24 units of competency learning as follows:</td>
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<tr>
<td>BCGSV5001A Assess the construction of domestic scale buildings</td>
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<tr>
<td>BCGSV5002A Evaluate materials for construction of domestic scale buildings</td>
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<tr>
<td>BCGSV5003A Produce working drawings for residential buildings</td>
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<td>BCGSV5004A Apply legislation to urban development and building controls</td>
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<td>BCGSV5005A Apply footing and geomechanical design principles for domestic scale buildings</td>
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<td>BCGSV5006A Assess construction faults in residential buildings</td>
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<td>BCGSV5007A Undertake site surveys and set out procedures to building projects</td>
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<td>BCGSV5008A Apply building control legislation to building surveying</td>
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<tr>
<td>BCGSV5009A Assess the impact of fire on building materials</td>
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<tr>
<td>BCGSV5010A Interact with clients in a regulated environment</td>
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<tr>
<td>BCGSV5011A Apply building codes and standards to residential buildings</td>
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<tr>
<td>BCGSV5012A Assess timber framed designs for one and two storey buildings</td>
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<tr>
<td>BCGSV5013A Apply principles of energy efficient design to buildings</td>
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<tr>
<td>BCGSV5014A Apply building surveying procedures to residential buildings</td>
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<tr>
<td>BCGSV5015A Assess structural requirements for domestic scale buildings</td>
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<tr>
<td>BSADM506A Manage business document design and development</td>
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</table>
| BSBCM406A Maintain business technology | * | *
| CHCCOM43A Utilise specialist communication skills | * | *
| CHCCOM44A Develop, implement and promote effective communication | * | *
| ICAITU128A Operate a personal computer | * | *
| ICAITU129A Operate a word processing application | * | *
| ICAITU130A Operate a spreadsheet application | * | *
| ICAITU131A Operate a database application | * | *
| ICAITU133A Send and retrieve information over the Internet using browsers and email | * | *
| plus | | |
| ACE1801 Engineering Communication 10 - | |
| ENM1851 Engineering in Society 10 - | |
| 120 120 | |

*credit points have not been assigned to individual units of competency learning

Year 3

Advanced Diploma of Building Surveying comprising a further 19 units of competency learning as follows:

| BCGSV6001A Assess the construction of buildings up to 3 storeys | * | *
| BCGSV6002A Produce working drawings for buildings up to 3 storeys | * | *
| BCGSV6003A Assess construction faults in buildings up to 3 storeys | * | *
| BCGSV6004A Apply footings and geomechanical design principles to buildings up to 3 storeys | * | *
| BCGSV6005A Evaluate services layout and connection methods for residential and commercial buildings up to 3 storeys | * | * |
BCGSV6006A Evaluate the use of concrete for residential and commercial buildings up to 3 storeys
BCGSV6007A Assess structural requirements for buildings up to 3 storeys
BCGSV6008A Apply building codes and standards to buildings up to 3 storeys
BCGSV6009A Implement performance based codes and risk management principles for buildings up to 3 storeys
BCGSV6010A Apply fire technology to buildings up to 3 storeys
BCGSV6011A Apply legal procedures to building surveying
BCGSV6012A Facilitate community development consultation
BCGSV6013A Co-ordinate asset refurbishment
BCGSV6014A Manage and plan land use
BCGSV6015A Analyse and present building surveying research information
BCGSV6016A Apply building surveying procedures to buildings up to 3 storeys
BSX154L606 Manage human resources
LGAPLEM502A Apply ecologically sustainable development principles to the built environment
LMFFT4010A Identify & calculate production costs
plus
SMA1201 Mathematics 1AP 10-
SMA1202 Mathematics 1AQ 10-
60 60
*credit points have not been assigned to individual units of competency learning

Assessment
For the competency learning components of the course, assessment is conducted in accordance with the Assessment Guidelines for the Building and Construction Industry. For the other subjects that make up the degree, the various assessment stipulations specific to individual subjects are as set out in Subject Details in the Faculty of Science, Engineering and Technology Handbook.

Professional Recognition
The course satisfies the academic requirements of Building Surveyor practitioner registration boards such as the Building Practitioners Board of Victoria where legislation makes reference to a degree in Building Surveying from a university within the meaning of the Tertiary Education Act 1993. This ensures that graduates who are interested in registering and practising as a professional Building Surveyor have the necessary formal educational qualifications.

Year 4
EBK4881 Building Construction and Legislation 2 10-
EBK4882 Building Construction and Legislation 3 10-
EBM4851 Quantities and Costs 10-
EMP4780 Project 10-
ENM4852 Engineering Project Management 10-
EQB5611 Risk Assessment and Human Behaviour 10-
EQB5621 Fire Growth, Detection and Extinguishment 10-
EQB5632 Smoke and Fire Spread, Fire Safety System Design 10-
EQB5642 Performance Codes Methodology and Structure 10-
plus one of the following:
ECP5600 Project Management Fundamentals 10-
or
ECP5705 Project Management & Information Technology
or
ECP5726 Project Procurement Management
or
ECP5745 Building Regulatory Management
plus one of the following:
ECP5610 Project Management Planning & Control 10-
or
ECP5620 Project Management and Contracts
or
ECP5716 Project Development Analysis
or
ECP5736 Facility Life Cycle Costing
60 60
Total credit points over eight semesters 480
The School of Computer Science and Mathematics offers undergraduate courses leading to the award of:

- Bachelor of Science –
  - Computer Science
  - Computer and Mathematical Sciences
  - Internet Technologies and Applications
  - Information Technology
  - Computational Financial Mathematics
  - Computer Science and Aviation

Bachelor of Science (Honours)

The School of Computer Science and Mathematics offers a comprehensive portfolio of undergraduate, postgraduate and research study programs in the fields of computer science, and mathematical sciences. 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 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.

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.

(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 section 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 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.

(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 the exclusion. Students must provide, with their application, evidence of changed circumstances which significantly improve the applicant’s likelihood of academic success.

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

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<th>Credit points</th>
<th>Semester</th>
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<td>SCM1115 Computer Systems and Architecture</td>
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<tr>
<td>SCM1613 Applied Statistics 1</td>
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<tr>
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<tr>
<td>BAO9913 Account &amp; Information Systems</td>
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<td>SCM1711 Mathematical Foundations 1</td>
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<tr>
<td>Year 2</td>
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<td>Five Electives from lists A and B (5 x 3 hours)</td>
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<td>SCM3001 Project 1</td>
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<td>SCM3002 Project 2</td>
<td>-</td>
<td>12</td>
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<td>Three Electives from lists A and B (3x3 hours)</td>
<td>36</td>
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<tr>
<td>Three Electives from lists A and B (3x3 hours)</td>
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<td>36</td>
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</tbody>
</table>
| *An enabling subject for those students identified as requiring assistance in English.
| List A | Year/Third Year Subjects |          |          |
|        | SCM2111 Data Communications and Networks 1 |          |          |
|        | SCM2112 Operating Systems |          |          |
|        | SCM2211 Database Systems 1 |          |          |
|        | SCM2218 Database Systems 2 |          |          |
|        | SCM2311 Object Oriented Programming 1 |          |          |
|        | SCM2312 Software Engineering 1 |          |          |
|        | SCM2313 Software Development |          |          |
|        | SCM2315 Advanced Programming |          |          |
|        | SCM2511 Image Processing 1 |          |          |
| List B | Second/Third Year Subjects |          |          |
|        | SCM2213 Computer Graphics |          |          |
|        | SCM3111 Data Communications and Networks 2 |          |          |
|        | SCM3311 Object Oriented Programming 2 |          |          |
|        | SCM3313 Software Engineering 2 |          |          |
|        | SCM3970 Computer Graphics for Gene Programming |          |          |
| List B | Third Year Subjects |          |          |
|        | SCM3112 User Interface Design |          |          |
|        | SCM3113 Multimedia Systems Design |          |          |
|        | SCM3115 Architectures 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 |          |          |
|        | SCM2930 3D Web Technologies |          |          |
|        | SCM2411 Mathematical Economics 1 |          |          |
|        | SCM2412 Mathematical Economics 2 |          |          |
|        | SCM2611 Linear Statistical Models |          |          |
|        | SCM2612 Statistical Forecasting |          |          |
|        | SCM2614 Statistical Data-mining |          |          |
|        | SCM2711 Discrete Mathematics |          |          |
|        | SCM2712 Mathematics of Continuous Processes |          |          |
|        | SCM2713 Modelling for Decision Making |          |          |
|        | SCM2911 Linear Optimisation Modelling |          |          |
|        | SCM2912 Project Scheduling |          |          |
|        | SCM2915 Stochastic and Combinatorial Optimisation |          |          |
| List B | Second Year Subjects |          |          |
|        | SCM2900 Selected Topics in Operations Research and Statistics |          |          |
|        | SCM3411 Mathematical Economics 3 |          |          |
|        | SCM3613 Time Series Analysis |          |          |
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, SCM3001, 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.

Bachelor of Science in Internet Technologies and Applications

Course Code: SBIA

Course Objectives
Internet and web-based computing has in recent years assumed a huge importance in industry, for theoretical and applied computer science, and research.

This course has been established to provide students with the fundamental background for the development and maintenance of Internet and web-based services. A new Internet Technologies and Applications Research Lab has been established recently to support academic and research activities in the areas.

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

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 Methmetical Methods or have the equivalent of these qualifications.

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

Course Structure

<table>
<thead>
<tr>
<th>Year 1, Semester 1</th>
<th>Credit points</th>
</tr>
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<tbody>
<tr>
<td>*ACE1141 English Language and Communication 1</td>
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<tr>
<td>SCM1114 Introduction to Computing and the Internet</td>
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<td>SCM1311 Programming 1</td>
<td>15</td>
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<tr>
<td>SCM1711 Mathematical Foundations 1</td>
<td>15</td>
</tr>
<tr>
<td>SCM1613 Applied Statistics 1</td>
<td>15</td>
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<td>Year 1, Semester 2</td>
<td>Credit points</td>
</tr>
<tr>
<td>--------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>*ACE1142 English Language and Communication 2</td>
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<tr>
<td>SCM1115 Computer Systems and Architecture</td>
<td>15</td>
</tr>
<tr>
<td>SCM1312 Programming 2</td>
<td>15</td>
</tr>
<tr>
<td>SCM1712 Mathematical Foundations 2</td>
<td>15</td>
</tr>
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<td>*For those not doing ACE1141 and ACE1142</td>
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<td>SCM1614 Applied Statistics 2</td>
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<td>Total per Semester</td>
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<tbody>
<tr>
<td>SCM2211 Database Systems 1</td>
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<td>SCM2311 Object Oriented Programming 1</td>
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<td>SCM2312 Software Engineering 1</td>
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<td>SCM2810 Advanced Internet Programming</td>
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<td>Credit points</td>
</tr>
<tr>
<td>--------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>SCM2111 Data Communications &amp; Networks 1</td>
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<td>SCM2112 Operating Systems</td>
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<td>SCM2313 Software Development</td>
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<td>SCM2820 Internet Computing using XML</td>
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<td>1 Elective from List A or B</td>
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<tr>
<td>Total per Semester</td>
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List A

Second Year Subjects
SCM2218 Database Systems 2
SCM2315 Advanced Programming
SCM2511 Image Processing 1

Second/Third Year Subjects
SCM2213 Computer Graphics
SCM3111 Data Communications & Networks 2
SCM3311 Object Oriented Programming 2
SCM3313 Software Engineering 2

Third Year Subjects
SCM3112 User Interface Design
SCM3113 Multimedia Systems Design
SCM3115 Architectures 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

Second Year Subjects
SCM2411 Mathematical Economics 1
SCM2412 Mathematical Economics 2
SCM2611 Linear Statistical Models
SCM2612 Forecasting
SCM2614 Statistical Data-mining
SCM2711 Discrete Mathematics
SCM2713 Modelling for Decision Making
SCM2911 Linear Optimisation Modelling
SCM2912 Project Scheduling
SCM2915 Stochastic and Combinatorial Optimisation

Third Year Subjects
SCM3411 Mathematical Economics 3
SCM3613 Time Series Analysis
SCM3617 Quality Improvement and Experimental Design
SCM3720 Cryptography, Computer and Network Security
SCM3714 Computational Modelling
SCM3911 Simulation
Bachelor of Science in Information Technology

Course Code: SBIT

Course Objectives
The Information Technology course aims to equip students with the updated skills required to deal with advanced data processing. Students in Information Technology will develop skills and conceptual understanding needed to design, install, configure and manage various advanced data management technologies; and to develop data management processes at both the intranet and Internet level for modern organizations and enterprises.

On completion of the course, students will:

- have acquired skills in the development of database applications such as relational, object-oriented and multimedia systems,
- be familiar with online transaction and application processing,
- be able to design, install, configure and maintain various data storage systems,
- have a sound understanding and competence in the use of technologies that are utilised in data warehousing and data mining,
- have a sound understanding of distributed systems, including the ability to establish and maintain data storage strategies within local area networks, wide area networks, and across the Internet.

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

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.

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

Course Structure

Year 1, Semester 1

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Subject</th>
<th>Credit Points</th>
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</thead>
<tbody>
<tr>
<td>SCM1111</td>
<td>Introduction to Computing and the Internet</td>
<td>15</td>
</tr>
<tr>
<td>SCM1311</td>
<td>Programming 1</td>
<td>15</td>
</tr>
<tr>
<td>SCM1613</td>
<td>Applied Statistics 1</td>
<td>15</td>
</tr>
<tr>
<td>SCM1711</td>
<td>Mathematical Foundations 1</td>
<td>15</td>
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Year 1, Semester 2

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<tr>
<th>Course Code</th>
<th>Subject</th>
<th>Credit Points</th>
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<td>SCM2111</td>
<td>Data Communications &amp; Networks 1</td>
<td>12</td>
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<tr>
<td>SCM2112</td>
<td>Operating Systems</td>
<td>12</td>
</tr>
<tr>
<td>SCM2313</td>
<td>Software Development</td>
<td>12</td>
</tr>
<tr>
<td>SCM2218</td>
<td>Database Systems 2</td>
<td>12</td>
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Total per Semester 60

Year 2, Semester 2

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<th>Subject</th>
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<td>Data Communications &amp; Networks 1</td>
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</tr>
<tr>
<td>SCM2112</td>
<td>Operating Systems</td>
<td>12</td>
</tr>
<tr>
<td>SCM2313</td>
<td>Software Development</td>
<td>12</td>
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<td>SCM2218</td>
<td>Database Systems 2</td>
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</table>

Total per Semester 60

List A
(Pool of second and third year Computing subjects used for SBCO, SBCM and proposed new course)

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<thead>
<tr>
<th>Course Code</th>
<th>Subject</th>
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<td>Object Oriented Programming 1</td>
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<td>SCM2312</td>
<td>Software Engineering 1</td>
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<td>SCM2313</td>
<td>Software Development</td>
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<td>SCM2315</td>
<td>Advanced Programming</td>
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<td>SCM2511</td>
<td>Image Processing 1</td>
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<td>SCM2912</td>
<td>Project Scheduling</td>
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<td>SCM3111</td>
<td>Data Communications and Networks 2</td>
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<td>Software Engineering 2</td>
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<td>SCM3311</td>
<td>Object Oriented Programming 2</td>
</tr>
<tr>
<td>SCM3112</td>
<td>User Interface Design</td>
</tr>
<tr>
<td>SCM3113</td>
<td>Multimedia Systems Design</td>
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<tr>
<td>SCM3115</td>
<td>Architectures for Enterprise Wide Computing</td>
</tr>
<tr>
<td>SCM3211</td>
<td>Database Systems 3</td>
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<tr>
<td>SCM3312</td>
<td>Intelligent Systems</td>
</tr>
<tr>
<td>SCM3314</td>
<td>Object Oriented Analysis and Design</td>
</tr>
<tr>
<td>SCM3315</td>
<td>Network Operating Systems Administration</td>
</tr>
<tr>
<td>SCM3511</td>
<td>Image Processing 2</td>
</tr>
<tr>
<td>SCM3712</td>
<td>Cryptography, Computer and Network Security</td>
</tr>
<tr>
<td>SCM3808</td>
<td>Advanced Object Oriented Computing</td>
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<tr>
<td>SCM3911</td>
<td>Simulation</td>
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</table>

Bachelor of Science in Computational Financial Mathematics

Course Code: SBCF

Course Objectives
A great many businesses in the unpredictable world of commerce employ sophisticated and computationally intensive mathematical tools to help corporations determine strategies for market trading and risk profiling. As a result, virtually all major banking, investment and energy companies employ graduates with expertise in mathematics and/or computing.
This course is designed to address this demand by coupling a program in computing and mathematical sciences with a focus on finance and risk management. There is no other undergraduate course in the country, and indeed very few internationally, that seeks to combine Finance with both the disciplines of Computer Science and the Mathematical Sciences in this way.

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

**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.

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

**Course Structure**

<table>
<thead>
<tr>
<th>Year 1, Semester 1</th>
<th>Credit points</th>
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<tbody>
<tr>
<td><em>ACE1141</em> English Language &amp; Communication 1</td>
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<tr>
<td>SCM1114 Introduction to Computing &amp; the Internet</td>
<td>15</td>
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<tr>
<td>SCM1311 Programming 1</td>
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<tr>
<td>SCM1613 Applied Statistics 1</td>
<td>15</td>
</tr>
<tr>
<td>SCM1711 Mathematical Foundations 1</td>
<td>15</td>
</tr>
<tr>
<td><strong>Total per Semester</strong></td>
<td><strong>60</strong></td>
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</tbody>
</table>

*Students requiring additional English will take ACE1141 and ACE1142 – this will increase their credit points total for 1st Year to 135 (= 67 + 68); however, these English subjects will replace one second year elective for them and the total credit for the course will be 360, instead of 360.

<table>
<thead>
<tr>
<th>Year 1, Semester 2</th>
<th>Credit points</th>
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<tbody>
<tr>
<td><em>ACE1142</em> English Language &amp; Communication 2</td>
<td>8</td>
</tr>
<tr>
<td>SCM1115 Computer Systems and Architecture</td>
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<tr>
<td>SCM1312 Programming 2</td>
<td>15</td>
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<tr>
<td>SCM1614 Applied Statistics 2</td>
<td>15</td>
</tr>
<tr>
<td>SCM1712 Mathematical Foundations 2</td>
<td>15</td>
</tr>
<tr>
<td><strong>Total per Semester</strong></td>
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<table>
<thead>
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<th>Year 2, Semester 1</th>
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<tbody>
<tr>
<td>BAO1101 Accounting for Decision Making</td>
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<tr>
<td>SCM2211 Database Systems 1</td>
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<td>SCM2612 Forecasting</td>
<td>12</td>
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<td>SCM2712 Mathematics of Continuous Process</td>
<td>12</td>
</tr>
<tr>
<td>1 Elective from List A</td>
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<tr>
<td><strong>Total per Semester</strong></td>
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<table>
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<th>Year 2, Semester 2</th>
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<tbody>
<tr>
<td>SCM2411 Software Engineering 1</td>
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<td>SCM2411 Mathematical Economics 1</td>
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<tr>
<td>SCM2713 Modelling for Decision Making</td>
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<td>SCM2911 Linear Optimisation Modelling</td>
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<tr>
<td>1 Elective from List A</td>
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<tr>
<td><strong>Total per Semester</strong></td>
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<tbody>
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<tr>
<td>BAO3403 Investment and Portfolio Analysis</td>
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<tr>
<td>SCM3001 Project 1 (Financial Computing)</td>
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<tr>
<td>SCM3711 Computational Methods</td>
<td>12</td>
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<tr>
<td>1 Elective from List B</td>
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<tr>
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<td><strong>Total per Semester</strong></td>
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</tr>
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</table>

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

**Course Code:** SBKA

**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>Semester One</th>
<th>Semester Two</th>
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<td>*ACE1412 English Language and Communication 2</td>
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<td>SCA1101 Introductory Aeronautics</td>
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<td>SCA1102 Basic Aeronautics</td>
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<td>SCM1115 Computer Systems and Architecture</td>
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</tr>
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<td>SCM1711 Mathematical Foundations 1</td>
<td>15</td>
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<td>SCM1712 Mathematical Foundations 2</td>
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<td>For those not doing ACE1141 and ACE1142</td>
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<tr>
<td>SCM1613 Applied Statistics 1</td>
<td>57*</td>
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<th>Year 2</th>
<th>Semester One</th>
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<tr>
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<td>SCA2063 Human Factors for the CPL</td>
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<td>SCM2211 Database Systems 1</td>
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<td>SCM2218 Database Systems 2</td>
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<td>SCM2311 Object Oriented Programming 1</td>
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<tr>
<td>ACE3143 English Language and Communication 3</td>
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<td>ACE3144 English Language and Communication 4</td>
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<td>SCA3011 IREX – The Civil Aviation Instrument Rating Theory Exam</td>
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<td>SCA3014 Human Factors for the ATPL</td>
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<td>SCA3116 Performance and Loading for the ATPL</td>
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<td>SCA3120 Air Law for the ATPL</td>
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</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.

If a student successfully completes first year they may, if they wish receive full credit for one years study and transfer into the Bachelor of Science degree in Computer Science, the Bachelor of Science degree in Mathematical Sciences or the Bachelor of Science degree in Computer and Mathematical Sciences. At the completion of any stage of the course students may apply for a transfer to any of the three above degrees and be given full credit for subjects successfully completed.

**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 SCA coded subjects, students must not enrol in any subject for which at least an N1 grade hasn't been attained in any of the prerequisite subjects.

For SCA coded subjects a pass must be obtained in SCA subject prerequisites as determined by the examining body, CASA, before enrolment is permitted.

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 (a) must be obtained in at most two sittings.

Completion by compensation is not a pass in a failed subject.

**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

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.

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

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<tr>
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<th>Credit points</th>
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<td>SCM1115</td>
<td>Computer Systems and Architecture</td>
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<td>SCM1312</td>
<td>Programming 2</td>
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<td>SCM1614</td>
<td>Applied Statistics 2</td>
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Level 2 Entrants

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<td>Computing Project</td>
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<tr>
<td>SCM3002</td>
<td>Computing Project</td>
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</table>

Plus nine (9) semester subjects selected from:

<table>
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<tr>
<th>Course Code</th>
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<td>SCM2112</td>
<td>Operating Systems</td>
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<td>SCM2211</td>
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<td>SCM3311</td>
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<td>SCM3312</td>
<td>Software Engineering 1</td>
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<td>SCM3313</td>
<td>Software Development</td>
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<td>SCM2612</td>
<td>Statistical Forecasting</td>
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<td>SCM2711</td>
<td>Discrete Mathematics</td>
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<td>SCM3311</td>
<td>Object Oriented Programming 2</td>
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<td>SCM3312</td>
<td>Intelligent Systems</td>
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<td>SCM3112</td>
<td>User Interface Design</td>
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<td>SCM3113</td>
<td>Multimedia Systems Design</td>
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<td>SCM3314</td>
<td>Object Oriented Analysis and Design</td>
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<tr>
<td>SCM3911</td>
<td>Simulation</td>
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</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.

Offshore Program Conducted in Malaysia

Course Code: SBCO

The Bachelor of Science in Computer Science course is offered as an advanced standing program in conjunction with Sunway College in Malaysia. Suitably qualified students (as determined by the School) are able to complete the final year of the course in Malaysia.

Course Structure

Semester 1
- SCM2311 Object Oriented Programming 1
- SCM2218 Database Systems 2
- SCM3312 User Interface Design
- SCM6822 Internet Programming

Semester 2
- SCM2311 Object Oriented Programming 1
- SCM2313 Software Development
- SCM2218 Database Systems 2
- SCM1712 Mathematical Foundations 2
- SCM2511 Image Processing 1

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

Semester 1
- SCM1312 Programming 2
- SCM2312 Software Engineering 1
- SCM1613 Applied Statistics 1
- SCM1711 Mathematical Foundations 1
- SCM6822 Internet Programming

Semester 2
- SCM2311 Object Oriented Programming 1
- SCM2313 Software Development
- SCM2218 Database Systems 2
- SCM1712 Mathematical Foundations 2
- SCM2511 Image Processing 1

Level 3

Semester 1
- ACE3143 English Language & Communication 3
- SCM3001 Project 1
- SCM3312 Intelligent Systems
- SCM3313 Software Engineering 2
- SCM3311 Object Oriented Programming 2

Semester 2
- ACE3144 English Language & Communication 4
- SCM3002 Project 2
- SCM3112 User Interface Design
- SCM3115 Architectures for Enterprise Wide Computing
- SCM3720 Cryptography, Computer and Network Security
The School of Electrical Engineering offers undergraduate courses leading to the award of:

- Bachelor of Engineering in –
  - Electrical and Electronic Engineering;
  - Computer Engineering;
  - Software Engineering;
  - Microelectronic Systems;
  - Telecommunication 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 both local and international students enrolled. 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 candidature, 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 monochrome and color 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:

- Telecommunication;
- 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 Units 3 and 4 in 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 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 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

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.

Recognition and accreditation by the relevant Institutions will be obtained for the recently introduced Software Engineering degree.

Industrial Experience

Candidates applying for the award of an engineering 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 Engineers Australia requirements.

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 Engineers Australia and other professional bodies.

**Course Structure**

<table>
<thead>
<tr>
<th>Year</th>
<th>Semester</th>
<th>Course Code</th>
<th>Credit Points</th>
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**Bachelor of Engineering in Computer Engineering**

**Course Code:** EEBH

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, including social and legal responsibilities, ethics, and membership of a professional society.
### Course Structure

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*Electives*(three for semester 1 and two for semester 2):
- EEA3001 Control Systems 3.1
- EEA3002 Control Systems 3.2
- EEA4004 Robotics and Automation 4.1
- EEC3801 Data Based Systems
- EEC3802 Introduction to Artificial Intelligence 3.2
- EEC3804 Computer Graphics 3.2
- EET2302 Multimedia Engineering Techniques 2.2
- EEEH2302 Microprocessor Systems 2.2

| **Total** | **60** | **60** |

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*Electives*(two for semester 1 and two for semester 2):
- EEA4001 Computer Control 4.1
- EEA4002 Computer Control 4.2
- EEC3504 Computers in Society 3.2
- EEEH3201 Computer and Digital Design 3.1

| **Total** | **60** | **60** |

### Bachelor of Engineering in Software Engineering

**Course Code:** EBSW

Software Engineering incorporates: the design and development of software, systems analysis, project management, programming in a range of languages and working in fields associated with industry's computer and software needs.

**Course Objectives**

The course combines theoretical and practical aspects of software engineering and also provides a significant breadth of study in related fields. Students are given the opportunity to specialise in additional areas of engineering by allowing them to choose from a broad collection of elective subjects ranging from computer communication to control and digital systems design. Major projects carried out by students entail a close integration of theory and practice.

### Course Structure

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*Electives*(three for semester 1 and two for semester 2):
- EEA3001 Control Systems 3.1
- EEA3002 Control Systems 3.2
- EEA4004 Robotics and Automation 4.1
- EEC3801 Data Based Systems
- EEC3802 Introduction to Artificial Intelligence 3.2
- EEC3804 Computer Graphics 3.2
- EET2302 Multimedia Engineering Techniques 2.2
- EEEH2302 Microprocessor Systems 2.2

| **Total** | **60** | **60** |

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*Electives*(two for semester 1 and two for semester 2):
- EEA4001 Computer Control 4.1
- EEA4002 Computer Control 4.2
- EEC3504 Computers in Society 3.2
- EEEH3201 Computer and Digital Design 3.1

| **Total** | **60** | **60** |
Year 3
ACE3143 English Language and Communication 3 10 -
ACE3144 English Language and Communication 4 - 10
EED3510 Design Project 10 10
ECE3511 Software Engineering 3.1 10 -
ECE3604 Programming Tools and Compiler 10 -
ECE3802 Introduction to Artificial Intelligence 3.2 - 10
EES3001 Advanced Program Design 3.1 10 -
SCM3311 Object-Oriented Programming 2 - 10
Three electives from the list below
EEH3504 Embedded Systems 3.1 10 -
EET2002 Multimedia Engineering - 10 Techniques 2.2
SCM3115 Architecture for Enterprise
Wide Computing - 10
EEC6001 Windows Programming 10 -
EEH3202 Computer and Digital Design 3.2 - 10
EEC2001 Linear Systems and Applications 1 - 10 (must be taken together with SMA2201)
SMA2201 Mathematics B 10 -
Other electives approved by course director 60 60

Year 4
BMO3851 Engineering Management 2 10 -
BMO4551 Human & Industrial Relations 10 -
EEG5012 Managing Software Projects - 10
EED4510 Advanced Design Project 4 20 20
EED4511 Software Testing and Quality Assurance - 10
Any 4 subjects from the list below 40
Approved electives from Computer Technology/Computer Eng/ Electrical Eng/ Comsci 3rd and 4th year subject list.

Admission Requirements
Satisfactory completion of the Victorian Certificate of Education, The Victoria University Certificate of Foundation Studies or equivalent at the appropriate standard. Students with alternative qualifications, especially work experience, will be encouraged to apply. Previous studies in physics and high level mathematics will be considered advantageous.
Students considered to have potential to complete, but without formal qualifications, may be required to take subjects from the foundation certificate as preparation.

Bachelor of Engineering in Microelectronic Systems
Course Code: EBMI
(There is no intake into this course in 2005)

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.

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| EEE4102  | 8 | - |
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| EEE4111  | 8 | - |
| EEE4112  | 8 | - |
| EEE4114  | 8 | - |
| EET4001  | 8 | - |
| EET4002  | 8 | - |
| EEE4103  | 8 | - |
| Computer Systems 4.3 | - | 8 |

*Appropriate semester electives from other Bachelor of Engineering courses.

*Appropriate semester electives from other Bachelor of Engineering courses.
Bachelor of Engineering in Telecommunication Engineering

Course Code: EBTE

(There is no intake into this course in 2005)

The Bachelor of Engineering in Telecommunication is an engineering degree course that provides an extensive core of studies in the major Multimedia Telecommunication 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 telecommunication 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

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Bachelor of Engineering in Photonics

Course Code: EBPH

(There is no intake into this course in 2005)

Course Objectives

The Bachelor of Engineering in Photonics seeks to prepare students for employment in those parts of the telecommunication 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 Telecommunication 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.
### Bachelor of Engineering Science in Photonics

**Course Code:** SBPT  
*(There is no intake into this course in 2005)*

#### Course Objectives

The Bachelor of Engineering in Photonics seeks to prepare students for employment in those parts of the telecommunication 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 Photonics and with the Bachelor of Engineering in Telecommunication and other degrees in Electrical and Electronic Engineering.

The Bachelor of Engineering Science provides students with a focussed 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

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<th>Year 2</th>
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| Year 4 | |
|---------| |
| Core | |
| BMO3422 Strategic Management | - | 8 |
| BMO4551 Human & Industrial Relations | 8 | - |
| EED4000 Design & Project Management 4.0 | 20 | 20 |
| EET4001 Signal Processing 4.1 | 8 | - |
| EET4002 Signal Processing 4.2 | - | 8 |
| Electives | 8 | 8 |
| | 60 | 60 |

*Students undertake any 4 of the following (8 credit points each):*

- EPP4001 Quantum Mechanics 4
- EPP4002 Atomic Spectroscopy
- EPP4003 Optical Properties of Materials
- EPP4004 Advanced Optics and Optical Design
- EPP4005 Optical Fibre Sensors
- EPP4006 Data Acquisition 2
- EPP4007 Computational Physics
- EPP4008 Advanced Fibre Optics
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

Middle Band Selection
Completing Physics and/or Specialist Mathematics leads to an ENTER score 3 points higher per study.

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

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Bachelor of Science in Applied Physics and Computing

Course Code: SBPC
(There is no intake into this course in 2005)

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.

The computing component of the course deals with both software and hardware aspects. Thus graduates are trained in such areas as computer and microprocessor architecture, data acquisition, instrument control, databases, computer graphics and programming in a variety of languages, including commercial and scientific applications.

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).

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<td>Electives (See below)</td>
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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
SPH3430 Physics Project 10 credit points
SPH1111 Astronomy 10 credit points
Students may undertake subjects from the BSc (Optoelectronics) degree, for example, SPH3441 Optical Properties of Materials, SPH3451 Advanced Optics and Optical Design, and SPH3462 Optical Waveguides and Sensors (5 credit points each).

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.

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 Optoelectronics
Course Code: SBPO
(There is no intake into this course in 2005)

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 complemented 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 provides 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>
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<th>Semester</th>
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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
EEC4700 Research Project
Elective subjects (3 x 3 hours per semester)
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>Course Code</th>
<th>Course Title</th>
<th>Weeks</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPH4410</td>
<td>Physics 4 (Honours)</td>
<td>20</td>
<td>120</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 Coordinator.
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 awards of:

Bachelor of Science (Honours)

- Biomedical Sciences
- Nutritional Therapy
- 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) 9919-2691 or fax (03 9919 2465.

**Bachelor of Science in Biomedical Sciences**

*Course Code: SBBIS*

**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/clinical 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 course 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.

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

**First Year Science Electives**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title of Subject</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBM1514</td>
<td>Functional Anatomy +1,2,4</td>
<td>20</td>
</tr>
<tr>
<td>SCS1110</td>
<td>Chemistry for Biological Sciences A 1,2,3</td>
<td>15</td>
</tr>
<tr>
<td>SCS1120</td>
<td>Chemistry for Biological Sciences B 1,2,4</td>
<td>15</td>
</tr>
<tr>
<td>SMA1110</td>
<td>Mathematics 1</td>
<td>10</td>
</tr>
<tr>
<td>SMA1120</td>
<td>Mathematics 2</td>
<td>10</td>
</tr>
<tr>
<td>SPH1210</td>
<td>Physics 1F (or equivalent)</td>
<td>10</td>
</tr>
<tr>
<td>SPH1220</td>
<td>Physics 1F (or equivalent)</td>
<td>10</td>
</tr>
</tbody>
</table>

**First Year General Electives**

- Any foreign language at first year level | 10 |
- ACC1047 | Culture and Communication | 10 |
- ACC1048 | Media, Culture and Society | 10 |
- ACP1053 | Introduction to Creative Writing | 10 |
- ACP1054 | Introduction to Media Writing | 10 |
- APP1012 | Psychology 1A | 15 |
- APP1013 | Psychology 1B | 15 |
- BMO1102 | Management and Organisational Behaviour 1,2 | 10 |
- BHO1171 | Introduction to Marketing 1 | 10 |
- BMO1122 | Human Resource Management 1,2 | 10 |
- BHO2343 | Consumer Behaviour 1 | 10 |
- BCP9110 | Introduction to Computing | 10 |
- BEO1106 | Business Statistics | 10 |

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
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

**Year 2**

**Core subjects**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title of Subject</th>
<th>Credit Points</th>
</tr>
</thead>
<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>SMB2260</td>
<td>Diet and Nutrition</td>
<td>20</td>
</tr>
<tr>
<td>SMB2540</td>
<td>Pathophysiology 2 (Human Bioscience 4A)</td>
<td>15</td>
</tr>
</tbody>
</table>

**Second Year Science Electives**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title of Subject</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBM1524</td>
<td>Functional Anatomy 1,2,4</td>
<td>20</td>
</tr>
<tr>
<td>SBM2560</td>
<td>Medical Biochemistry 1,4</td>
<td>15</td>
</tr>
<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</td>
<td>10</td>
</tr>
<tr>
<td>SBM2661</td>
<td>Epidemiology</td>
<td>5</td>
</tr>
<tr>
<td>SBF2330</td>
<td>Cell Biology 1,2,4</td>
<td>10</td>
</tr>
<tr>
<td>SMB2580</td>
<td>Advanced Functional Anatomy 1,4</td>
<td>15</td>
</tr>
<tr>
<td>SMB3610</td>
<td>Bioscience, Ethics and Values 1,2</td>
<td>10</td>
</tr>
<tr>
<td>SCS2372</td>
<td>Toxicology 1A</td>
<td>5</td>
</tr>
<tr>
<td>SCS2373</td>
<td>Toxicology 1B</td>
<td>5</td>
</tr>
</tbody>
</table>

**Second Year General Electives**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title of Subject</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACP2070</td>
<td>Editing Principles and Practice</td>
<td>10</td>
</tr>
<tr>
<td>ACP2079</td>
<td>Publishing Principles and Practice</td>
<td>10</td>
</tr>
<tr>
<td>ACP2069</td>
<td>Writing for the Web</td>
<td>10</td>
</tr>
<tr>
<td>APP2013</td>
<td>Psychology 2A</td>
<td>10</td>
</tr>
<tr>
<td>APP2014</td>
<td>Psychology 2B</td>
<td>10</td>
</tr>
<tr>
<td>BAO2207</td>
<td>Employment Law</td>
<td>10</td>
</tr>
<tr>
<td>BHO2250</td>
<td>Advertising and Public Relations</td>
<td>10</td>
</tr>
<tr>
<td>BHO2251</td>
<td>Product and Pricing Strategy</td>
<td>10</td>
</tr>
</tbody>
</table>
BMO2300 Career Planning & Development
BMO2285 Marketing Research
BMO3420 Human Resource Information Systems
BMO3476 Training and Development
HPE1202 Biomechanics
HPE2104 Exercise Physiology
HPE3100 Advanced Exercise Physiology
HPL3127 Resistance Training

Any foreign language at second year level

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

Year 3

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</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>One</td>
</tr>
<tr>
<td>SBM3800</td>
<td>15</td>
</tr>
<tr>
<td>SBM3264</td>
<td>20</td>
</tr>
<tr>
<td>SBM3550</td>
<td>20</td>
</tr>
<tr>
<td>SBM3560</td>
<td>20</td>
</tr>
<tr>
<td>SBM3590</td>
<td>20</td>
</tr>
<tr>
<td>SBM3660</td>
<td>20</td>
</tr>
<tr>
<td>SBM3720</td>
<td>20</td>
</tr>
<tr>
<td>SBM3810</td>
<td>20</td>
</tr>
<tr>
<td>SBM3820</td>
<td>20</td>
</tr>
<tr>
<td>SBM3913</td>
<td>20</td>
</tr>
<tr>
<td>Electives</td>
<td>20-25</td>
</tr>
</tbody>
</table>

Third Year Science Electives

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Description</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBF3920</td>
<td>Biometrics and Experimental Design</td>
<td>15</td>
</tr>
<tr>
<td>SBM3800</td>
<td>Pharmacology</td>
<td>20</td>
</tr>
<tr>
<td>SBM3264</td>
<td>Advanced Nerve and Muscle Physiology</td>
<td>-20</td>
</tr>
<tr>
<td>SBM3550</td>
<td>Advanced Bioscience 5A</td>
<td>20</td>
</tr>
<tr>
<td>SBM3560</td>
<td>Advanced Bioscience 6A</td>
<td>20</td>
</tr>
<tr>
<td>SBM3590</td>
<td>Advanced Histological Techniques</td>
<td>20</td>
</tr>
<tr>
<td>SBM3660</td>
<td>Developmental and Clinical Genetics</td>
<td>-20</td>
</tr>
<tr>
<td>SBM3720</td>
<td>Immunology</td>
<td>20</td>
</tr>
<tr>
<td>SBM3810</td>
<td>Wellness 1</td>
<td>20</td>
</tr>
<tr>
<td>SBM3820</td>
<td>Wellness 2</td>
<td>-20</td>
</tr>
<tr>
<td>SBM3913</td>
<td>Project1,2,4</td>
<td>-20</td>
</tr>
<tr>
<td>Electives</td>
<td>20-25</td>
<td>20-50</td>
</tr>
</tbody>
</table>

Bachelor of Science in Nutritional Therapy

Course Code: SBNT

Nutritional Therapy is founded in medical science and on peer-reviewed evidence-based research. Nutritional Therapists use manipulation of food and diet for therapeutic purposes. Often a patient’s condition can be improved by suitably matching food intake to their condition, together with nutriceutical prescription and appropriate lifestyle advice. The graduates from this course will not be Dietitians, but will be able to treat chronic non-life threatening conditions.

This course is modelled on the highly successful BSc Nutritional Therapy courses offered in Europe. At present there is no similar course in Nutritional Therapy in Australia, and this course will be the first in Australasia.

Course Objectives

The Bachelor of Science in Nutritional Therapy will provide an alternative education and training program for those wishing to apply their knowledge of Nutrition to the treatment of a range of clients by high-quality nutrition care and therapy. The objectives of the course are to produce Graduates able to function independently as Nutritional Therapists. At the end of the course, Graduates will be able to; evaluate and process requests for nutritional therapy; assess the client and formulate an appropriate course of nutritional therapy; educate the client in self-care therapy, and evaluate the client’s response to the course of treatment.

The Graduates of this course will be able to make a valuable contribution to society as Nutritional Therapists in private practice, as Nutrition Consultants to the healthcare and fitness industries, and as practitioners in integrated health centres.

Course Structure

Year 1

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Description</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBF2310</td>
<td>Advanced Nutrition</td>
<td>10</td>
</tr>
<tr>
<td>SBM3230</td>
<td>Nutrition and Health</td>
<td>-10</td>
</tr>
<tr>
<td>SBM3610</td>
<td>Bioscience, Ethics and Values1,2</td>
<td>-10</td>
</tr>
<tr>
<td>SBM3640</td>
<td>Advanced Neurosciences</td>
<td>-10</td>
</tr>
<tr>
<td>SBM3650</td>
<td>Advanced Reproduction and Development</td>
<td>-10</td>
</tr>
<tr>
<td>SBM3670</td>
<td>Molecular Psychology</td>
<td>10</td>
</tr>
<tr>
<td>SCS301</td>
<td>Public Health</td>
<td>-5</td>
</tr>
<tr>
<td>SCS3361</td>
<td>Environmental Health</td>
<td>-10</td>
</tr>
</tbody>
</table>

Year 2

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Description</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>HFPN0021</td>
<td>Counselling Skills for Natural Medicine Practitioners</td>
<td>15</td>
</tr>
<tr>
<td>SBF3240</td>
<td>Functional Foods</td>
<td>15</td>
</tr>
<tr>
<td>SBM2260</td>
<td>Diet and Nutrition</td>
<td>15</td>
</tr>
<tr>
<td>SBM2530</td>
<td>Pathophysiology</td>
<td>15</td>
</tr>
<tr>
<td>SBM2540</td>
<td>Pathophysiology</td>
<td>15</td>
</tr>
<tr>
<td>SBM2560</td>
<td>Medical Biochemistry</td>
<td>15</td>
</tr>
<tr>
<td>SBM2850</td>
<td>Nutritional Therapeutics A</td>
<td>15</td>
</tr>
<tr>
<td>SBM2855</td>
<td>Nutritional Therapeutics B</td>
<td>15</td>
</tr>
</tbody>
</table>

60
Year 3  
SBM3810  Wellness 1   15  
SBM3820  Wellness 2   15  
SBM3850  Nutritional Therapeutics C  15  
SBM3855  Nutritional Therapeutics D  15  
SBM3950  Nutritional Therapy in Practice 1   15  
SBM3955  Nutritional Therapy in Practice 2   15  
SBM3960  Nutrition Frontiers  15  
SBM3970  Operating a Clinical Practice  15  

Professional Recognition  
Graduates will be eligible for full membership of  the following professional bodies upon completion of  the course (awaiting formal notification):  
- Australian Nutrition Society  
- British Association of  Nutritional Therapy  
- Australian Complementary Health Association  
- Australasian Integrative Medicine Association  

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.
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 OH&S at a workplace.

Admission Requirements  
Normal entry requirements for articulation to the Bachelor of Science is the successful completion of a Diploma in Occupational Health and Safety that is equivalent with the course undertaken at Swan TAFE. A significant number of such applicants are expected to be occupational health and safety professionals seeking to upgrade their Diploma qualifications to a degree 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, 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 modularity in the delivery of subjects. Block mode teaching delivered at Swan TAFE, Western, Australia, is available. Students complete all units by distance education mode.

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>Credit points</th>
<th>Semester</th>
<th>One</th>
<th>Two</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBM2361 Epidemiology</td>
<td>6</td>
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<tr>
<td>SBM3570 Toxicology 2</td>
<td>5</td>
<td>8</td>
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<tr>
<td>SCS2001 Minor Project</td>
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<tr>
<td>SCS2071 Biological Chemistry</td>
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<tr>
<td>SCS2101 Task Analysis and Job Design</td>
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<tr>
<td>SCS2301 Study Design</td>
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<td>SCS2461 Risk Management</td>
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<td>SCS3061 Safety 3</td>
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<td>SCS3101 Rehabilitation</td>
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<td>SCS3161 Safety and Society</td>
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<td>SCS3301 Public Health</td>
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<td>SCS3361 Environmental Health</td>
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<tr>
<td>SCS3401 OH&amp;S Best Practice</td>
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<td>10</td>
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</tbody>
</table>

Additional Subjects for Level 2 – Associate Diploma Occupational Health and Safety Graduates upgrading to Bachelor of Science in Occupational Health and Safety:
BM02271 Organisations | - | 9 | - |
BM03220 Human Resource Management | 9 | - | - |
BHO3473 Human Relations | 9 | - | - |
BM03476 Training and Development | - | 9 | - |

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.
Double Degree — 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
Course structure for Psychology/Biomedical Sciences

<table>
<thead>
<tr>
<th>Credit Points</th>
<th>Semester 1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>SBM1518 Human Physiology 1</td>
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<tr>
<td></td>
<td>SCS1110 Chemistry for Biological Sciences A</td>
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<tr>
<td></td>
<td>APP1012 Psychology 1A</td>
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<tr>
<td></td>
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<td></td>
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<td>SBM1528 Human Physiology 2</td>
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<td></td>
<td>SCS1120 Chemistry for Biological Sciences B</td>
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<td>APP1013 Psychology 1B</td>
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<tr>
<td></td>
<td>SBM2530 Pathophysiology 1</td>
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<td>APP2013 Psychology 2A</td>
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<td></td>
<td>*APS2030 Quantitative Social Research Methods</td>
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<td></td>
<td>Semester 4</td>
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<td>SBM2540 Pathophysiology 2</td>
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<td></td>
<td>SBM1514 Functional Anatomy 1</td>
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<td>APP2014 Psychology 2B</td>
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<td></td>
<td>*APS2040 Qualitative Social Research Methods</td>
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<td>Semester 5</td>
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<tr>
<td></td>
<td>SBM2800 Cardiorespiratory and renal physiology</td>
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<td>SBM3800 Pharmacology</td>
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<td>APP3011 Psychology 3A</td>
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<td>Arts major (Arts subjects range 3-5 contact hours)*</td>
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<td>Semester 6</td>
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<td>SBM2260 Diet and nutrition</td>
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<td></td>
<td>SBM3610 Biomedical science, ethics and values</td>
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<td></td>
<td>APP3011 Psychology 3A</td>
</tr>
<tr>
<td></td>
<td>Arts major (Arts subjects range 3-5 contact hours)*</td>
</tr>
</tbody>
</table>

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

Arts: Major Options

Arts majors include studies in Sociology, Literary Studies, Communications & Professional Writing, Gender Studies, Asia-Pacific Studies and Spanish. Other options in Asian Studies, Asian Languages and History are available at the Footscray Park campus.

*APS2030 Quantitative Social Research Methods and APS2040 Qualitative Social Research Methods must be taken in either of second or third years.

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

Arts Majors

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
ACP1053 Introduction to creative writing
ACP1054 Introduction to media writing
ACS1071 Spanish A: Basic Spanish 1
ACS1072 Spanish B: Basic Spanish 2
ACW1020 Sex and gender
ACW1021 Fashioning gender
ASS1012 Sociology 1A – Introduction to Australian society and cultures

Psychology Electives for fourth year (not all electives are offered each 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

Course total 480

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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-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 of Molecular Sciences offers undergraduate courses leading to the award of:

Bachelor of Science (Honours)

Bachelor of Applied Science –

- Chemistry
- 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 handbook 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) 9919-8271 or fax (03) 9919 8284.

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 Structure

<table>
<thead>
<tr>
<th>Semester</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>Two</td>
</tr>
<tr>
<td>Year 1</td>
<td></td>
</tr>
</tbody>
</table>
| SCS1006  | Chemistry 1  | 20  
| SCS1008  | Industrial Experience | 10  |
| SCS1603  | Medical, Forensic and Analytical Chemistry 1A | 5  |
| SMA1071  | Mathematics Part 1 | 10 |
| SMA1081  | Mathematics Part 2 | 10 |
| SPH1601  | Physics ISA | 10 |
| SPH1602  | Physics ISB | 10 |
|          |              | 60 |
| Year 2   |              |
| SCS2510  | Analytical Chemistry 2 | 20 |
| SCS2000  | Industrial Experience | 10 |
| SMA2031  | Mathematics 2 Part 1 | 10 |
| SMA3071  | Intro to Computer Utilization | 10 |
|          | Chemistry Electives | 20 |
|          |              | 60 |
| Year 3   |              |
| ACE3020  | Written and Oral Communications 3 | 5 |
| SCS3511  | Applied Chemistry 3 (Analytical) | 20 |
| SCS3000  | Industrial Experience 3 | 15 |
|          | Chemistry Electives | 20 |
|          |              | 60 |

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.

Stage Completion by Compensation
Each degree course is composed of three years.

<table>
<thead>
<tr>
<th>Year Completed</th>
<th>Semester</th>
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<tr>
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<td>Completed First Year (SBCP)</td>
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<tr>
<td>0220</td>
<td>Completed Second Year (SBCP)</td>
</tr>
<tr>
<td>0320</td>
<td>Completed Third Year (SBCP)</td>
</tr>
<tr>
<td>1020</td>
<td>Stage Completed by Compensation, First Year (SBCP)</td>
</tr>
<tr>
<td>2020</td>
<td>Stage Completed by Compensation, Second Year (SBCP)</td>
</tr>
<tr>
<td>3020</td>
<td>Stage Completed by Compensation, Third Year (SBCP)</td>
</tr>
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</table>
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 2005 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.

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

<table>
<thead>
<tr>
<th>Credit points</th>
<th>Semester</th>
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</thead>
<tbody>
<tr>
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<table>
<thead>
<tr>
<th>Year 1</th>
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<tbody>
<tr>
<td>ACE1910 Communications for Science</td>
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<tr>
<td>BCF9110 Introductory Computing</td>
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<td>SBF1310 Biology 1</td>
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<td>SBF1320 Biology 2</td>
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<td>SCS1601 Chemistry A</td>
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<table>
<thead>
<tr>
<th>Year 2</th>
<th>One</th>
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<tbody>
<tr>
<td>SBF2300 Microbiology 1</td>
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<td>SBF2310 Microbiology 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>Electives</td>
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<table>
<thead>
<tr>
<th>Year 3</th>
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<tr>
<td>SBF3251 Bioprocessing Technology 1</td>
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<td>SBF3252 Bioprocessing Technology 2</td>
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<tr>
<td>SBF3510 Preparative and Analytical Biochemistry</td>
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<td>SBF3760 Recombinant DNA Technology</td>
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<td>SBF3730 Food Microbiology</td>
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<td>SBF3750 Industrial and Environmental Microbiology</td>
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<td>SBF3910 Project – Biotechnology</td>
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<tr>
<td>SBFM3720 Immunology</td>
<td>20</td>
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</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.

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: SBMF

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 indicating 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).
The course commences with a typical first year that exposes the student to a wide range of science disciplines. Second year has core of subjects and a selection of electives. In the final year chemical knowledge and applications are consolidated through appropriate choices of subjects and 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 open 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. Under some circumstances, mid-year entry will be permitted.

**Course Structure**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
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A total of 120 credit points is required for completion of the first year.

**Year 2**

<table>
<thead>
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<tbody>
<tr>
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<td>Medical Chemistry 2</td>
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<td>Forensic Chemistry 2</td>
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<td>SBS2310</td>
<td>Microbiology 1</td>
<td>15</td>
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<tr>
<td>SBS2330</td>
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<tr>
<td>SBS2410</td>
<td>Food Components</td>
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<td>SBS1518</td>
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<td>SBS2372</td>
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<td>SBS2521</td>
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<td>SBS2260</td>
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**Year 3**

<table>
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<td>SBS3603</td>
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<td>SBS3605</td>
<td>Forensic Methods 3A</td>
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<td>SBS3606</td>
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<td>SBS3071</td>
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Electives

Electives up to a total of 40 credit points may be selected over two semesters to make an overall total of 120 credit points for the completion of the third year. Note that if the above 'and' options are selected for both semesters then electives to the total of 10 credit points must be selected.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credit Points</th>
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</thead>
<tbody>
<tr>
<td>SBS2330</td>
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<td>Pathophysiology 1</td>
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<td>SBS3720</td>
<td>Immunology</td>
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<td>Prep and Analytical Biochemistry</td>
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<td>Recomb DNA Technology</td>
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<td>SBS3264</td>
<td>Advanced Nerve and Muscle Physiology</td>
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<td>Advanced Nutrition</td>
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<td>SBS3361</td>
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**Bachelor of Science in Nutrition, Food and Health Science**

**Course Code**: SBNH

**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 course requires the completion of a number of compulsory or core subjects together with elective subjects, totalling a minimum of 120 credit points per year of full-time study.

Course Structure
The course requires the completion of a number of compulsory or core subjects together with elective subjects, totalling a minimum of 120 credit points per year of full-time study.

Credit points

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<td>SBF2210 Food Interactions</td>
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<td>SBF2750 Nutrition</td>
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<td>SBF2660 Nutrition and Food Analysis Laboratory</td>
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<td>SBF3240 Functional Foods</td>
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Electives

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<td>Plant Food Processing Laboratory</td>
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<td>SBF6745</td>
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<td>BHO2434</td>
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<td>SMA1070</td>
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<td>SBF2530</td>
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<tr>
<td>SBF3750</td>
<td>Industrial and Environmental Microbiology</td>
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</table>

Students are advised to seek the assistance and advice of academic staff when making their elective selection.

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, 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 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 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>Coursework</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPG6010 Research Design</td>
<td>9% 10</td>
</tr>
<tr>
<td>SCS4201 Honours Coursework (9% per item)</td>
<td>27% 30</td>
</tr>
<tr>
<td>SCS4600 Honours Project: Initial Oral Presentation</td>
<td>10% 80</td>
</tr>
<tr>
<td>Project Thesis</td>
<td>54%*</td>
</tr>
<tr>
<td>Total</td>
<td>100%</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 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 Group 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 academic staff have doctoral degrees and substantial research and consultancy experience. The Group endeavours to develop close relationships with industry and 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 access to the Queenscliff laboratories of the Victorian Marine Science Consortium, a well equipped aquatic research laboratory, 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 field work.

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 that 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 precedence 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) 9919-2667 or fax (03 9919 2493).

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 a second teaching method in a Diploma of Education course and to subsequently gain registration with the Ministry of Education to

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 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 understanding of the biology, 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 specialisations 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 2005 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 2005 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 2005.

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>Course Code</th>
<th>Course Title</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBF1150</td>
<td>Global Environmental Issues</td>
<td>15</td>
</tr>
<tr>
<td>SBF1160</td>
<td>Australian Landscapes &amp; Biota</td>
<td>15</td>
</tr>
<tr>
<td>SMA1110</td>
<td>Maths 1 or elective</td>
<td>15</td>
</tr>
<tr>
<td>SBF1320</td>
<td>Biology 2</td>
<td>15</td>
</tr>
<tr>
<td>SCS1110</td>
<td>Chemistry for Biol. Sci. A or elective</td>
<td>15</td>
</tr>
<tr>
<td>SCS1120</td>
<td>Chemistry for Biol. Sci. B or elective</td>
<td>15</td>
</tr>
<tr>
<td>SMA1120</td>
<td>Maths 2 or elective</td>
<td>15</td>
</tr>
<tr>
<td>ACE1910</td>
<td>Communications for Science</td>
<td>5</td>
</tr>
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<td></td>
<td></td>
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</tr>
<tr>
<td>Year 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SBF2610</td>
<td>Fundamentals of Ecology</td>
<td>15</td>
</tr>
<tr>
<td>SBF2620</td>
<td>Australian Plants</td>
<td>15</td>
</tr>
<tr>
<td>SBF2630</td>
<td>Community &amp; Environment</td>
<td>15</td>
</tr>
<tr>
<td>SBF2640</td>
<td>Australian Animals</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Prescribed and free electives</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td></td>
<td>60</td>
</tr>
<tr>
<td>Year 3</td>
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<tr>
<td>(minimum of four from list and four electives)</td>
<td></td>
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</tr>
<tr>
<td>SBF3600</td>
<td>Aquatic Ecology</td>
<td>15</td>
</tr>
<tr>
<td>SBF3610</td>
<td>Biostatistics</td>
<td>15</td>
</tr>
<tr>
<td>SBF3620</td>
<td>Conservation &amp; Sustainability</td>
<td>15</td>
</tr>
<tr>
<td>SBF3630</td>
<td>Environmental Impacts</td>
<td>15</td>
</tr>
<tr>
<td>SBF3640</td>
<td>Terrestrial Environments</td>
<td>15</td>
</tr>
<tr>
<td>SBF3650</td>
<td>Pollution Biology</td>
<td>15</td>
</tr>
<tr>
<td>SBF3660</td>
<td>Indigenous Society &amp; Environmental Management</td>
<td>15</td>
</tr>
<tr>
<td>SCS3411</td>
<td>Environmental Legislation</td>
<td>15</td>
</tr>
<tr>
<td>Electives for balance of credit points</td>
<td></td>
<td>15-30</td>
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<tr>
<td></td>
<td></td>
<td>60</td>
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</tbody>
</table>

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

Ecology and Natural Resource Management Stream

<table>
<thead>
<tr>
<th>Course Code</th>
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</thead>
<tbody>
<tr>
<td>ACE1910</td>
<td>Communications for Science</td>
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<tr>
<td>SCS3411</td>
<td>Environmental Legislation</td>
<td>15</td>
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</tbody>
</table>

Ecology and Natural Resource Management Stream

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<th>Course Title</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCS1110</td>
<td>Chemistry for Biological Sciences A</td>
<td>15</td>
</tr>
<tr>
<td>SMA1110</td>
<td>Maths 1 or Elective</td>
<td>15</td>
</tr>
<tr>
<td>SCS1120</td>
<td>Chemistry for Biological Sciences B</td>
<td>15</td>
</tr>
<tr>
<td>SMA1120</td>
<td>Maths 2 or Elective</td>
<td>15</td>
</tr>
</tbody>
</table>

Aquatic engineering specialization

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENF2841</td>
<td>Fluid Mechanics 1</td>
<td>15</td>
</tr>
<tr>
<td>ECF2842</td>
<td>Hydraulics</td>
<td>15</td>
</tr>
<tr>
<td>ECF3841</td>
<td>Engineering Hydrology</td>
<td>15</td>
</tr>
<tr>
<td>ECF3842</td>
<td>Water Resources Engineering</td>
<td>15</td>
</tr>
<tr>
<td>ECG3861</td>
<td>Geomechanics</td>
<td>15</td>
</tr>
<tr>
<td>ECF4842</td>
<td>Geohydrological Engineering</td>
<td>15</td>
</tr>
</tbody>
</table>

Ecology and Community Development Stream

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASA1021</td>
<td>Community Development Theory and Practice 1</td>
<td>15</td>
</tr>
<tr>
<td>ASA1022</td>
<td>Community Development Theory and Practice 2</td>
<td>15</td>
</tr>
</tbody>
</table>

Ecology and Tourism/Business Stream

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>BHO1190</td>
<td>Introduction to Tourism</td>
<td>15</td>
</tr>
<tr>
<td>BHO2286</td>
<td>Nature-based Tourism</td>
<td>15</td>
</tr>
</tbody>
</table>

Students taking this stream should choose two electives from the following:

ASA2021 | Community Development Theory and Practice 3 15 -
ASA2022 | Community Development Theory and Practice 4 - 15
ASS3012 | Sociology 3A – Colonisation, Decolonisation and Development - 15
ASS3013 | Sociology 3B – International Social Policy - 15
ASS3035 | Sociology 2.3E – (Environmental Policy) - 15
ASC3095 | Conflict Resolution in Groups and Communities - 15

BHO1190 | Introduction to Tourism 15 -
BHOB286 | Nature-based Tourism 15 -

Students taking this stream should choose two electives from the following:

BHO2255 | Tourism Enterprise Management 15 -
BHO1192 | Travel Industry Management 15 -
BHO3347 | Destination Planning and Development 15 -
BHO3350 | Hospitality and Tourism Industry Project 15 -
BHO1171 Introduction to Marketing 15
BAO1101 Accounting for Decision Making 15
Ecology and Human Bioscience/Wellness Stream
SBM2530 Human Bioscience 3A 15
(SB2540 Human Bioscience 4A, or SBM3810 Wellness 1 20)
SBM3820 Wellness 2 20
Students taking this stream could include electives from the following:
SBM2260 Diet and Nutrition 20
SBM2560 Medical Biochemistry 15
SBM2610 Biomedical Sciences and Society 15
SBM1514 Functional Anatomy 1 20
SBM1524 Functional Anatomy 2 20
SBM2361 Epidemiology 15
Suitable Free Electives
Note: Some electives may be prescribed for certain streams.
SCS1110 Chemistry for Biological Sciences A 15
SCS1120 Chemistry for Biological Sciences B 15
SMAS1120 Maths 2 15
ENF2841 Fluid Mechanics 15
ECF2842 Hydraulics 15
ECF3841 Engineering Hydrology 15
ECF3842 Water Resources Engineering 15
EGC3861 Geomechanics 15
ECF4842 Geohydrological Engineering 15
ECN3882 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
ASC3095 Conflict Resolution in Groups and Communities 15
ASS3012 Sociology 3A – Decolonisation, Decolonisation and Development 15
ASS3013 Sociology 3B – International Social Policy 15
ASS3035 Sociology 2.3E (Environmental Policy) 15
BHO2255 Tourism Enterprise Management Ecology 15
BHO2286 Nature-based Tourism 15
BHO1190 Introduction to Tourism 15
BHO1192 Travel Industry Management 15
BHO3437 Destination Planning and Development 15
BHO3500 Hospitality and Tourism Industry Project 15
BHO1171 Introduction to Marketing 15
BAO1101 Accounting for Decision Making 15
SBM2530 Human Bioscience 3A (pathophysiology 1) 15
SBM2540 Human Bioscience 4A, or SBM3810 Wellness 1 20
SBM3820 Wellness 2 20
SBM2560 Medical Biochemistry 15
SBM2610 Biomedical Sciences and Society 15
SBM1514 Functional Anatomy 1 20
SBM1524 Functional Anatomy 2 20
SBM2361 Epidemiology 15
SBF3530 Environmental Philosophy 15
SBF3540 Leadership & the Environment 15
SBF3750 Industrial and Environmental Microbiology 15
SCS2610 Plastics in the Environment 15
SCS2562 Environmental Chemistry 15
SCS3361 Environmental Health 15
SCS3401 Occupational Health and Safety 15
SCS3431 Environmental Measurement and Analysis 15
Best Practice

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 specialisations. The aim of the honours program is to provide a course of advanced study at a fourth year level that 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, 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 in Ecology and Sustainability 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)
Undergraduate Subject Details

Language and Communication Subjects
Language and Communication subjects are offered at three levels. They are:

Australian English: offered as a preliminary subject designed for students who are not sufficiently competent in English to successfully undertake a mainstream communication subject.

Language and Communication: core unit consisting of either a one-semester subject or a two-semester subject with necessary variations tailored to the requirements of varying course structures.

Professional Communication: a subject focusing on the preparation and the delivery of a major written and oral report as well as employment preparation for final year students.

ACC1047 CULTURE AND COMMUNICATION
Campus Footscray Park, St Albans
Prerequisite(s) Nil
Content This foundation subject introduces the study of communication and the intricate web of relationships involving communication and cultural organisation. Language is studied as a principal component of communication as are non-verbal aspects such as style and body language. The subject also examines how cultures develop a sense of collective and individual identity through stories, myths and films as forms of communication.
Required Reading To be advised by lecturer.
Class Contact Three hours per week for one semester.
Assessment Written assignments.

ACC1048 MEDIA, CULTURE AND SOCIETY
Campus Footscray Park, St Albans
Prerequisite(s) Normally students should have passed ACC1047 Culture and Communication
Content Explores how mass communication is today increasingly implicated in the way perceptions of the world are formed, and the way 'self' is shaped and understood. Topics to be covered include: The way images communicate, the role of advertising, media ownership in Australia, new media technologies, community media, audience studies special emphasis will be given to how media structures related to notions of the public sphere and democratic process.
Required Reading To be advised by lecturer.
Class Contact Three hours per week for one semester.
Assessment Written assignments, 70%; final examination, 30%.

ACC3045 VIDEO PRODUCTION
Campus St Albans and Sunway (Malaysia).
Prerequisite(s) ACC1047 Culture and Communication, ACC1048 Media, Culture and Society.
Content Students will be given a working understanding of the basic techniques and processes involved in single camera video production. The subject will deal with video recording techniques; composition; lighting; editing and dubbing; crew functions; interview techniques. Special emphasis will be given to video production work in a television studio context.
Required Reading To be advised by lecturer.
Class Contact Four hours per week for one semester comprising one one-hour lecture, one two-hour workshop and one one-hour screening.
Assessment Short exercises, 10%; Group video production, 50%; Essay, 30%; class presentation, 10%.

ACC3046 COMMUNICATING WITH RADIO
Campus St Albans
Prerequisite(s) To be eligible for this subject, students will have to be in their third and final year of a Communication Studies or Professional Writing major.
Content Students will be provided with the opportunity to engage with some basic radio production techniques and processes. The major emphasis of the subject is on spoken-word radio with a specific focus on interviewing and 'magazine' formats. Production work will include field interviewing with portable equipment, studio work, writing for radio, editing, elementary sound mixing and voice performance. If done to an adequate standard, production exercises will be broadcast on local community radio stations. Students are advised that the work required is substantial, with continuous assessment and that deadlines for work submissions must be kept through the semester.
Required Reading To be advised by lecturer.
Class Contact Four hours per week for one semester comprising lectures and workshops.
Assessment Production work, 80%; written commentaries, 20%.

ACC3047 COMMUNICATING IN ORGANISATIONS
Campus St Albans
Prerequisite(s) Normally, ACC3041 Language in Society, ACC3043 Interpersonal, Group and Organisational Communication.
Content Topics covered include: theories of organisational communication; communication roles in organisations; effect of gender, age and ethnicity on communication patterns and processes; communication flow and networks within organisations; accessibility and control of information. Weekly workshops will develop skills in the diagnosis and solution of communication problems in organisations, including network analysis, measurement of communication load, monitoring of information flow, communication auditing, Delphi groups and quality circles, analysis of organisational discourses.
Required Reading To be advised by lecturer.
Class Contact Three hours per week for one semester comprising one two-hour lecture/seminar and one one-hour tutorial.
Assessment Essay, 20%; class based activities, 20%; journals, 30%; test, 30%.

ACE1010 WRITTEN AND ORAL 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 future employment. Skills include listening and note-taking, reading and summarizing, 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.
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. 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.
### ACE1141 English Language and Communication 1

**Campus** Footscray Park  
**Prerequisite(s)** Nil  
**Content** This is a preliminary subject, which is designed to enable students who are not sufficiently competent in English to successfully undertake a mainstream ‘communication’ subject. Criteria for admission will be determined by the Language and Communication staff. The subject aims to provide proficiency in writing and speaking Australian English, while increasing understanding of Australian society. 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: listening, reading 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 oral presentation and demonstration.

**Required Reading** Murphy, Raymond, 1994, *English Grammar in Use*, CUP, Cambridge, CUP  
**Class Contact** Two hours per week for one semester.  
**Assessment** Final Examination 30%; Summary 20%; Continuous class and homework exercises 20%; two oral presentations 20%; aural summary 10%.

### ACE1142 English Language and Communication 2

**Campus** Footscray Park  
**Prerequisite(s)** ACE1141 English Language and Communication 1  
**Content** This is a 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: listening, reading 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 oral presentation and demonstration.

**Required Reading** Murphy, Raymond, 1994, *English Grammar in Use*, CUP, Cambridge, CUP  
**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 and homework exercises 10%.

### ACE1541 Communication for NNSE 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%.

### ACE1801 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%.
ACE1910 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, 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.

ACE2010 WRITTEN AND ORAL COMMUNICATION 2

Campus Werribee
Prerequisite(s) ACE1010 Written and Oral Communication 1.
Content This subject develops and builds upon language and research skills acquired in ACE1010 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.

ACE2190 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.

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.

ACE3010 WRITTEN AND ORAL COMMUNICATION 3

Campus Werribee
Prerequisite(s) ACE1010 Written & Oral Comm 1 & ACE2010 Written & Oral Comm 2 or ACE1910 Communications for Science.
Content This subject develops and builds upon language and research skills acquired in ACE1010 and ACE2010. 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%.

ACE3020 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.

ACE3143 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.
Recommended Reading Eumson, B., 1994, Writing Technical Documents, John Wiley, Queensland
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%.
ACE3144 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%.

ACP1053 INTRODUCTION TO CREATIVE WRITING

Campus St Albans

Prerequisite(s) Nil.

Content This subject introduces students to the creative writing strand in the major in Professional Writing. The subject focuses on three writing areas - autobiography, short story and short film - and teaches key techniques used to write about personal life experience, and to write short stories and short film scripts. Students read a variety of personal writing, from poetry to essays, and a range of mainly Australian short stories by established writers and film scripts which have been produced as films. Students also read the published fiction of Professional Writing students in the literary magazine Offset, and are encouraged to contribute to the magazine. Lectures focus on historical and contemporary aspects of writing and creative writing, and on the contexts in which creative writers work. The course also features short film screenings and guest lectures by creative writers.

Required Reading A book of readings; Offset literary magazine (2002).


Class Contact One one-hour lecture and one two-hour workshop each week for one semester.

Assessment Personal essay, 30%; Short story, 30%; Short film script, 30%; Lecture test, 10%.

ACP1054 INTRODUCTION TO MEDIA WRITING

Campus St Albans

Prerequisite(s) Normally ACP1053 Introduction to Creative Writing.

Content This subject introduces students to the media writing strand in the major in Professional Writing. The subject focuses on three writing areas – advertising, journalism and public relations – and teaches key techniques used to write advertisements, and news and feature stories for the print media, and to write a range of public relations materials, from media releases to speeches. Students read a variety of media material, ranging from advertisements to news and feature stories from newspapers and magazines, and the speeches of politicians. Lectures focus on the historical development of the media industries, their contemporary context, and the role of the advertising copywriter, journalist and public relations professional in these industries. The course also features guest lectures by media writers.

Required Reading A book of readings.

Recommended Reading Helen Garner, The Feel of Steel (2001); David Leser, The Whites of Their Eyes (1999); David Herzbrun, Copywriting (1997); Kay Chung, Going Public (1999).

Class Contact One one-hour lecture and one two-hour workshop each week for one semester.

Assessment Advertising portfolio, 30%; Feature article, 30%; Examination, 40%.

ACP2069 WRITING FOR THE WEB

Campus St Albans

Prerequisite(s) (Normally) ACP 1053 Introduction to Creative Writing; ACP 1054 Introduction to Media Writing.

Content This subject examines forms and content areas in Web publication, and develops journalistic writing for the electronic publishing industry. The subject explores the diversity of Web publications and electronic communities, and enables students to research and practice writing for the Web. Topics covered include: the electronic publishing industry, online publications, writing for print compared to computer screen, interactivity, Web audiences and Web communities. Skills taught will include: writing styles for the Web, hard and soft news, types of feature article; writing for content areas such as sports, arts, humour, music and science, and for non-mainstream independent publishers; research, including interviewing and accessing online sources; Web publishing forms, interface design and context, writing links and summaries.

Required Reading To be advised by lecturer.


Class Contact One one-hour lecture and one two-hour workshop each week for one semester.

Assessment Two assignments, each 30%; Portfolio comprising four pieces of writing, 40%.

ACP2070 EDITING PRINCIPLES AND PRACTICE

Campus St Albans

Prerequisite(s) Normally ACP1053 Introduction to Creative Writing; ACP1054 Introduction to Media Writing.

Content This subject examines the principles and practices of editing and publishing, with special emphasis on their role and influence in history and contemporary society. Students will learn a range of practical techniques and applied theories of text editing in the context of small press and desktop publishing. The subject looks at the principles and practice of structural editing, copy editing, proof reading and the forms of communication used by editors, designers, authors and printers. It also includes consideration of communications law in relation to editing and publishing, such as copyright law.


Class Contact One one-hour lecture and one two-hour tutorial each week for one semester.

Assessment Take home layout and critique assignment, 20%; Editing project or essay, 40%; Examination, 40%.

ACP2079 PUBLISHING PRINCIPLES AND PRACTICE

Campus St Albans

Prerequisite(s) Normally ACP2070 Editing Principles and Practice.

Content This subject examines the principles and processes of contemporary publishing in their cultural, political and economic contexts, and will include a special focus on their practical application. Students will learn advanced desktop publishing skills using a range of software programs. The subject will also involve a number of face-to-face meetings with industry professionals either in lectures or via excursions to their workplaces. It includes further consideration of communications law in relation to publishing, such as copyright and libel law.
Class Contact One one-hour lecture and one two-hour workshop each week for one semester.
Assessment Group publication project, 50%; Publishing proposal, 20%; Essay, 30%.

ACP3051 WRITING FOR PUBLIC RELATIONS AND ADVERTISING

Campus St Albans
Prerequisite(s) Normally ACP1053 Introduction to Creative Writing; ACP1054 Introduction to Media Writing; ACP2070 Editing Principles and Practice.
Content What does it mean to be a citizen in Australian society? What are a citizen's rights to express an opinion and participate in a democratic society? Public relations is often confused with men in grey suits and a great deal of hand shaking-advertising with gimmickry and the corporate product. Yet 'relating' to the 'public' is not a specialist activity. We all have the right to be involved in the 'public sphere', promote different forms of information, hold 'public opinions' and persuade others of our point of view. In this subject we look at some theoretical and social contexts for public relations and advertising and the different perspectives involved. We consider beliefs and ideology, the public sphere and public opinion, the media, rhetoric, arguments and audiences. In the section on advertising, we look at the economics, regulation and production of advertising and methods of reading its meanings. Students will have the opportunity to analyse the professional writing skills covered and develop their own writing skills.
Required Reading To be advised by lecturer.
Class Contact Three hours per week for one semester comprising one one-hour lecture and one two-hour workshop.
Assessment Essay in public relations and advertising, 30%; portfolio, 25%; client task, 30%; tutorial presentation, 15%.

ACP3053 ADVANCED FICTION WRITING

Campus St Albans
Prerequisite(s) ACP 1053 Introduction to Creative Writing and either ACP2067 Gender and Genre in Short Fiction or ACP2064 Writing and Cultural Difference, or demonstrated interest and competence in creative writing. A folio of creative writing may be requested prior to approval of enrolment.
Content This subject focuses primarily on short story writing and further develops the writing techniques and approaches to fiction practised in first and second year creative writing subjects. The subject will revisit conventional realist writing techniques but emphasis will be placed on innovative departures from realism (such as new Gothic, magic realism, metafiction and intertextual fiction) and students will be encouraged to experiment with story length and form. Students will read a range of short fiction by Australian and international writers, several recently published novels, and a variety of extracts by contemporary writers on writing technique. Students will become familiar with a range of contemporary Australian literary magazines and will be required to submit at least one short story to a literary magazine for publication; they will also be required to read a range of book reviews from newspapers and literary magazines. At least one workshop in the subject will be conducted by a locally-based fiction writer.
Required Reading Jack Hodgins, A Passion for Narrative (1993); Offset literary magazine (2002); a book of readings.
Recommended Reading Daniel Halpern (ed), The Art of the Story (1999); Stephen King, On Writing (2000).
Class Contact Two 90-minute workshops each week for one semester.
Assessment One short short story, 20%; two short stories, 30% each; one book review, 20%.

APP1012 PSYCHOLOGY 1A

Campus St Albans, Footscray Park
Prerequisite(s) Nil.
Content The subject aims to provide students with an introduction to the discipline of psychology, giving a general view of the social and biological influences on human behaviour while establishing a solid basis for further, detailed work in subsequent years. The subject involves psychological experimentation including application of descriptive statistics. Topics covered include perception, learning, memory and information processing, social psychology, motivation and emotion, intelligence and abilities.
Required Reading To be advised by lecturer.
Class Contact Five hours per week for one semester comprising three one-hour lectures and one two-hour laboratory.
Assessment Semester examination, 50%; laboratory reports and quizzes, 50%. There is a requirement that students attend 80% of laboratory classes. (Subject to change.)

APP1013 PSYCHOLOGY 1B

Campus St Albans, Footscray Park
Prerequisite(s) APP1012 Psychology 1A
Content The subject aims to further introduce students to the discipline of psychology, continuing to consider the social and biological influences on human behaviour while consolidating a firm basis for more advanced, detailed work in subsequent years. The subject involves further work on psychological experimentation and application of inferential statistics. Topics covered include brain and behaviour, personality-theory and assessment, health and stress, abnormal psychology and therapy, language and the brain. Basic computer analysis is also taught
Required Reading To be advised by lecturer.
Class Contact Five hours per week for one semester comprising three one-hour lectures and one two-hour laboratory.
Assessment Semester examination, 50%; laboratory reports, tutorial work and/or essay, 50%. There is a requirement that students attend 80% of laboratory classes. Students planning to take APP2011 Psychology 2 must pass the design and analysis component of APP1013 Psychology 1B. Students who fail Design and Analysis but pass other components will be graded with (S) ungraded pass. (Subject to change.)

APP2013 PSYCHOLOGY 2A

Campus St Albans, Footscray Park
Prerequisite(s) APP1012 Psychology 1A; APP1013 Psychology 1B and a pass in Design and Analysis assessment or a pass in APS2040 Quantitative Social Research Methods.
Content The aim of the subject is to promote a more integrated understanding of life long development of the human being by studying such topics as: personality development, developmental psychobiology, developmental cognition, and interpersonal interaction. There is also emphasis on methods used in psychological inquiry, including statistical computer skills.
Required Reading To be advised by lecturer.
Class Contact Five hours per week, including 3 one-hour lectures.
Assessment Two end of semester examinations, 40%; Course work including a literature review, essay, article review and a laboratory report, 60%. In addition students will need to meet a 80% minimum requirement attendance for laboratory classes to pass this subject. Students intending to pursue psychology intensively at a postgraduate level may consider also enrolling in Qualitative and Quantitative Social Research Methods as electives.

APP2014 PSYCHOLOGY 2B

Campus St Albans, Footscray Park
Prerequisite(s) APP2013 Psychology 2A.
Content This subject builds on the work completed in the first semester and looks to further enhance students understanding of human life span development. Topics include the family, child...
development, adult development, aging and special topics such as reading development. As in semester one there is also emphasis on methods used in psychological inquiry, including statistical computer skills.

Required Reading: To be advised by lecturer.
Class Contact: Five hours per week, including 3 one-hour lectures.
Assessment: Two end of semester examinations, 40% Course work including a poster paper, seminar presentation, article review and a laboratory report, 60%. In addition students will need to meet a 80% minimum requirement attendance for laboratory classes to pass this subject. Students intending to pursue psychology intensively at a postgraduate level may consider also enrolling in Qualitative and Quantitative Social Research Methods as electives.

ASA1021 COMMUNITY DEVELOPMENT THEORY AND PRACTICE 1 (ASIA PACIFIC STREAM)

Campus: St Albans
Prerequisite(s): Nil
Content: This subject aims to introduce students to the theory and practice of community development from an international perspective, with particular reference to models of community development in Asia and the Pacific regions. The subject begins with a discussion of the concept of community and the nature of community development work and an introduction to the historical emergence and evolution of community development, including United Nation models, Western models and Third World models. It also aims, to familiarise students with existing and emerging linkages between community development and action at local, regional, national and global levels. Students are encouraged to explore, analyse and develop models and approaches to community development that are considered to be of most relevance to their background experience or in their work with communities.

Assessment: Two essays, 40%; Journal/Folio, 20%.

ASA1022 COMMUNITY DEVELOPMENT THEORY AND PRACTICE 2 (ASIA PACIFIC STREAM)

Campus: St Albans
Prerequisite(s): Nil
Content: The aim of the subject is to introduce students to the ways in which community development theories and models can be applied in the context of human rights, particularly in the welfare and human service sectors. The subject begins with an examination of United Nations and other international conventions and covenants on human rights, including specific covenants on social, educational, employment rights and rights of women, minorities and children. International observance, and problems in the implementation, of human rights are then examined, with particular reference to the Asia Pacific region. Specific human rights problems in the educational, welfare and employment contexts are discussed and related to strategies and models of community development and advocacy.

Class Contact: Three hours per week for one semester, comprising one three-hour lecture/seminar.
Assessment: Essay, 50%; Role play/class paper, 40%; Class exercises, 10%.

ASA2021 COMMUNITY DEVELOPMENT THEORY AND PRACTICE 3 (ASIA PACIFIC STREAM)

Campus: St Albans
Prerequisite(s): Completion of AXF1001 Knowing and Knowledge A and AXF1002 Knowing and Knowledge B
Content: The subject aims to introduce students to some of the essential features of organisations in contemporary societies, with a special emphasis on Asian and Pacific organisations at local, regional and international levels. Issues of power and co-operation within and between NGOs and government organisations will be examined. The subject will include discussion of classical approaches to understanding bureaucracy and traditional organisational structures, as well as more contemporary analyses. An examination of a range of alternative models of organisation located in Pacific Island and Asian cultures will form a part of the course. This will include Freireian models, empowerment models, feminist models, cooperatives and collectives. The subject concludes with a discussion of the implications of organisational theory and its various forms for community development practice. A number of case studies of organisations and organisational change including the impact of corporations on Asia Pacific community development contexts will also be studied.

Recommended Reading: To be advised by lecturer.
Class Contact: Three hours per week for one semester comprising one one-hour lecture and one two-hour tutorial.
Assessment: Class presentation, 40%; Essay, 50%; Class exercises, 10%.

ASA2022 COMMUNITY DEVELOPMENT THEORY AND PRACTICE 4 (ASIA PACIFIC STREAM)

Campus: St Albans
Prerequisite(s): Completion of ASA1021 and ASA1022
Content: The subject aims to introduce students to some of the significant theory and practice of empowerment as applied to both the Asia Pacific Region and disadvantaged groups in all societies. It further aims to enable students to develop and evaluate their own practice of community development, to identify central issues in the practice of community development and to introduce students to theories of social action and social change. The subject will include a study of a variety of practical strategies for implementing social action and social change with examples and case studies drawn from or relating to Asian and Pacific contexts. The relationship between social movements and social change will also be explored along with an examination of the development of a number of social movements and an assessment of their impact on societies.

Recommended Reading: To be advised by lecturer.
Class Contact: Three hours per week for one semester comprising one one-hour lecture and one two-hour seminar.
Assessment: Class paper, 40%; Major essay analysing a community development or social movement action strategy or campaign in an Asian or Pacific context, 60%.
ASC3095 CONFLICT RESOLUTION IN GROUPS AND COMMUNITIES

**Campus** St Albans  
**Prerequisite(s)** Nil  
**Content** This subject introduces conflict resolution theory and its application to conflicts at both group and community levels. Through seminar presentations, discussion and analysis, experiential exercises, role plays, and problem-solving tasks, the subject aims to develop students' skills in understanding and practicing appropriate means of resolving or managing conflicts. The elective commences with defining the nature of conflict in groups and communities, and then presents the theory, principles and practical strategies of conflict resolution. Specific processes and skills for resolving or managing conflict in a range of differing contexts are then considered, including individual conflicts, multi-party and multi-issue conflicts, intragroup conflicts, cultural and intergroup conflicts, and disputes in neighbourhood and workplace contexts. Particular emphasis will be placed on the awareness of difference and its effect in disputes, and on the students' own styles in dealing with conflict.

**Recommended Reading**  
Bisno, H., 1988, Managing Conflict, Sage Publications.  
Bolton, R., 1987, People Skills, Simon and Schuster, Brookvale, NSW.  

**Required Reading**  

**Class Contact** Three hours per week for one semester comprising one three-hour seminar/workshop.

**Assessment** Assessed role-play, 40%; 5000 word essay analysing a particular dispute, 60%.

ASS3035 SOCIOLOGY 2/3E-ENVIRONMENTAL POLICY AND POLITICS

**Campus** St Albans  
**Prerequisite(s)** ASS1012/ASS1013 Sociology 1A and 1B; or by negotiation with the subject co-ordinator.

**Content** Recognition that existing economic, political and legal structures are demonstrably inadequate for dealing with the scope and depth of the current global ecological crisis has motivated widespread social responses at all levels: local, regional, national and international. The aim of this subject is to examine some of these responses and assess their importance for current and future environmental policy formulation. Analysis of the vexed issue of ecological sustainability has motivated much of the alternative visions of ecological sustainability adopted by different nation states e.g. those of the developing countries, newly industrialising countries (NICs) and the major Western economic powers. We also examine the critical role that indigenous people may play within this process. Throughout the subject attention is paid to specific policy contexts and issues within Australia and the Pacific, in particular their relationship with several of these wider concerns.

**Required Reading** To be advised by lecturer.

**Recommended Reading**  

**Class Contact** Three hours per week for one semester comprising one one-hour lecture and one two-hour seminar.

**Assessment** Three minor assignments, 45%; Major research paper and presentation, 55%.

BAO101 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.

**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** 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 by management. Basic financial accounting, costing and management accounting.

**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** 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.
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/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 gain a pass in the subject. Supplementary assessment will not be available.

BCF9110 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 communication, 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 gain a pass in the subject. Supplementary assessment will not be available.

BCF9130 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 communication, 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%, 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.

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.

BEO1103 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.

**Recommended Reading** To be advised by lecturer.

**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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**BEO1101 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 affecting 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, tutorial 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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**BEO1102 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; hypothesis 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.


**Assessment** Two assignments, 25% each; 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.
BHO2250 ADVERTISING AND PUBLIC RELATIONS

Campus Footscray Park, Werribee, Sunbury, Kuala Lumpur.

Prerequisite(s) BHO1171 Introduction to Marketing.

Content This subject aims to develop an understanding of the terminology of promotion, in general, and advertising, in particular, an understanding of the role of advertising both in the firm and in society, and an ability to integrate the different aspects of advertising into a comprehensive promotional plan. In addition, the subject will provide students with a knowledge of aspects of public relations and an appreciation of the processes of identifying the policies and procedures of the organisation with the view to marketing of image.

Topics include: communication theory and its application; advertising; sales promotion; direct marketing.


Class Contact Equivalent to 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 Project based assignment, 50%; 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.

BHO2251 PRODUCT AND PRICING STRATEGY

Campus Footscray Park, Werribee, Sunbury, Kuala Lumpur.

Prerequisite(s) BHO1171 Introduction to Marketing.

Content This subject will enable students to understand how marketers develop strategy, and appreciate the variety of organisational alternatives for managing products. The subject will give insights into how existing products can be modified and how businesses develop ideas into successful products. Students will be able to recognise and appreciate the different types of product life cycles, understand the concepts and tools of strategy formulation and the management of products during the various stages of their life cycle, as well as appreciate the importance of branding and the factors affecting the branding decisions. The subject will also cover pricing, and how pricing strategies are formulated. Topics include: Product concepts; product strategies; positioning strategies; market strategies; pricing strategies.


Class Contact Equivalent to 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/or mid-semester tests, 50%; 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.

BHO2252 SELLING AND SALES MANAGEMENT

Campus Footscray Park, Werribee, Sunbury.

Prerequisite(s) BHO1171 Introduction to Marketing.

Content Selling and Sales Management will introduce students to the principles of selling and selling theory, and the various activities involved in setting up a sales force. The responsibilities of the sales manager will also be covered. Topics include: personal selling; theories of selling; organisational buyer behaviour; communication in the sales process; preparation in the selling process; the sales presentation; handling objections; follow-up after the sale; sales force management; organizing the sales force; forecasting sales; controlling, supervising and evaluating the sales force; international sales management; ethical issues in selling.


Class Contact Equivalent to 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, 20%; report, 30%; 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.

BHO2434 CONSUMER BEHAVIOUR

Campus Footscray Park.

Prerequisite(s) BHO1171 Introduction to Marketing.

Content The aim of the subject is to provide a detailed study, for both consumer and organisational buying behaviour, of purchasing processes and the factors which influence them. Topics include: characteristics of individuals, groups and organisations and their influence on purchasing behaviour; consumer behaviour; organisational buying behaviour.

Required Reading To be advised by lecturer.

Recommended Reading To be advised by lecturer.

Class Contact Three hours per week per comprising of two hours lectures and 1 hour tutorial.

Assessment Assignments and case study, 40%; final examination and test, 60%.

BHO3373 INTERNATIONAL MARKETING

Campus Footscray Park, Sunbury, Kuala Lumpur.

Prerequisite(s) BHO1171 Introduction to Marketing.

Content Marketing in an international environment; international marketing research/intelligence; market segmentation on a global scale; consumer behaviour in different countries/cultures; international product/service policy; international distribution; international promotion/advertising; pricing in international markets; marketing planning on an international scale; organisation and control of international marketing; importing and exporting.

Required Reading To be advised by lecturer.

Class Contact Equivalent to 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 Mid-Semester Test, 10%; Major project, 30%; Class participation, 10%; Formal 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.

Recommended Reading The Clinical educator will prescribe further relevant recommended reading relating to current developments in legal practice.

Class Contact Four hours per week. Subject equal to 15 credit points.

Assessment Clinical placement, 70% - this assessment will be made on a pass/fail basis rather than by a grading of students. A written report on aspects of clinical placement, 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.

BHO3435 MARKETING PLANNING AND STRATEGY
Campus Footscray Park, Werribee, Sunbury, Kuala Lumpur.
Prerequisite(s) Please enquire, BHO1171 Introduction to Marketing.

Content This subject adopts a strategic approach to marketing. The tools, techniques and analyses performed in the preparation of a marketing strategy plan will be covered in detail. In addition, the subject will evaluate a number of theories developed to assist with strategy formulation. Topics covered include: trends in marketing strategy, portfolio analysis, competitor audits, customer audits, situation analysis, selecting strategic alternatives, the business vision and mission, implementation and control processes. The culmination of this subject may involve the preparation of a marketing plan.

Required Reading To be advised by lecturer


Class Contact Equivalent to 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, 40%; Individual essay, 20%; Group project, 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.

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.

BLO2105 BUSINESS LAW
Campus Footscray Park, Sunbury, Werribee, Kuala Lumpur, Hong Kong.
Prerequisite(s) Nil.

Content This subject aims to provide students with an understanding and awareness of the basic principles of Contract Law, a familiarity with relevant case law and an introduction to the statutory provisions pertinent to the course. The instructional methodology is also aimed at providing students with a format from which they may develop an understanding of legal reasoning as it applies to the analysis of contractual relationships. Topics include: an introduction to the Australian legal system; definition of contract; offer and acceptance; termination of offer; consideration; intention to be legally bound; express terms; statutory and common law implied terms; certainty; mistake; misrepresentation; duress, undue influence and unconscionable conduct; legality of purpose; discharge of contract; remedies for breach of contract.


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 participation, 10%; assignment, 30%; 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.

BLO2188 INTRODUCTION TO LAW
Campus Footscray Park.
Prerequisite(s) Nil.

Content Sources of law, the Australian Constitution, the Parliamentary process, contract law and contracts of employment,
natural justice and civil rights, arbitration and conciliation. To introduce the sources and role of law as it applies to workers and to trade union members. To develop an awareness of the functions of law with regard to the rights of workers and an understanding of those rights. To show the link between the rights of workers and rights of people in the broader community.

Required Reading
Eaglebook, *Juels and the Law*, CCH.

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.

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
The method of assessment will be announced at the commencement of the semester. Supplementary assessment will not be available.

BMO102 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.
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.
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.

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 precariousness employment for the future of work; 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.
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 must satisfactorily complete each component of the assessment to gain a pass in the subject.
Supplementary assessment will not be available.

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.

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 workplace; training needs analysis and skills audit and job analysis; computer assisted and managed learning; selling, training and development programs within an organisation.
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.
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 Class Notes: Engineers and Process Management, Engineers and Organisational Systems.


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.

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.


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.

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.

BMO4551 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.

EBAS841 AIR CONDITIONING AND HYDRAULIC SERVICES 1

Campus Footscray Park.

Prerequisite(s) ENT2881, ENF2841, ENC2842


Recommended Reading To be advised.

Class Contact Three hours per week for one semester based on two hours of lectures and one hour of tutorial.
### UNDERGRADUATE SUBJECT DETAILS

**EAB3842 AIR CONDITIONING AND HYDRAULIC SERVICES 2**

**Campus** Footscray Park  
**Prerequisite(s)** EAB3841  
**Class Contact** Three hours per week for one semester based on two hours of lectures and one hour of tutorial.  
**Assessment** Class assignments and tests, 65%; course examination, 35%. A pass in each component of assessment is required for a subject pass.

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**EAB3871 ELECTRICAL POWER DISTRIBUTION 1**

**Campus** Footscray Park  
**Prerequisite(s)** EEP2882  
**Content** Overview of power generation and distribution in Australia. The role of a specialist electrical services system design engineer. Regulations, standards and codes of practice. High, medium and low voltage distribution. Protective devices, their theory of operation and selection. Electrical safety. Transformers used in power distribution systems. System 'fault' capacity and calculation. Cable properties and cable selection based on current, temperature, voltage drop and fault levels. Circuit protection devices, their theory of operation and selection.  
**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%.

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**EAB3872 ELECTRICAL POWER DISTRIBUTION 2**

**Campus** Footscray Park  
**Prerequisite(s)** EAB3871  
**Content** Transformers and their specification. Design, specification and testing of switchboards. Control of harmonics in building power systems. Building earthing systems. Energy management in electrical power systems. Operational planning and maintenance of power systems.  
**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** 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%.

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**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%.

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**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.  
**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%. A pass in each component of assessment is required for a subject pass.

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**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, 50%; end of semester examination, 50%.
Assessment Class exercises and assignments, 65% end of semester examination, 35%. A pass in each component of assessment is required for a subject pass.

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%. A pass in each component of assessment is required for a subject pass.

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 impact(s). 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. Bioclimatic 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.

EAD4831 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%.

EH4831 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.

**Required Reading** Lawrence, B., 1994, Design in Mind, Butterworth Architecture


**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,, 19th and early 20th century. Urban design principles and practices fundamental to western cultural traditions will be examined. 20th Century: Formal 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)** EAD3832

**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.

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
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%.

EBM4851 QUANTITIES AND COSTS
Campus: Footscray Park
Prerequisite(s): ENM2852
EBM4851 QUANTITIES AND COSTS
examination, 50%.
Assessment: Class exercises and assignments, 50%; end of semester examination, 50%.

Class Contact: Three hours per week for one semester comprising two hours of lectures and one hour of tutorial and computer laboratory session.
Assessment: Class tests and assignments, 40%; end of semester examination, 60%.

ECD3831 CIVIL ENGINEERING DESIGN 1
Campus: Footscray Park
Prerequisite(s): Nil
Co-requisite(s): ECG3861, ECF3841, ECT3871
Content: Students will perform several designs during the semester in areas drawn from hydraulics, road engineering, geotechnics and hydrologic studies. A design report will be prepared for each design and an 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.
Class Contact: Three hours per week for one semester comprising mainly design sessions supported by some lectures and seminars.
Assessment: Designs, 72%; Writing Tasks, 18%; Oral Presentation, 10%.

ECD3892 STRUCTURAL ENGINEERING DESIGN 1
Campus: Footscray Park
Prerequisite(s): ECD3832, ECD3821
Class Contact: Three hours per week for one semester based on a mixture of lecture and a one hour tutorial.
Assessment: Design projects, 30%; and a final three hour examination, 70%.

ECD4831 CIVIL ENGINEERING DESIGN 2
Campus: Footscray Park
Prerequisite(s): ECT3871, ECT3872, ECF3842, ECG3862
Content: Students will perform several designs during the semester in areas drawn from hydraulics, traffic engineering, geotechnical engineering and hydrologic studies. A design report will be prepared for each design and an associated written report on a related issue will...
be made. Oral presentations will be made by all students on one of
design areas during the semester.
Required Reading As for the prerequisite subjects.
Recommended Reading As for the prerequisite subjects.
Class Contact Three hours per week for one semester comprising
mainly design sessions supported by some lectures and seminars.
Assessment Designs, 72%; writing tasks, 18%; oral presentation,
10%.

ECD4892 STRUCTURAL DESIGN 3

Campus Footscray Park
Prerequisite(s) ECD3842, ECG3862
Content Students will perform several designs during the semester in
areas drawn from hydraulics, geotechnical engineering and hydrologic
studies. A design report will be prepared for each design. Oral
presentations will be made by all students on one of their design
areas during the semester.
Required Reading As for the prerequisite subjects.
Recommended Reading As for the prerequisite subjects.
Class Contact Three hours per week for one semester comprising
mainly design sessions supported by some lectures and seminars.
Assessment Designs, 90%; oral presentation, 10%.

ECD4832 CIVIL ENGINEERING DESIGN 3

Campus Footscray Park
Prerequisite(s) ENS2821, Solid Mechanics 2; ENS2822, Solid Mechanics 3.
Content Reinforced concrete. Beams. Flexure – single reinforcement,
double reinforcement, T beams. Shear. Deflection. Simply supported
and continuous beams. Short and slender columns. One-way slabs.
Two-way slabs supported along grid lines – coefficient methods, yield
line method, strip method. Suspended slabs – flat slabs and flat plates.
Idealised frame method.
Required Reading SAA HB2.2 – 1998, Australian Standards for
Engineering Students Part 2: Structural Engineering, or AS3600
Concrete Structures, Standards Australia. Warner, R.F., Rangan, B.V.,
Hall, A.S. and Faulkies, K.A., 1998, Concrete Structures, Longman,
974 pages. Class notes and tutorials provided on the university library
e-reserve.
Class Contact Three hours per week for one semester comprising
a two hour lecture and a one hour tutorial.
Assessment Design projects and tests, 40%; and a final three hour examination, 60%.

ECD4892 STRUCTURAL DESIGN 3

Campus Footscray Park
Prerequisite(s) END4891, Structural Design 2, Reinforced Concrete Design;
ENS2821, Solid Mechanics 2; ENS2822, Solid Mechanics 3.
Content Pre-stressed concrete. Reasons for prestressing. Overview
of approaches to design – load balancing, crack control and full
prestressing. Analysis of section stresses at service conditions.
Decompression and cracking moments. Design of tendons for
service conditions. Losses. Transfer. Shear. Anchorage. Design of
simply supported beams. Primary and secondary actions in
continuous beams. Design of continuous beams.
Required Reading SAA HB2.2 – 1998, Australian Standards for
Engineering Students Part 2: Structural Engineering, or AS3600
Concrete Structures, Standards Australia. Warner, R.F., Rangan, B.V.,
Hall, A.S. and Faulkies, K.A., 1998, Concrete Structures, Longman,
974 pages. Class notes and tutorials provided on the university library
e-reserve.
Class Contact Three hours per week for one semester comprising
a two hour lecture and a one hour tutorial.
Assessment Design projects and tests, 40%; and a final three hour examination, 60%.

ECD2842 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
rotodynamic systems. Pump performance equations, affinity laws and
specific speed. Pump selection for particular duties. Flow in open
channels – fundamentals, discharge equations, specific energy and
critical depth relationships, flow transitions and weirs and flumes.
Required Reading Hamill, L., 2001, Understanding Hydraulics, 2nd edn,
Macmillan Press.
Recommended Reading White, F., 1995, Fluid Mechanics, 3rd edn,
3rd edn, Longman.
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%.

ECD3841 ENGINEERING HYDROLOGY

Campus Footscray Park
Prerequisite(s) ECD2842
Content Hydrologic cycle. Measurement of precipitation.
Design rainfalls. IDF curves. Statistical rational formula. Flood
frequency analysis. Unit hydrographs. Urban drainage system analysis
and design (system layout, hydrology and hydraulics). Urban
stormwater drainage computer software. Reservoir routing. River
routing. Runoff routing. RORB computer software. Culvert
hydraulics and design. Retarding basin design. Floodplain
management. Structural/non-structural measures for flood damage
mitigation.
Required Reading Linsley, R.K. et al., 1992, Water Resources
Engineering, 4th edn, McGraw Hill.
Recommended Reading Hamill, L., 2001, Understanding Hydraulics,
2nd edn, MacMillan Press. The Institution of Engineers, Australia,
1987, Australian Rainfall and Runoff – A Guide to Flood Estimation,
Vols 1 and 2. Grayson, R.B., Argent, R.M., Nathan, R.J., McMahon, T.A.
and Mein, R.G., 1996, Hydrological Recipes: Estimation Techniques in
Australian Hydrology, Cooperative Research Centre for Catchment
Hydrology.
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%.

ECD3842 WATER RESOURCES ENGINEERING

Campus Footscray Park
Prerequisite(s) ECD2842
Content Review of basic open channel flow concepts (continuity,
energy and momentum equations). Flow transitions. Gradually varied
flow and water surface profiles. Introduction to unsteady flow.
Introduction to 1D steady and unsteady flow computer models.
Water supply systems. Reservoir design by critical period methods
and simulation. REALM computer software. Streamflow analysis.
Introduction to stochastic streamflow data generation. River basin
planning. Optimisation methods in water resources Multi-objective
planning in water resources. Drought management. Water sharing
principles. Environmental flows.
Required Reading Linsley, R.K. et al., 1992, Water Resources
Engineering, 4th edn, McGraw Hill.
Recommended Reading Hamill, L., 2001, Understanding Hydraulics,
Channels, 2nd edn, Tata McGraw Hill. McMahon, T.A. and Mein, R.G.,
Class Contact Three hours per week for one semester comprising
two hours of lectures and one hour of tutorial.
ECF4841 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, 35%; end of semester examination, 65%.

ECF4842 GEOHYDROLOGIC ENGINEERING

Campus Footscray Park
Prerequisite(s) ECF2842, ECG3861, ECN3882
Content River sediment transport processes and reservoir siltation, river bed and bank stabilization. Australian groundwater resources/ hydrogeology: more advanced groundwater hydrails, 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 GEOTECHNICAL ENGINEERING 1

Campus Footscray Park
Prerequisite(s) ECG3861


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%.

ECG4861 GEOTECHNICAL ENGINEERING 2

Campus Footscray Park
Prerequisite(s) ECG4861
Undergraduate Subject Details

ECN3882 Introduction to Environmental Engineering

Campus: Footscray Park

Prerequisite(s): Nil

Content:
A 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.

Required Reading:

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%.

ECN4881 Environmental Engineering I

Campus: Footscray Park

Prerequisite(s): ECN3882

Content:
Physical, chemical and microbiological water quality criteria and standards. Types of treatment plant required for various source 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.

Required Reading:

Recommended Reading:

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%.

ECN4882 Environmental Engineering II

Campus: Footscray Park

Prerequisite(s): ECN4881

Content:

Required Reading:

Recommended Reading:

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%.

ECP4810 Engineering Projects

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 – student to be advised.

Recommended Reading:
- Current available text book – student to be advised.

ECS3821 Structural Analysis I

Campus: Footscray Park

Prerequisite(s): ENS2622

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 Macaulay 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 book – students to be advised.
Recommended Reading

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%.

ECTS822 STRUCTURAL ANALYSIS 2
Campus Footscray Park
Prerequisite(s) ECS8281.

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 qualitative 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.

ECTS4822 ADVANCED STRUCTURAL ANALYSIS
Campus Footscray Park
Prerequisite(s) ECS8282

Content
Basic concepts of finite element analysis. Element stiffness matrix and mass matrix. Element assembly and solution for unknowns. Analysis of 2D and 2D structures using a commercial finite element analysis package such as STRAND or ANSYS. Basic concepts of vibration and structural dynamics. Static and dynamic analysis of structure using finite element method. Buckling analysis of columns, frames and plates.

Required Reading

ECT872 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.

ECT872 ENVIRONMENTAL PLANNING AND DESIGN
Campus Footscray Park
Prerequisite(s) Nil

Content
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.

**Required Reading**  Victoria Department of Infrastructure, 2001, *Victoria Planning Provisions (CD)*, Department of Infrastructure, Victoria.


**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%.

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**ECZ3490 ENERGY STUDIES B**

**Campus**  Footscray Park.

**Prerequisite(s)**  ECG2230 Energy Studies A.


**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/labouratory session.

**Assessment**  Assignments, laboratory work, projects, 50%; examination, 50%.

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**EEA2001 LINEAR SYSTEMS 2.1**

**Campus**  Footscray Park.

**Prerequisite(s)**  EEA1002 Electrical Engineering I.2, SMA1202 Maths 1AQ.


**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.

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**EEA2002 LINEAR SYSTEMS 2.2**

**Campus**  Footscray Park.

**Prerequisite(s)**  EEA2001 Linear Systems 2.1.

**Content**  Frequency domain analysis of linear time-invariant systems. Transfer functions in the jw-domain, magnitude and phase characteristics. Passive and active first-order and second-order filters. The application of operational amplifiers to analog signal processing. Bode diagrams, asymptotic straight-line approximation of frequency response curves. Fourier Series. Approximation calculation of average power.


**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.

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**EEA2502 LINEAR SYSTEMS AND CONTROL 2.2**

**Campus**  Footscray Park.

**Prerequisite(s)**  EEA1002 Electrical Engineering I.2, SMA1202 Mathematics 1AQ.


**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.

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**EEA3001 CONTROL SYSTEMS 3.1**

**Campus**  Footscray Park.

**Prerequisite(s)**  EEL2001 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.


**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.
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 controllers. 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.

EEA3501 DIGITAL LINEAR SYSTEMS & CONTROL 3.1

**Campus** Footscray Park

**Prerequisite(s)** EEA2502 Linear Systems and Control 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 W-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.

EEA3502 DIGITAL LINEAR SYSTEMS & CONTROL 3.2

**Campus** Footscray Park

**Prerequisite(s)** EEA3501 Linear Systems and Control 3.1

**Content** The subject comprises one control system project that is to design, develop and implement a digital controller applied to real-time digital 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 beat 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.

EEA4001 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.

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.

EEA4004 ROBOTICS AND AUTOMATION 4.1

**Campus** Footscray Park

**Prerequisite(s)** EES2001 Programming with Objects 2.1; SMA2201 Mathematics B; or equivalent subjects.

**Content** Programmable Logic Controllers: Introduction to PLCs, programming and application. Overview of Robotics, classification, control methods, drive mechanisms. Programming and applications of specific robots. Homogeneous 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

**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 formalisation 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.  
**Assessment**  
Three hours per week or one semester based on one and a half hours per week of lecture/tutorial and one and a half hours per week of laboratory exercises and project work.  
**Class Contact**  
To be advised by lecturer.

### EEC2301 OPERATING SYSTEMS 2.1

**Campus:** Footscray Park  
**Prerequisite(s):** EES1002 Programming Structures 1.2 or ETC1112 Programming for Technology 2 or equivalent.  
**Content**  
The functions and characteristics of an operating system. Introduction to the UNIX operating system, its commands and utilities. Processes. CPU Scheduling, process synchronisation, 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 two hours of lecture and one hour of laboratory/tutorial.  
**Assessment**  
Test, assignment and laboratory exercises, 30%; examination, 70%. Satisfactory performance in all aspects of the assessment must be achieved in order to gain a pass in the subject.

### EEC2601 DATA STRUCTURES AND ALGORITHM ANALYSIS 2.2

**Campus:** Footscray Park  
**Prerequisite(s):** ETC1112 Programming Structures 1.2 or EES1002 Programming for Technology 2 or equivalent.  
**Co-requisite(s):** EEC2302 Software Engineering 2.2  
**Content**  
**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.

### EEC2602 DATA STRUCTURES AND ALGORITHM ANALYSIS 2.2

**Campus:** Footscray Park  
**Prerequisite(s):** EEC2601 Data Structure and Algorithm Analysis 2.1; EEC2302 Software Engineering 2.2.  
**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.  
**Required Reading** To be advised by lecturer.  
**Class Contact**  
Three hours per week for two semesters based on two hours of lecture 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):** EES2001 Programming with Objects 2.1.  
**Content**  
**Required Reading** To be advised by lecturer.  
EEC3504 COMPUTERS AND SOCIETY 3.2

Campus Footscray Park

Prerequisite(s) Completed second year Computer Technology or equivalent.


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) EEC2302 Software Engineering 2.2.

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 EES2001 Programming with Objects 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.

Assessment Test, assignment and laboratory exercises, 35%; examination, 65%. A pass in each component is required for a subject pass.

EEC3604 PROGRAMMING TOOLS AND COMPILERS 3.2

Campus Footscray Park

Prerequisite(s) EEC2602 Data Structures and Algorithm Analysis 2.2.


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 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.

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 EES2001 Programming with Objects 2.1.


Class Contact Three hours per week for one semester based on two hours of lecture and one hour of tutorial/laboratory.

Assessment Tests, 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 EES2001 Programming with Objects 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/laboratory.

Assessment Test, assignment and laboratory exercises, 35%; examination, 65%. A pass in each component of the subject is required for a subject pass.
EEC3803 ADMINISTERING MICROSOFT® WINDOWS

Campus: Footscray Park

Prerequisite(s): Completed 2nd year of Computer Technology Course or equivalent.


Required Reading: Subject materials will be provided by Microsoft®.


Class Contact: Three hours per week for one semester based on one hour of lecture and two hours of tutorial/practical work. The tutorial/practical will be taken in block mode, and will constitute the equivalent of 26 hours of class contact for the semester.

Assessment: Assignments, practical exercises, tests, 35%; examination, 65%. Satisfactory results must be obtained in each component of the subject to obtain a subject pass.

EEC3804 COMPUTER GRAPHICS 3.2

Campus: Footscray Park

Prerequisite(s): EEC2602 Data Structures and Algorithm Analysis. 2.2 or EIES2001 Programming with Objects 2.1


Class Contact: Three hours per week for one semester based on one hour lecture and two hours of laboratory class.

Assessment: Test, assignment and laboratory exercises, 35%; examination, 65%. A pass in each component of assessment is required for a subject pass.

EEC4001 SOFTWARE PROJECT MANAGEMENT 4.1

Campus: Footscray Park

Co-requisite(s): Completed Year 3.

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 transforms, 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.

Required 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.

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 transforms, 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.

Required 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.

EEC4511 SOFTWARE TESTING AND QUALITY ASSURANCE

Campus: Footscray Park

Prerequisite(s): EEC3511 Software Engineering 3.1

Co-requisite(s): Nil.


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 a number in 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.
EED2012 DESIGN 2.2

Campus Footscray Park

Prerequisite(s) EEE2011 Electronics 2.1, EHH2011 Digital Systems 2.1

Content This subject gives the student grounding in the planning, design, documentation, construction, and evaluation of electronics hardware, and leads on to more advanced project work in later years of the course.

Initially students are given an introduction to drafting practices and CAD packages for the production of electrical and electronic circuit diagrams and PCB layouts. A major project will be undertaken by each student, requiring, the meeting of specifications, PCB fabrication, electronic hardware assembly and the production of a comprehensive report.


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 Tests & Assignments, 25%; Project Hardware, 60%; Report, 15%

EED2502 DESIGN PROJECT 2.2

Campus Footscray Park

Prerequisite(s) EHH2011 Digital Systems 2.1

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 printed circuit board. A major project will be undertaken by each student, requiring, the meeting of specifications, PCB fabrication, electronic hardware assembly and the production of a comprehensive report.


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 Tests & Assignments, 25%; Project Hardware, 60%; Report, 15%

EED3000 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 undertaken on an individual basis. An electronics design project, involving selection of a feasible solution, approximate design calculations, simulations, bread boarding (optional), printed circuit design, obtaining components, construction and testing, report writing and oral presentation, is required each semester. The theory is more applications orientated, and covers the concepts of heat transfer, heatsink design, illumination design, acoustic noise control, and equipment and system reliability.


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 Assessment: Assignments, examination, 34%. Project work consists of two individual projects. Each project 33%.

EED3510 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%.

EED3600 DESIGN PROJECT 3

Campus Footscray Park

Prerequisite(s) Completed 2nd year

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%.

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**EEE2011 ELECTRONICS 2.1**

**Campus** Footscray Park

**Prerequisite(s)** EEE1002 Circuit Theory and Applications 2.

**Content** Introduction to PSPICE. Introduction to semi conductor materials, PN-Junction Diodes, characteristics and applications. BJT characteristics and small signal models, BJT amplifiers. MOSFET and JFET characteristics and small signal models, MOSFET and JFET amplifiers.


**Assessment** Tests, assignments and laboratory exercises: 35%; examination: 65%. A satisfactory performance in each component of the assessment is required for a subject pass.

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**EEE2012 ELECTRONICS 2.2**

**Campus** Footscray Park

**Prerequisite(s)** EEE2011 Electronic 2.1


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**EEE2501 ELECTRONICS 2.5**

**Campus** Footscray Park

**Prerequisite(s)** EEL1001 Circuit Theory and Application 1.

**Content** Introduction to AC circuits, sinusoidal wave forms, Sinusoidal voltages and currents in resistors, Inductors and capacitors. Series and parallel LC and R concepts of reactance, impedance and phasors. Power in AC circuits. DC Power supply and rectifier circuit, single wave and full wave, controlled DC supply, filter circuit design. Power Supply Regulation: series, shunt regulators.


**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** Tests, assignment and laboratory exercises: 35%; examination: 65%. A satisfactory performance in each component of the assessment is required for a subject pass.

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**EEE2503 ELECTRONICS 2.6**

**Campus** Footscray Park

**Prerequisite(s)** EEE2501 Electronics 2.5


**Assessment** Tests, assignment and laboratory exercises: 35%; examination: 65%. A pass in each component of assessment is required for a subject pass.

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**EEE2011 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.

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Therefore, the document contains detailed information about course subjects, their prerequisites, content, and assessment methods, along with recommended readings. It is structured in a manner that facilitates understanding and alignment with the requirements for the subjects.
EEE3001 ELECTRONIC CIRCUITS 3.1

Campus Footscray Park

Prerequisite(s) EEE2012 Electronics 2.2.


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.

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.

EEE4004 RF ENGINEERING 4.2

Campus Footscray Park

Prerequisite(s) EEE3002 Electronic Circuits 3.2; EET3101 Communication Engineering 3.1.


Required Reading Gonzalez, G. 1984, Microwave Transistor Amplifiers (Analysis and Design), Prentice Hall.


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.

EEE4005 HIGH VOLTAGE ENGINEERING

Campus Footscray Park

Prerequisite(s) EEP3002 Power Systems 3.2.

Content High voltage power circuit interruption theory, principles of operation of high voltage circuit breakers, surge propagation in high voltage networks, transients in high voltage networks from lightning and switching, instruction types and characteristics, insulation coordination, overvoltage protection, high voltage testing and measurement techniques.


Class Contact Three hours per week for one semester consisting of two hours of lectures/tutorials and one hour of laboratory class.

Assessment Final examination (3 hours), 60%; laboratory exercises and reports, 20%; assignment (no greater than 2000 words), 20%.

EEEH1001 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, 15%; Laboratory exercises, 10% and final examination, 75%.

EEEH2011 DIGITAL SYSTEMS 2.1

Campus Footscray Park

Prerequisite(s) EEEH1001 Digital Electronics 1; EES1002 Programming 2/ETC1112 Programming for Technology 2

Content Multi-mode synchronous counters, modulus design, cascading devices, applications in frequency division. Registers and shift registers, data communication applications, ring counters and PRBS applications. Multiplexers, demultiplexers, comparators, encoders and decoders, equation implementation and data path applications. Voltage, current and propagation delay considerations for logic devices. The register model and instruction set of a simple 8 bit microprocessor. A selection of addressing modes and instructions. Arithmetic, logical and looping operations in assembly language.


**EEH2012 DIGITAL SYSTEMS 2.2**

**Campus** Footscray Park  
**Prerequisite(s)** EEH2011 Digital Systems 2.1  
**Content** PLD definitions including the PLA, PAL and PLE (the ROM as a PLE and register/ROM applications). Manufacturers fuses, Fuseset creation for simple combinational devices and counters. An introduction to VHDL and device modelling using the PROCESS statement. The description of combinational and sequential devices in VHDL. The implications of VHDL syntax on PLD architecture requirements. Microprocessor input/output ports, interrupts, stack operations and subroutines.  
**Class Contact** Three hours per week for twelve weeks based on 2 hours per week of lecture/tutorial and one hour per week of laboratory based activity.  
**Assessment** Laboratory based design, build and test activities including documentation and reports 10%, Final Examination 90%.  

**EEH2601 MICROPROCESSOR SYSTEMS 2.1**

**Campus** Footscray Park  
**Prerequisite(s)** Completed first year.  
**Content** A revision of binary arithmetic and shift registers. An introduction to 8 bit microprocessors – using the Motorola 68HC11 as the example. The 68HC11 architecture, assembly language instruction set, addressing modes etc. Microprocessor system devices (e.g. RAM, ROM and Input/Output) and the Memory Map. An introduction to assembly language programming and programs with loops. The use of index registers and microprocessor stacks. Simple subroutines and an introduction to interrupts.  
**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  
**Class Contact** Three hours per week for one semester based on one hour of lecture and two hours of laboratory/tutorial work.  
**Assessment** Test, assignment and laboratory exercises, 35%; examination, 65%. Satisfactory performance in each component of assessment is required for a subject pass. Students must also attend a minimum of 80% of all lab and tutorial classes.  

**EEH3002 MULTIMEDIA CIRCUITS AND SYSTEMS 3.2**

**Campus** Footscray Park  
**Prerequisite(s)** EEH2012 Digital Systems 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 per week of lecture and two hours per week of laboratory exercises.  
**Assessment** Laboratory exercises 20%, project 50%, examination 30%. A pass in each component of assessment is required for a subject pass.  

**EEH3101 DIGITAL CIRCUITS 3.1**

**Campus** Footscray Park, Werribee.  
**Prerequisite(s)** EEA2102 Electrical Engineering 2.2.  
**Content** Digital value representation, number systems, binary arithmetic operations. Boolean algebra, Boolean expression of digital circuits, Karnaugh Map simplification, combinational digital circuit design, Nand/Nor design. Circuit design using MSI components, decoders and multiplexers. Latches, flip-flops and concepts and sequential digital circuits. Binary counter and other modulus counter design. Typical circuits for analog to digital and digital to analog conversion. Devices for microprocessor interface.  
**Class Contact** Based on one hour per week tutorial, one hour per week laboratory and one hour per week laboratory exercises.  
**Assessment** Test, assignment and laboratory exercises, 40%; examination, 60%. 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** EES2001 Programming with Objects 2.1, EEH2012 Digital Systems 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.
Required Reading Mazidi, M.A. and JG, 1998, The 80 x 86 IBM PC
and Compatible Computers (Volumes I and II), 3rd edn, Prentice Hall.
Recommended Reading Brey, 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 15%, 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) EES2001 Programming with Objects 2.1
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, notations and constructs, data path
and data units, bus transfers.
Required Reading Wakeley, JF, 2000, Digital Design Principles and
and Design, Prentice Hall.
Recommended Reading Shiva, S.G., 1988, Introduction to Logic
Design, Scott and Foreman. TTL Data Book. Winkel, D and Prosser,
F, 1987, Art of Digital Design – An Introduction to Top Down Design,
Prentice Hall. Fletcher, W.I., 1980, An Engineering Approach to Digital
Design, Prentice Hall. Katr, R.H., 1994, Contemporary Logic Design,
Addison Wesley.
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) EEH2012 Digital Systems 2.2 or equivalent
Content Introduction to silicon fabrication process. Digital and
analogue circuit design, static and dynamic design techniques, random
logic, PLA, domino, NOR, 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. (GAs).
Required Reading Pucknell, D.A. and Eshraghain, K., 1994, Basic
VLSI Design system and Circuits, Prentice Hall.
Recommended Reading Allen, P.E. and Holberg, D.R., 1989,
CMOS Analog Circuit Design, HRW. Haskard, M.R. and May, I.C., 1990,
Analog VLSI Design NMOS and CMOS, Prentice Hall. Weste, N. and
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,
50%. A pass in each component of assessment is required for a
subject pass.

EEH3504 EMBEDDED SYSTEMS 3.1
Campus Footscray Park
Prerequisite(s) EEH2012 Digital Systems 2.2 and EEH2602
Microprocessor Systems 2.2
Content Advanced microprocessor concepts using the Motorola
68XXX family of 32 bit microprocessors. The programming model,
instruction set and addressing modes, exception processing, bus
behaviour and interfacing to external devices. Embedded microcontrollers using the 68XXX core. Integration of high level
language modules. Efficiency in assembly language programming
techniques.
Required Reading Antonakis, J.L., The 68000 Microprocessor,
Prentice Hall.
Recommended Reading Elements, A., Microprocessor Systems
Design – 68000 Hardware, Software and Interfacing, PWS Publishing
Hall.
Class Contact Three hours per week for one semester based on one
hour per week of lecture and two hours per week for
tutorial/laboratory.
Assessment Examination 100%.

EEH3604 DIGITAL SYSTEMS 3.1
Campus Footscray Park
Prerequisite(s) EEH2011 Digital Systems 2.1, EEH2012 Digital
Systems 2.2
Content Description of data path elements in VHDL. Use of
concurrent signal assignment statements and process statements to
describe:- decoders, encoders, counters, registers, comparators, ALUs,
etc. Port mapping entities to form hierarchical design structures.
Review of the ASM design method and controller description in
VHDL. An introduction to linked and partitioned controller design.
The impact of VHDL. programming style on the synthesized circuit
structure. VHDL. constraints for CPLD and FPGA mapping.
Asynchronous circuit design: analysis, flow and transition tables, race
conditions. State assignment and reduction techniques. Iterative
circuits.
Required Reading Skahill, K., 1996, VHDL, for Programmable Logic,
Addison Wesley.
Recommended Reading Prosser, F. and Winkel, D.E. 1980, The Art
Class Contact Three hours per week for one semester based on one
hour per week of lecture, tutorial and laboratory.
Assessment Test, assignment and laboratory exercises, 20%;
examination, 80%.

EEH3702 INTRODUCTION TO FABRICATION
Campus Footscray Park
Prerequisite(s) Nil.
Content The unit contents are as follows:
- Fundamental principles of fabrication processes, physical and
  chemical models for crystal growth, oxidation, ion
  implantation, etching, deposition, lithography and metallisation.
- 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.

**Required Reading**

**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/industrial visits.

**Assessment**
Assignments, 30% and final examination, 70%.

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EEH3704 INTRODUCTION TO MEMS

**Campus**
Footscray Park

**Prerequisite(s)**
Nil

**Content**
The unit contents are as follows:

- MOS and MEMS processes
- Bulk and surface silicon micromachining
- LIGA techniques
- Analog and digital interfacing circuits and sensors
- EDA tools for MEM design and implementation
- MEMS device modelling
- Packaging issues
- Replication processes
- Hybrid design methodology and techniques

**Required Reading**

**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/laboratory exercises.

**Assessment**
Assignments: 20%, laboratory exercises: 20% and final examination: 60%.

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EEH4101 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.

**Required Reading**

**Recommended Reading**

**Class Contact**
Two 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, assignment and laboratory exercises, 20%; examination, 80%.

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EEH4102 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 PSPICE simulation tools. Basic analog building blocks. Timing issues in VLSI circuit design. Design of VLSI system subsystems: 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

**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, assignment and laboratory exercises, 40%; examination, 60%. A pass in each component of assessment is required for a subject pass.

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EEH4104 DIGITAL SYSTEMS DESIGN 4.2

**Campus**
Footscray Park

**Prerequisite(s)**
EEH4101 Computer and Digital Design 4.1 or EEH3604 Digital Systems 3.1

**Content**
Further topics VHDL. including subprograms, operator overloading, textio memory modelling. Behavioural modelling. An introduction to hardware testing and testable design, test vector generation, scan path methods, built-in self test.

**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**
Test, assignment and laboratory exercises, 20%; examination, 80%.

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EEL1001 CIRCUIT THEORY AND APPLICATIONS 1

**Campus**
Footscray Park

**Prerequisite(s)**
Nil

**Co-requisite**
SM1A201

**Content**
Introduction to fundamental concepts of electricity. DC Circuit Analysis, using KCL, KVL, Nodal Voltage Analysis, Thivenin and Norton's Theorems. The application of these techniques to practical electric and electronic circuits. Introduction to real and ideal devices: Sources, Resistors, Capacitors, Rectifier and Zener Diodes, and Rectification circuits. Introduction to Operational Amplifiers and applications. Laboratory exercises in practical aspects of circuit construction and basic laboratory instrument.

**Required Reading**
Provided subject lecture notes.

**Recommended Reading**

**Class Contact**
Two hours per week lecture, one hour per week tutorial and two hours per fortnight laboratory.

**Assessment**
Examination, 80% test, 10% laboratory exercises, 10%. Satisfactory completion of laboratory work is required for a subject pass.
EEL1002 CIRCUIT THEORY AND APPLICATIONS 2

Campus Footscray Park

Prerequisite(s) EEL1001


Required Reading Provided subject lecturer notes.


Class Contact Two hours per week lecture, one hour per week tutorial and two hours per fortnight laboratory.

Assessment Examination, 80%; test, 10%; laboratory exercises, 10%. Satisfactory completion of laboratory work is required for a subject pass.

EEL2001 LINEAR SYSTEMS AND APPLICATIONS 1

Campus Footscray Park

Prerequisite(s) EEL1002 Circuit Theory and Applications 2 and SMA1202 Mathematics 1AQ


Class Contact Two hours per week of lecture/tutorial and one hour per week of laboratory exercises for a twelve weeks semester.

Assessment Laboratory exercises 10%, examination 90%. A satisfactory performance in each component of the assessment is required for a subject pass.

EEL4401 NEURAL NETWORKS AND FUZZY LOGIC 4.1

Campus Footscray Park

Prerequisite(s) EEE2503 Electronics 2.6, EEA2502 Linear Systems And Control 2.2

Content The subject will introduce the concept of neural networks, fuzzy logic and applications. Topics covered include: Neural static and dynamic functions, analog circuits and networks, neural net chips; Fuzzy systems – fuzzy sets, logic and algebra; fuzzy functions and decomposition; application of fuzzy concepts and systems.


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.

EEN2301 COMPUTER COMMUNICATIONS 2.1

Campus Footscray Park

Prerequisite(s) SMA1202 Mathematics 1AQ


Required Reading Foruzan, G., 2000, G. Data Communications and Networking, 2nd Ed. McGraw Hill.


Class Contact Three hours per week for one semester based on two hours of lecture, and one hour of laboratory/tutorial.

Assessment Tests, assignment and laboratory exercises: 30%; examination: 70%. Satisfactory performance in all aspects of the assessment must be achieved in order to gain a pass in the subject.

EEN2302 COMPUTER COMMUNICATIONS 2.2

Campus Footscray Park

Prerequisite(s) EEN2301 Computer Communications 2.1

FTP and 1FTP, SMTP, SNMP, HTTP and WWW. Socket interface. IPv6, Network security.

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 of laboratory/tutorial.

Assessment: Tests, assignment and laboratory exercises: 30%; examination: 70%. Satisfactory performance in all aspects of the assessment must be achieved in order to gain a pass in the subject. A pass in each component of assessment is required for a subject pass.

EEL1002 Circuit Theory and Applications 1.2

Campus: Footscray Park

Prerequisite(s): EEL1002 Circuit Theory and Applications 1.2

Content: Introduction to magnetic circuits. Single phase transformer theory and performance. DC machines, circuit models, characteristics and speed control. Introduction to three phase power and its measurement. Balanced and unbalanced three phase systems (load unbalanced only). Complex power and power factor correction.


Class Contact: Three hours per week for one semester based on two hours lecture/tutorial per week and one hour laboratory exercises per week.

Assessment: Test: 20%; laboratory exercises: 20%; examination: 60%. A satisfactory performance in each component of the assessment is required for a subject pass.

EEE2802 ELECTRICAL ENGINEERING 1

Campus: Footscray Park

Prerequisite(s): SPH1602 and SMA1202


Class Contact: Three hours per week for one semester comprising two hours of lectures and one hour of tutorial/laboratory.

Assessment: Class tests laboratory work and assignments, 25%; end of semester examination, 75%.

EEE3001 POWER SYSTEMS 3.1

Campus: Footscray Park

Prerequisite(s): EEE2002 Energy Conversion 2.2


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.

EEE3002 POWER SYSTEMS 3.2

Campus: Footscray Park

Prerequisite(s): EEP2002 Energy Conversion 2.2

Content: Basic concepts in power systems, energy conversion, transmission and distribution, per unit and quantities, DC/DC, DC/AC, and AC/DC power converters. Current and voltage relations for short, medium and long transmission lines. Network calculations. Power converters.


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, 20%, examination, 70%. A pass in each component of assessment is required for a subject pass.

EEE4001 POWER SYSTEMS 4.1

Campus: Footscray Park

Prerequisite(s): EEP3002 Power Systems 3.2


Class Contact: Three hours per week based on two hours per week of lecture and tutorial and one hour per week of laboratory exercises.

Assessment: Test, assignment and laboratory exercises, 40%; examination, 60%. A pass in each component of assessment is required for a subject pass.

EEE4002 POWER SYSTEMS 4.2

Campus: Footscray Park

Prerequisite(s): EEP3002 Power Systems 3.2


Class Contact: Three hours per week based on two hours per week of lecture and tutorial and one hour per week of laboratory exercises.

Assessment: Test, assignment and laboratory exercises, 40%; examination, 60%. A pass in each component of assessment is required for a subject pass.
EEP4004 DISTRIBUTION SYSTEMS 4.2
Campus Footscray Park
Prerequisite(s) EEP3002 Power Systems 3.2.
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, assignments and project, 40% examination, 60%. A satisfactory performance in each component is required for a subject pass.

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 laboratory exercises, 40%, examination, 60%. A satisfactory performance in each component 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.
Assessment Test, assignments and laboratory exercises, 40%, examination, 60%. A satisfactory performance in each component is required for a subject pass.

EES2001 PROGRAMMING WITH OBJECTS
Campus Footscray Park
Prerequisite(s) EES1002 Programming 2.
Content Problem solving and advanced programming skills augment the material covered in the first year of the course. Object oriented design and programming techniques, the use of constructors, overloaded functions and inheritance. Also included is an introduction to advanced data structures such as linked lists and multi-dimensioned arrays and related search algorithms and operations on binary and random access files.
Class Contact Three hours per week for one semester consisting of 2 hours lecture/tutorial and 1 hour laboratory.
Assessment Tests, assignments and laboratory exercises: 40%. Final examination: 60%. A satisfactory performance in each component of the assessment is required for a subject pass.

EET2011 COMMUNICATION SYSTEMS 2.1
Campus Footscray Park
Prerequisite(s) SMA1202 Mathematics 1AQ
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 satisfactory performance in each component of the assessment is required for a subject pass.

EET2302 MULTIMEDIA ENGINEERING TECHNIQUES
Campus Footscray Park
Prerequisite(s) EES1002 Programming 2.
Content The architecture of digital video broadcasting (DVB) including terrestrial, cable and satellite systems. The principles and design of JPEG image compression and MPEG video compression systems. Techniques for internet and wireless transmission of video, methods of correcting transmission errors and problems of congestion and packet loss.
Required Reading Notes and reading lists on each topic are provided. Heath, S., 1999, Multimedia and Communications Technology, Focal Press.
Class Contact Three hours per week for one semester including one hour per week of lecture, tutorial and laboratory work.
Assessment Examination 50%, tests assignment and laboratory exercises 50%.
### EET3002 MULTIMEDIA COMMUNICATION NETWORKS 3.2

**Campus** Footscray Park  
**Prerequisite(s)** EET2011 Communication Systems 2.1  
**Required Reading** To be advised.  
**Recommended Reading** Stallings, W. 1992, *ISDN and Broadband ISDN*, 2nd edn, MacMillan  
**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.

### EET3101 COMMUNICATION ENGINEERING 3.1

**Campus** Footscray Park  
**Prerequisite(s)** EET2011 Communication Systems 2.1  
**Content** Computer communication protocols and standards. TCP/IP protocol suite. Underlying technologies. IP addressing. Subnetting and supernetting. 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 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.  
**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; EEL2002 Linear Systems and Applications 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, assignment 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 tutorial and design 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 This unit is designed to introduce the design of actual communication systems and management of telecommunication 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 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.

EET4302 MULTIMEDIA SYSTEMS DESIGN 4.2
Campus Footscray Park
Prerequisite(s) EET3102 Communication Engineering 3.2
Content In this subject, students are guided in the design of communication systems. 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.
Class Contact Three hours per week for one semester based on two hours per week of lecture and one hour per week of tutorial/seminar.
Assessment Examination 70%, assignments 30%.

EET4402 TELETRAFFIC ENGINEERING 4.2
Campus Footscray Park
Prerequisite(s) EET3102 Communication Engineering 3.2
EET4701 COMMUNICATION SYSTEMS 4.1

**Campus** Footscray Park

**Prerequisite(s)** EET3102 Communication Engineering 3.2


**Required Reading**

**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.

EET4702 COMMUNICATION SYSTEMS 4.2

**Campus** Footscray Park

**Prerequisite(s)** EET4701 Communication Systems 4.1


**Required Reading**
- To be advised by the lecturer.

**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** Assignments, project and laboratory exercises, 35%; examination, 65%. A pass in each component of assessment is required for a subject pass.

EET4501 BROADBAND ISDN 4.1

**Campus** Footscray Park

**Prerequisite(s)** EET3102 Communication Engineering 3.2


**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.

**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** Assignments, project 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 EEH3202 Computer and Digital Design 3.2


**Required Reading**
- To be advised by the 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 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.

EEY4102 COMPUTER SYSTEMS 4.2

**Campus** Footscray Park

**Prerequisite(s)** EEY4101 Computer Systems 4.1, EEH3201 Computer and Digital Design 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.

**Recommended Reading**

**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.

EEY4101 COMPUTER SYSTEMS 4.1

**Campus** Footscray Park

**Prerequisite(s)** EEY3001 Software Systems 3.1, EEH3201 Computer and Digital Design 3.1

**Content** Operating systems, programming and applications case study. Networks: Topology, LAN, WAN, access methods, network standards, security, privacy, performance and management. Network software: Network operating systems, programming and applications case study.

**Required Reading**
- To be advised.
EMC372 ENGINEERING COMPUTATIONS 2

Campus: Footscray Park
Prerequisite(s): ENC2812 Engineering Computations 1
Required Reading: Current available text book – student to be advised.
Class Contact: Three hours per week for one semester comprising of an hourly lecture and a two hourly tutorial/laboratory
Assessment: Assignments and class tests, 40%; End of Semester Examination 60%

EMC4731 ENGINEERING COMPUTATIONS 3

Campus: Footscray Park
Prerequisite(s): Engineering Computations 3.
Content: Introduction to Software development for engineering problems. Major software project based on a Mechanical Engineering problem.
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, 30%; Software project 70%

EMD3731 MECHANICAL DESIGN 1

Campus: Footscray Park
Prerequisite(s): Solid Mechanics 3, Engineering Design
Content: Design of mechanical elements: Design of power transmission, shafting, gears, cams and followers, Design and selection of rolling contact and journal bearings, Selection of chain drives, belt drives, clutches and couplings, Bolted and Welded joints.
Required Reading: Current available text book – Student to be advised. Class notes.
Class Contact: Three hours per week for one semester based on one hour lecture and two hours tutorial/laboratory session.
Assessment: Assignments and class tests, 50%; end of semester examination, 50%.

EMD3732 MECHANICAL DESIGN 2

Campus: Footscray Park
Prerequisite(s): EMD3731 Mechanical Design 1
Content: Design of plant equipment. Structural design
Required Reading: Current available text book – student to be advised.
Recommended Reading: Class notes. To be advised.
Class Contact: Three hours per week for one semester comprising of an hourly lecture and a two hourly tutorial.
Assessment: Assignments and class tests, 50%; End of Semester Examination 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 hourly tutorial.
Assessment: Assignments and class tests, 50%; end of semester examination, 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 text book – student to be advised.
Class Contact: Three hours per week for one semester comprising of an hourly lecture and a two hourly tutorial.
Assessment: Assignments 50%, Satisfactory semester progress 50%

EMF3741 FLUID 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 hour lectures and one hour tutorial/laboratory session.
Assessment: Class tests and assignments, 50%; end of semester examination, 50%.
EMF4741 FLUID MECHANICS 3
Campus Footscray Park
Required(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.
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/laboratory work.
Assessment Class tests and assignments, 70%; end of semester examination, 30%.

EMF4742 FLUID MECHANICS 4
Campus Footscray Park
Required(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.
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/laboratory work.
Assessment Class tests and assignments, 70%; end of semester examination, 30%.

EMM3110 MECHATRONICS 1
Campus Footscray Park
Prerequisite(s) Fluid Mechanics 2
Content Gas dynamics: compressible flows, sound speed, Mach number, laws of adiabatic flow, critical values; normal and oblique shock waves, entropy change. Characteristics of nozzle flows with friction, location of shock, gas flow in ducts, Fanno flow, isothermal flow, Rayleigh flow. Computational fluid dynamics using CFD package.
Required Reading Current available text book – Student to be advised.
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%.

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 semesters comprising two hours of lectures and one hour of tutorial and laboratories as required.
Assessment Class tests and assignments.

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%

EMS3722 STRESS ANALYSIS 2
Campus Footscray Park
Prerequisite(s) Stress Analysis 1
Required Reading Lecture Notes: Danh Tran, Stress Analysis, 2002, 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%

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%.
EMT3781 THERMODYNAMICS 2

Campus Footscray Park
Prerequisite(s) Thermodynamics 1.
Class Contact Three hours per week for one semester based on two hour lectures and one hour tutorial session.
Assessment Class tests and assignments, 40%; end of semester examination, 60%.

EMT3782 HEAT TRANSFER

Campus Footscray Park
Prerequisite(s) Thermodynamics 2.
Class Contact Three hours per week for one semester based on two hour lectures and one hour tutorial/laboratory session.
Assessment Class tests and assignments, 30%; Semester examination, 70%.

EMT4782 HEATING AND AIR CONDITIONING

Campus Footscray Park
Prerequisite(s): EMT3781
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%.

EMT4881 AUTOMOTIVE ENGINE TECHNOLOGY

Campus Footscray Park
Prerequisite(s): EMT3781
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%.

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%.

EMV4772 DYNAMICS OF SYSTEMS
Campus Footscray Park
Prerequisite(s) EMV3772 Dynamics 3
Content Mathematical modelling of dynamic systems. Transient response analysis. Control systems design by Root-Locus methods; by frequency response. PID control. Robust control. Lyapunov stability analysis.
Required Reading Ogata, K., 1997, Modern Control Engineering, 3rd edn, Prentice Hall.
Class Contact Three hours per week for one semester comprising two hours of lecture and one hour of tutorial.
Assessment Assignments and class tests, 30% end of semester examination, 70%.

EMV4871 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%
**ENC1812 COMPUTING FOR ENGINEERS**

**Campus** Footscray Park

**Prerequisite(s)** Nil


**Required Reading** Online class notes.


**Class Contact** Three hours per week for one semester based on one hour of lecture and two hours laboratory/tutorial.

**Assessment** Class tests, 80%; Assignments and laboratory work, 20%.

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**ENC2812 ENGINEERING COMPUTATIONS 1**

**Campus** Footscray Park

**Prerequisite(s)** SMA1202 Engineering Mathematics 1AQ.

**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.

**Required Reading** Online class notes.


**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%.

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**END1832 ENGINEERING GRAPHICS**

**Campus** Footscray Park

**Prerequisite(s)** Nil

**Content** Drawing practice, projections and views, dimensioning, preparation of layout, assembly and detailed drawings, sketching CAD computer generated drawings through use of AutoCAD software.


**Class Contact** Three hours per week for one semester comprising one hour hand drawing and two hours CAD tutorials.

**Assessment** Class tests, 10%; CAD tests, 10%; assignments, 80%; attendance at all classes is required.

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**END2832 ENGINEERING DESIGN**

**Campus** Footscray Park

**Prerequisite(s)** END2831

**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%.

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**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%.

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**EM1851 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
## 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%.  

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## ENM4852 ENGINEERING PROJECT MANAGEMENT

**Campus** Footscray Park  
**Prerequisite(s)** ENM3851  
**Required Reading** Current available text book – to be advised.  
**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%.  

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## ENSI822 SOLID MECHANICS 1

**Campus** Footscray Park  
**Prerequisite(s)** EPH1601 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%.  

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## ENS282I SOLID MECHANICS 2

**Campus** Footscray Park  
**Prerequisite(s)** ENSI822  
**Content** Properties of sections, including area, centroids, first and second ‘moments’ of area. Principal axes of sections. Parallel axis theorem. Compound sections. Elastic/plastic bending stresses in beams. Shear stresses in beams. Deflection of simple determinate beams. Deflections by Macaulay’s method and superposition. Failure modes and loads for compression members, includes squashing/elastic buckling and combined effect of direct and bending stresses.  
**Class Contact** Three hours per week for one semester based on a two hour lecture and a one hour tutorial.  
**Assessment** Based on minor and major model construction projects, 25%; tests, 10%; 3 hour examination, 65%.  

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## ENS2822 SOLID MECHANICS 3

**Campus** Footscray Park  
**Prerequisite(s)** ENS2821  
**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%.  

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## UNDERGRADUATE SUBJECT DETAILS
ENT2881 THERMODYNAMICS 1
Campus Footscray Park
Prerequisite(s) SPH1102.
Class Contact Three hours per week for one semester comprising two hours of lectures and one hour of tutorial.
Assessment Class tests and assignments, 30%; end of semester examination, 70%.

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. Quantum mechanical 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. Manufacturing 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%.

ENX1831 ENGINEERING EXPERIMENTATION
Campus Footscray Park
Prerequisite(s) Nil
Content Measurement, use of instrumentation, laboratory and technical procedures, work-place 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. Assessment Class tests and assignments, 80%; laboratory report and oral presentation, 20%.

EPP1001 PHYSICS 1.1
Campus Footscray Park
Prerequisite(s) Nil
Class Contact Four hours per week for one semester comprising of two hours lecture, one hour tutorials and one hour laboratory.
Assessment End of semester examination, 60%; tests, 20%; laboratories, 20%.

EPP1002 PHYSICS 1.2
Campus Footscray Park
Prerequisite(s) EPP1001, SMA1201
Class Contact Four 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
Co-requisite SMA1202
Content de Broglie Waves: wave-particle duality, Heisenberg’s Uncertainty Principle, properties of matter waves. Schroedinger Wave Equation: wave functions, expectation values, eigenfunctions, zero potential, potential steps and barriers, tunnelling, particle in a box, simple harmonic oscillator. One electron atoms: eigenfunctions and eigenvalues, probability densities, orbital angular momentum, electron
spin, orbital and spin magnetic dipole moments, spin-orbit interaction, total angular momentum. Multielectron atoms: Periodic Table of the Elements.

**Required 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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**EPP2002 PHYSICAL OPTICS**

**Campus**
Footscray Park

**Prerequisite(s)**
EPP1002, SMA1201

**Content**
Optics – Lens systems: thick lens design using matrix methods, aberrations. Multiple beam interference: Fresnel equations, complex reflection and transmission coefficients, reflectance instrument function for the plane parallel optical resonant cavity, instrument parameters for optical cavities, applications as Fabry-Perot interferometer, interference filters and laser cavities, tuning, Multi-layer coating design. Lasers: Simulation emission, population inversion, Einstein coefficients, energy level diagrams, various types of lasers and their operation, mode structure, laser applications.

**Required Reading**

**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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**EPP2003 ELECTROMAGNETIC FIELD THEORY & OPTICS**

**Campus**
Footscray Park

**Prerequisite(s)**
EPP1002, SMA1201

**Content**
Revision of Maxwell’s equations in integral form, potential gradient, del notation in Cartesian, cylindrical and spherical co-ordinates, divergence of E and B, Poisson and Laplace equations – method of images, curl of E and B, Maxwell equations in differential form, implications of changing electric field term, an electromagnetic wave in free space and in conducting media, energy transfer – Poynting vector, boundary conditions and media, energy transfer down a cable, radiation from an accelerated charge, laws of optics.

**Required 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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**EPP2004 OPTICS LABORATORY 2**

**Campus**
Footscray Park

**Prerequisite(s)**
EPP1001, EEE1002

**Content**
A series of graded laboratory exercises designed to support and enhance the students’ understanding of the basis of modern optics through hands on experience of physical measurement and the limitations thereof.

**Required Reading**
Optics Laboratory 2 Manual, Victoria University.

**Class Contact**
Three hours per week for one semester of laboratory experience.

**Assessment**
Logbook of experimental work, formal reports and oral presentations.

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**EPP3000 PHOTONICS TECHNICAL PROJECT**

**Campus**
Footscray Park

**Prerequisite(s)**
EPP2002 plus at least 90 credit points of 2nd year subjects.

**Content**
The aim of this subject is to develop the 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**
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.

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**EPP3001 OPTICS 3**

**Campus**
Footscray Park

**Prerequisite(s)**
EPP2001, EPP2002

**Content**

**Required Reading**

**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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**EPP3002 FIBRE OPTIC COMMUNICATION SYSTEMS**

**Campus**
Footscray Park

**Prerequisite(s)**
EPP2001, EPP2002

**Content**

**Required Reading**

**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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119
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.

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.

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.

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.

Recommended Reading Mandl, F., 1992, Quantum Mechanics, Wiley.


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; 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.

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

Required Reading Hecht E., 2002, Optics, 4th edn, Addison-Wesley.


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 OPTICAL 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, multiplexted and special optical fibres for sensors, interferometric sensors, fibre optic materials interactions in optical fibre sensors, fibre optic components, single mode fibres, normal mode theory of single mode fibre


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.

EPP4006 DATA ACQUISITION 2

Campus Footscray Park
Prerequisite(s) EPP3006 or equivalent.

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.

Assessment Laboratory project work plus assignments as advised by lecturer.

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.


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.

ETC1001 COMPUTER TECHNOLOGY 1

Campus: Footscray Park

Prerequisite(s): Nil


Class Contact: Three hours per week for one semester.

Assessment: Examination, 50%; Various forms of continuous assessment, 50%. 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.


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.

HPE1202 BIOMECHANICS

Campus: Footscray Park

Prerequisite(s): None

Content: (i) biomechanical concepts and terminology, (ii) human motion and ways to measure it, (iii) forces applied to the human and equipment during sport & exercise, and (iv) basic biomechanical analysis techniques.

Required Reading: To be advised by lecturer.


Class Contact: Subject Hours: 3 hours per week for one semester: 2 hours lecture, 1 hour tutorial session.

Assessment: Mid-semester exam, 40%; Final exam, 60%.

HPE2101 SPORT PHYSIOLOGY

Campus: Footscray Park

Prerequisite(s): HPE1204 Exercise Physiology

Content: This subject builds on the student’s knowledge of exercise physiology, studying the essential importance of exercise physiology in understanding sport and exercise performance, including elite
sports and recreational exercise. The subject emphasises understanding the physiologic requirements of exercise and sport, evaluates the importance of physiological systems in athlete performance, the essential role of nutrition in exercise and sport, sport-specific adaptations to physical training and comparisons of different forms of training. The subject studies basic principles underlying physiological exercise testing, with emphasis on sport specificity, lab-based and field-based testing. Laboratory and field-based classes require students to administer and interpret exercise tests that are fundamental to exercise physiology including measurements of maximal oxygen consumption, muscle strength and fatigability, skinfold measurements and anaerobic power testing. The subject will include competency evaluation for these tests. The subject examines the important role of exercise physiology in sustaining and enhancing sport performance. The subject is designed to lead to more detailed mechanistic studies in the core subject Advanced Exercise Physiology and applied studies in the elective subject Applied Exercise Physiology, in the Exercise and Sport Science stream.

Required Reading

Specific journal articles to be advised

Recommended Reading


Class Contact

Four hours per week for one semester comprising two one-hour lectures and one two-hour laboratory class.

Assessment

Laboratory reports, 20%; short tests and assignments, 10%; final examination, 30%; laboratory and field test competency 40%.

HPE2102 SPORTS BIOMECHANICS

Campus

Footscray Park and City Flinders Street (Biomechanics Laboratory)

Prerequisite(s)

HPE1202 Biomechanics; or equivalent.

Content

(i) developing biomechanical principles through application to sport / exercise specific examples and analysis, (ii) working with some of the available technologies / techniques and using them in exercise and sports application and (iii) familiarizing students with laboratory practice and data handling in sports biomechanics.

Required Reading

To be advised by lecturer.

Recommended Reading


Class Contact

4 hours per week for one semester: 2 hours lecture/tutorial, 2 hours lab/tutorial.

Assessment

Essay, 20%; Lab work, 30%; final exam, 50%.

HPE2104 EXERCISE PHYSIOLOGY

Campus

Footscray Park

Prerequisite(s)

SBM1174 Human Physiology

Content

This subject applies the student's knowledge of Human Physiology to understanding the acute and chronic responses to exercise, as well as the physiological bases of exercise performance. The subject examines the acute effects of exercise on the cardiovascular, respiratory and thermoregulatory systems, the metabolic supply of energy to exercising muscles, both nutritional and biochemical, and neural mechanisms controlling movement and associated exercise responses. The second part of the unit examines longer term (chronic) physiological responses of exercise training, with focus on cardiorespiratory and musculoskeletal adaptations. Practical sessions will complement topics covered in lectures and will include topics such as energy metabolism at rest and during exercise, maximal oxygen consumption, cardiovascular and respiratory responses to exercise, indirect measurement of body fat and anaerobic power testing. The subject will include both descriptive and mechanistic approaches, to enhance student understanding of exercise physiology principles. This subject forms the basis for advanced core and elective studies in the Exercise and Sport Science Stream.

Required Reading

Specific journal articles to be advised

Recommended Reading


Class Contact

Three hours per week for one semester comprising two one hour lectures and one two hour laboratory class every second week.

Assessment

Final examination, 60%; mid-semester examination, 25%; laboratory quizzes, 10%; laboratory oral exam, 5%.
HPE3100 ADVANCED EXERCISE PHYSIOLOGY

Campus Footscray Park

Prerequisite(s) HPE 1204 Exercise Physiology

Content This subject explores in-depth the physiological responses to exercise, building on the knowledge gained in previous core subjects Human Physiology, Exercise Physiology, and Sports Physiology in the Exercise and Sport Science stream. The subject focuses on the regulation of the cardiovascular, respiratory, metabolic, endocrine, neural and muscular responses to acute exercise. The subject details the role of exercise in metabolic rate and weight control and associated impact on human health, including major chronic diseases such as diabetes, cardiovascular disease. The subject includes measurement and interpretation of the electrocardiogram (6 and 12 lead) during exercise. Practical sessions include measurement of limb blood flow with exercise, metabolism and electrolyte regulation during intense and prolonged exercise; ECG during graded exercise; respiratory control during exercise, regulation of blood pressure and cardiac responses to exercise; and examination of factors influencing muscle fatigue.

Required Reading Specific journal articles to be advised


Class Contact Four hours per week for one semester comprising two one hour lectures and one two hour laboratory class.

Assessment Laboratory reports, 30% ; short tests and assignments, 20%; final examination, 50%.

HPL2186 EXERCISE PRESCRIPTION

Campus Footscray Park, Melton.

Prerequisite(s) HPL1180 Introductory Anatomy; HPL1190 Introductory Physiology; or equivalent.

Content The subject will draw upon the basic skills developed in other subjects to develop the theoretical knowledge and the practical skills necessary to the task of prescribing exercise. A broad range of resources will be accessed to provide insight and information to underpinning knowledge and associated practical skills, in the following areas: Semester one - Classification and taxonomy; Proliferative and eukaryotic cell structure and function; Diffusion and osmosis; Mitosis and meiosis; Mammalian (human) anatomy and physiology. Semester two – Angiosperm structure and function; Genetics and reproduction; Biological evolutionary theory; Principles of environmental science.

Class Contact Three hours per week for one semester comprising lecture/laboratory.

Assessment Take home examination, 60%; exercise logbook, 10%; three exercise demonstrations, 30%.

HPL3127 RESISTANCE TRAINING I

Campus Footscray Park, Melton.

Prerequisite(s) Nil.

Content This subject is an introduction to the theories, principles and practice of resistance training. The specific contents are as follows: the physiological theories, principles and effects of resistance training; the biomechanical theories and principles of resistance training; resistance training for strength, power and endurance; major muscle groups; compound and isolation exercises; exercise variations; technique and safety; resistance training technology; designing and practicing a personal resistance training program; nutrition and weight training.


Class Contact Three hours per week for one semester comprising lecture/laboratory.

Assessment Semester one – two examinations, 25%; Class and practical work, 50%; Semester two – two examinations, 25%.

JCB0100 BIOLOGY

Campus Footscray Park

Prerequisite(s) Nil

Content The aim of this subject is to provide students with underpinning knowledge and associated practical skills, in the following areas: Semester one - Classification and taxonomy; Proliferative and eukaryotic cell structure and function; Diffusion and osmosis; Mitosis and meiosis; Mammalian (human) anatomy and physiology. Semester two – Angiosperm structure and function; Genetics and reproduction; Biological evolutionary theory; Principles of environmental science.

Class Contact Five hours per week for two semesters, including two hours of laboratory time per week.

Assessment Semester one – two examinations, 25%; Class and practical work, 50%; Semester two – two examinations, 25%.

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 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%.

JCM0100 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; Telecommunication, local and wide area networks; Computer architecture – Basic computer model (e.g. CPU, memory, I/O); Basic data representation : number us, characters, ascii, us.non; 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 Contact Three hours per week for two semesters.
**JCM0110 MATHEMATICS**

**Campus** Footscray Park  
**Prerequisite(s)** Year 11 Mathematics or equivalent  
**Content** Semester one – Algebra and graphing; 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, hyperbolic 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%.

**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%.

**JSP0010 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 these 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 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%.

**SBF1135 INTRODUCTORY FOOD SCIENCE**

**Campus** Werribee  
**Prerequisite(s)** Nil  
**Content** The aim of this subject is to provide an introduction to the Food Industry, its components and organisation, both in Australia and internationally, the composition of foods, food safety and the preservation and processing of fruits and vegetables, grains and oilseeds, dairy products, meat, poultry, fish and beverages.  
**Class Contact** Three hours per week comprising lectures/tutorials for two semesters.  
**Assessment** Assignments, 40%; final examinations (two), 60%.

**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  
**Prerequisite(s)** 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 renewable 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  
**Prerequisite(s)** 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 the 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
Required Reading
Recommended Reading
Content
Assessment
Class Contact
Assessment
Content
Prerequisite(s)
Campus
Prerequisite(s)
Content
Required Reading
Class Contact
Class Contact
ASSESSMENT
SBF1310 BIOLOGY 1
Campus St Albans, Werribee.
Nil.
Nil.
Six hours per week for one semester comprising three hours of lectures and three hours of practical work.
Assignments, 10%; practical work, 40%; final examination, 50%.
SBF1320 BIOLOGY 2
Campus St Albans, Werribee.
Nil.
Nil.
Six hours per week for one semester comprising three hours of lectures and three hours of practical work.
Assignments, 10%; practical work, 40%; final examination, 50%.
SBF179 BIOCHEMISTRY 1 (OSTEOPATHY)
Campus City, St Albans
Normal entry requirements into the Osteopathy course.
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, nucleic 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, Kreb’s cycle, oxidative phosphorylation, gluconeogenesis, the pentose phosphate pathway; glycerol metabolism, lipid metabolism. Cholesterol transport through lipoproteins, its metabolism and role in atherosclerosis will also be discussed.
To be advised by lecturer.
Recommended Reading
Recommended Reading
Recommended Reading
To be advised by lecturer.
Six hours per week for one semester comprising three hours of lectures and three hours of practical work.
Assignments, 10%; practical work, 40%; final examination, 50%.
SBF1738 CELL STRUCTURE AND FUNCTION
Campus St Albans, City Flinders
Nil.
Microscopic cell structure and function; cell membranes and transport; nuclear structure and function; ribosomal activity; cell type specificity; lysosomes; autolysis etc; histology; human genetics; microbiology; spread and transmission of infection/microbes; categories of infective agents; bacterial; viral; fungal; parasitic etc; sterilization and disinfection; resistance; host and infective agents.
Two hours per week for one semester comprising two one-hour lectures every other week and one two-hour laboratory session every other week.
Class Contact
Written examinations, 60%; reports, 40%.
SBF2192 APPLIED MICROBIOLOGY
Campus Footscray Park
Nil.
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. Mutagens, genetic and strain improvement.
Two hours of lecture and three hours of practical work per week for one semester.
Class Contact
Based upon short tests, practical reports and an end-of-semester examination.
SBF2210 FOOD INTERACTIONS
Campus Werribee
Nil.
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 50%.

### SBF2300 MICROBIOLOGY 1

**Campus** Werribee

**Prerequisite(s)** SBF1310 Biology 1.

**Content** Introduction to the biology of bacteria, protozoans, fungi and viruses. Microbial cell morphology; structure and function of cell components. Growth, reproduction and enumeration of microorganisms. Control of microbial growth: the effect of physical and chemical environments on growth. Microbial genetics. Diversity of microorganisms and their environments.

**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%.

### SBF2310 MICROBIOLOGY 2

**Campus** 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%.

### SBF2330 CELL BIOLOGY

**Campus** St Albans, Werribee.

**Prerequisite(s)** SBF1310 Biology 1 or SBF1528 Human Physiology 2 or equivalent.

**Content** This unit complements units in Biochemistry and provides a strong foundation for students moving into areas such as biotechnology, molecular biology, medical sciences and environmental sciences. Topics covered include: Eukaryotic cell organisation (covering all of the major organelles) and compartmentalisation; membranes and transport mechanisms; the cell surface; intracellular targeting of proteins including cotranslational and post translational pathways; transport and docking of vesicles; motor proteins, movement and the cytoskeleton; communication between cells including receptors and signal transduction pathways; cell cycle and its regulation; apoptosis; the molecular basis of cancer.

**Required Reading** To be advised by lecturer.

**Class Contact** Four hours per week for one semester based on 3 hours of lectures and 1 hour of tutorial.

**Assessment** Assignments, 40%; examination, 60%.

### SBF2390 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 course 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 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%.
SBF2400 FOOD COMPONENTS

Campus Werribee

Prerequisite(s) SCS1601 Chemistry 1A & SCS1602 Chemistry 1B or equivalent.

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.


Assessment Assignments, 40%; final examination, 60%.

SBF2520 BIOCHEMISTRY 1

Campus St Albans, Werribee.

Prerequisite(s) SBF1310 Biology 1 and 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 Three hours per week comprising lectures/tutorials 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, phospholipids, 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%.

SBF2610 FUNDAMENTALS OF ECOLOGY

Campus St. Albans

Prerequisites SBF1310 Biology 1, SBF 1320 Biology2

Content History and nature of ecology; Ecology & evolution - natural selection & speciation; Niche concept – ecosphysiology, 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, geochanical cycles, global patterns & processes; World biogeography & biomes; Palaeoecology.

Recommended Reading To be advised by lecturer.

Required 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%.

SBF2620 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 instil 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.


Assessment Practical work, 25%; practical work (including test), 30%; practicals and assignments: 60 %; examination: 40 %.

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.


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%.

SBF2640 AUSTRALIAN ANIMALS

Campus St. Albans
Prerequisites SBF1310 Biology 1, SBF1320 Biology 2

Content Diversity of animal life, with an emphasis on the Australian fauna; the science of systematics, including cladistic analysis; Bauplans; 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 To be advised by lecturer.


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%.

SBF2660 NUTRITION AND FOOD ANALYSIS

LABORATORY

Campus Werribee
Prerequisite(s) SBF1130 Introductory Food Science and SCS 1003 Chemistry I or equivalent

Content To study experimental techniques as applied to nutrition and food studies. Rationale for experimental procedures used in nutrition, experimental design, statistical analysis, anthropometry, feeding trials, N balance studies, amino acid score, digestibility of food, nutritional survey and data collection, dietary instrument design, diet analysis, calorimetry, analysis of specific nutrients, use of analysis software, site visits. Pitfalls and complications encountered in human nutrition experimentation, and strategies commonly used to overcome these. Procedures for analysis of foods using HPLC, GC, UV/Vis, IR.


Class Contact Three hours per week comprising of lecture/tutorial/laboratory and site visits over 2 semesters.

Assessment Assignments 40%; examination 60%.

SBF2739 BIOCHEMISTRY 2 (OSTEOPATHY)

Campus RY, 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, Thalassemia 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%.

SBF2740 FOOD PRESERVATION AND PROCESSING

Campus Werribee
Prerequisite(s) SBF1130 Introductory Food Science and Technology


Required Reading To be advised by lecturer.


...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, Thalassemia 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%.
SBF3210 ADVANCED NUTRITION

Campus Werribee
Prerequisite(s) SBF2750 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.
Required Reading Low, T., 1989, Bush Tucker – Australia’s Wild Food Harvest, Angus and Robertson.
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) SBF2750 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 intolerance.
Class Contact Three hours per week comprising lectures/tutorials for one semester.
Assessment Assignments, 40%; final examination, 60%.

SBF3240 FUNCTIONAL FOODS

Campus Werribee
Prerequisite(s) SBF2750 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.
Required Reading To be advised by a subject coordinator.
Class Contact Three hours per week comprising lectures/tutorials for one semester.
Assessment Assignments, 40%; final examination, 60%.

SBF325I BIOPROCESSING TECHNOLOGY 1

Campus Werribee
Prerequisites SBF2300 Microbiology 1; SBF2520 Biochemistry 1; or equivalents
Content This unit focuses on the application of microbiology to the production of goods for medical, agricultural and other uses. Topics covered include principles of biochemical engineering; fermentation technologies; batch and continuous; bioreactor design and applications; scale-up in bioprocessing technologies; harvesting and purification of bioproducts; filtration systems; downstream processing.
Required Reading To be advised by lecturer.
Class Contact Eight hours per week comprising 3 hours of lectures and 5 hours of laboratory/tutorial work for one semester.
Assessment Assignments, 20%; practical work, 30%; final examination, 50%.

SBF3252 BIOPROCESSING TECHNOLOGY 2

Campus Werribee
Prerequisite(s) SBF2300 Microbiology 1.
Co-requisite(s) SBF2520 Biochemistry 1.
Content The aim of this subject is to provide further studies in bioprocessing technology and will include: mammalian and plant cell culture, plant products, monoclonal antibodies and their uses in biotechnology, enzyme engineering, use of immobilised cell and enzyme systems, biomass conversion and fuel production, algal biotechnology.
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%.

SBF3260 PROCESS ENGINEERING 2

Campus Werribee
Prerequisite(s) SCS2250 Process Engineering 1.
Content The subject aims to develop and apply the physical principles of process engineering introduced in SCS2250 Process Engineering 1, with particular reference to traditional and modern food processing operations, and to introduce students to the design and construction concepts and principles for plant and factory operation. The subject includes: evaporation; drying of liquids and particulates; thermal processing; membrane filtration; electrodialysis; ion exchange; freezing and freeze concentration; plant and factory 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
Recommended Reading Mepham, B., 1996, Food Ethics, Routledge.
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.
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.

FACULTY OF SCIENCE, ENGINEERING AND TECHNOLOGY
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.

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### SBF3510 PREPARATORY AND ANALYTICAL BIOCHEMISTRY

**Campus** Werribee

**Prerequisites** SBF2520 Biochemistry 1.

**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 assay as sources 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%.

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### SBF3530 ENVIRONMENTAL PHILOSOPHY

**Campus** St. Albans

**Prerequisites** 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 patriotism in the development of Eco-feminism.

**Required Reading** To be advised by lecturer.

**Class Contact** Three hours per week for one semester.

**Assessment** Assignments 50%; examination, 50%.

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### SBF3540 LEADERSHIP AND THE ENVIRONMENT

**Campus** St. Albans

**Prerequisites** 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 1980s and after when a broader picture of what might explain leader success began to develop. The current place of ethics, morals, values, feelings and properties of genes, strategies used by nature or developed in the laboratory for manipulating genes and specific uses of laboratory based gene manipulation. 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%.

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### SBF3600 AQUATIC ECOLOGY

**Campus** St. Albans

**Prerequisites** SBF 1310 Biology 1, 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%).

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### SBF3610 BIOSTATISTICS

**Campus** St. Albans

**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.


**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
Prerequisites SBF 1310 Biology 1, SBF 1320 Biology 2, SBF 2610 Fundamentals of Ecology, or at the discretion of the subject coordinator.
Content The subject ties together, in both theoretical and practical ways, concepts and practices for maintaining ecological 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 zoo's, 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.
Required Reading New, T., 1999, Conservation Biology, An Introduction for Southern Australia, Oxford University Press, United Kingdom and Australia.
Assessment Four hours per week for one semester, comprising two hours of lectures and two hours of practical.
Assessment Practicsals and assignments: 40%; examination: 60%.

SBF3630 ENVIRONMENTAL IMPACTS AND MONITORING

Campus St. Albans
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 resources subject to environmental degradation (e.g. land, soil, water, biota); The social and industrial factors responsible for degradation (e.g. erosion, water pollution, salinisation, 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
Prerequisites SBF 1310 Biology 1, SBF 1320 Biology 2, SBF 2610 Fundamentals of Ecology, or at the discretion of the subject coordinator.
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.
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 %.

SBF3650 POLLUTION BIOLOGY

Campus St. Albans
Prerequisites SBF1310 Biology 1, SBF1320 Biology 2, SBF2610 Fundamentals of Ecology, SBF3610 Biometrics, or at discretion of subject coordinators.
Content This subject introduces students to the impact of pollutants on natural ecosystems. Topics covered include: Principles and concepts that 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
Recommended Reading


Class Contact

Four hours per week for one semester, comprising two hours of lectures and two hours of practical work.

Assessment

Practicals and assignments: 40%; examination: 60%.

SBF3660 INDIORIGINAL SOCIETY AND ENVIRONMENTAL MANAGEMENT

Campus St Albans (offered subject to minimum enrolments in 2005)

Prerequisites Nil

Content


Required Reading


Recommended Reading


Class Contact

Two hours per week.

Assessment

Folder plus Case Study/Video/Art Work/Story/Photo Essay. Contribution.

SBF3730 FOOD MICROBIOLOGY

Campus Werribee

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; biomas; 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.

Required Reading


Recommended Reading


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 FOOD PROCESSING

Campus Werribee

Prerequisite(s)

SBF2410 Food Components, SBF2210 Food Interactions

Content


Required Reading

To be advised by a subject coordinator.

Recommended Reading


Class Contact

Three hours per week comprising lectures/tutorials for two semesters.

Assessment

Assignments and tests, 40%; final examination, 60%.

SBF3733 ANIMAL FOOD PROCESSING LABORATORY

Campus Werribee

Prerequisite(s)

SBF3731 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)

SBF3731 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.
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 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%.

SBF3760 RECOMBINANT DNA TECHNOLOGY

Campus Werribee, St Albans

Prerequisites 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, interpersonal 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%.

SBF3810 NUTRIENT AND DRUG INTERACTION

Campus Werribee

Prerequisite(s) SBF 2550 Nutrition, SBF 2260 Diet and Nutrition or equivalent, SNH2110 Disease and Health.

Content The aim is to study metabolic fate of drugs and nutrient and drug interactions. Metabolic fates of drugs and xenobiotics, known drug-nutrient interactions, role of nutrient-drug interactions in the development of nutritional imbalance. Pharmacodynamics. Major classes of prescription drugs and their indications, and their effects on gastrointestinal and metabolic function. Role of nutrient-drug interactions in the aetiology and treatment of significant disease conditions. Impact of hepatic and renal insufficiency on drug and nutrient bioavailability.


Class Contact Three hours per week for one semester comprising lectures and tutorials.

Assessment Assignments 40%, final examination 60%.

SBF3900 PROJECT

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, experimental design and analysis, and research plan preparation. The project will be, as far as is possible, concerned with a real problem and will require the presentation of an oral and written report and may form part of a research publication. The project will be chosen by the student in consultation with staff members.

Required Reading There are no prescribed texts for this subject.

Class Contact Eight hours per week for one semester comprising lectures, tutorials and practical work.

Assessment A choice of research project will be made halfway through semester five and an assignment concerned with establishing the methodology for this project will be assessed and will contribute 20% to the overall assessment of the project. The written project will contribute 60% and the oral presentation will contribute 20% to the overall assessment.

SBF3910 PROJECT – BIOTECHNOLOGY

Campus Werribee

Prerequisite(s) Successful completion of Years 1 and 2 is normally required.

Content This subject provides students with the opportunity to develop skills in applying research methodology to a specific problem and enabling them to develop an area of personal interest relevant to the degree specialisation. The subject covers project methodology, experimental and analysis design and research plan preparation. A project will be selected by the student in consultation with staff members and will, as far as is possible, be concerned with solving a real-life problem. The project will require the presentation of an oral and written report and may form part of a research publication.

Required Reading To be advised by the lecturer.

Class Contact Eight hours per week for one semester comprising lectures, tutorials and laboratory work.

Assessment Assignment, 20%; oral presentation, 20%; project report, 60%.
SBF4000 SCIENCE HONOURS  
Campus St Albans, Werribee  
Prerequisite(s) Satisfactory completion of an undergraduate degree program with a credit average in the final year.

Content The program will consist of a research project and a coursework component. The major focus of the course component is research methodology and subjects include experimental design, statistics in research, data analysis, computer applications and software, literature analysis and critical appraisal, ethics in research, scientific writing and data presentation. The research project will be undertaken in one of the research areas of the School and may, subject to approval, be undertaken at an external location.

Required Reading To be advised by the lecturer.

Class Contact An average of 20 hours per week for two semesters.

Assessment The nature of the coursework assessment will vary and may be based on written assignments, seminar presentations and a written examination. The research project assessment will consist of an oral presentation and submission of a thesis.

SBM1171 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.

SBM1174 HUMAN PHYSIOLOGY  
Campus Footscray Park  
Prerequisite(s) Nil.

Content The general aim of the subject is to give students an understanding of basic concepts in human physiology. The subject will comprise a description of basic cell structures and functions for generalised and specialised cells; outline co-ordinated body functions with specific applications to the cardiovascular, respiratory, musculo-skeletal, neural, alimentary and renal systems. In addition, basic concepts in organic metabolism and energy balance will be considered.


Class Contact Three hours per week for one semester comprising 2 one-hour lectures per week and a two hour laboratory session every second week.

Assessment Practical 20%; topic tests 20%; examination 60%

SBM1500 FOUNDATIONS IN BIOMEDICAL SCIENCE  
Campus St Albans  
Prerequisite(s) Nil.

Content Introduces basic study principles and skills as they relate to Biomedical Sciences. In particular the role of mathematics, computing, statistics and laboratory exercises in biomedical sciences will be examined. Students will be encouraged to develop communicative, organisational, problem-solving and team-work skills and begin to formulate a skills portfolio for future employment.

Required Reading The focus of this subject will be on enhancing life long learning skills in particular, student ability to use print based and electronic information systems to assist in solving problems.

Class Contact 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%.

SBM1510 HUMAN BIOSCI ENCE I A  
Campus St Albans  
Prerequisite(s) Nil.

Content This unit provides a basic knowledge and understanding of human cells, tissues and organ systems. It also introduces chemical and physical principles and relates these principles to the human body. Concepts of physiological regulation and homeostasis are discussed and applied to functions of body systems. This subject provides an overview of the structure and function of the human body.

Required Reading To be advised by lecturers.

Class Contact Eight hours per week comprising four hours lectures, two hours laboratory and two hours tutorial.

Assessment Tests and examinations, 55%; laboratory reports, laboratory tests and assignments, 45%.

SBM1514 FUNCTIONAL ANATOMY I (HEAD, NECK AND TRUNK)  
Campus St Albans  
Prerequisite(s) Nil.

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 I, 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 I.


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%.

SBM1515 ANATOMY AND PHYSIOLOGY I  
Campus St Albans  
Prerequisite(s) Nil.

Content The subject provides students with a basic knowledge and understanding of the structure and function of human body. Cells and tissues are introduced. Basic concepts in chemistry/biochemistry are covered in relation to the human body. The bones, joints and muscles of the body are taught 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 is also covered, and this is followed by a discussion of special senses, in particular sight, hearing and balance.


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%.

135
SBM1518 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 to highlight their regulatory role for control, co-ordination and communication. The nervous system will be represented as the body's most rapid means of maintaining homeostasis via sensations, integration and response to changes, both within the body and in the outside environment. The physiology of nerve cells will be introduced to support an understanding of the various types of cells within the body 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.


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/workshops, 45%; test/examination, 55%.

SBM1519 HUMAN BIOSCIENCE 1

Campus St Albans
Prerequisite(s) Nil.
Co-requisite(s) HHN1210 Nursing 1: Health Assessment.
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 be 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 nervous system will be represented as the body's most rapid means of maintaining homeostasis via sensations, integration and response to changes, both within the body and in the outside environment. The physiology of nerve cells will be introduced. This will be followed by a discussion of other body systems emphasizing the relationship between structure and function and their relevance to Nursing.


Class Contact Fifty six hours comprising of lectures, practical/tutorial class and a range of online delivery methods.

Assessment Test and examination, 50%; practical assignments/tests, 50%.

SBM1520 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 (UPPER & LOWER LIMBS)

Campus St Albans
Prerequisite(s) SBM1514 or equivalent.
Content This subject introduces students to functional anatomy. After a brief introduction to the bones, joints, muscles, vessels and nerves of the body; students study gross anatomy using a regional 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; acupoint 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 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 co-ordination via the neuro-endocrine system. This provides an understanding of how homeostatic mechanisms regulate variables such as blood pressure, blood gas status, fluid and electrolyte balance and acid-base balance. 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.

Required Reading Marieb, E.N., 2001, Human Anatomy and Physiology, 5th edn, Benjamin Cummings.

Class Contact Four hours per week for one semester comprising of lectures, tutorials and laboratory work.

Assessment Theory examination, 40%; practical examination, 30%; test/assignment, 20%; laboratory work, 10%

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**SBM1528 HUMAN PHYSIOLOGY 2**

Campus St Albans

Prerequisite(s) SBM1518 Physiology 1

Content This subject continues the study of the structure and functions of the body, using homeostatic regulation of the internal environment as the ongoing theme. The cardiovascular, respiratory, urinary, gastrointestinal and reproductive systems are placed in context with their overall regulation and co-ordination 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. 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 illness is followed by discussions of other body systems emphasizing their variations; Basic taxonomy, orders and families of selected plants; Plant morphology and internal anatomy of stem, root and leaf; 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.


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%

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**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 Kanagaratnum, N., 1999, *Botany Monograph*, St Albans, School of Life Sciences and Technology, Victoria University.


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.

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**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.


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%

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**SBM1572 BODY CONTROL MECHANISMS**

Campus St Albans

Prerequisites 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, co-ordination and communication. The cardiovascular, respiratory and urinary systems are placed in context with their overall regulation and co-ordination 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.


Class Contact Three hours per week for two semesters.

Assessment Examination /test 75%; test/assignment/worksheets 25%
SBM1810 NUTRITIONAL BIOCHEMISTRY

Campus St Albans

Prerequisite(s) Nil

Content Chemical bonding, water and buffers; structure-function relationships of macromolecules, including carbohydrates, proteins, lipids and nucleic acids; nutritional importance of essential amino acids and lipids; the role of biomolecules in transport around the body and the storage of energy; biomembranes; protein synthesis; major metabolic pathways.


Class Contact 4 hours per week for one semester comprising 2 hours lecture and 2 hours tutorial.

Assessment Assignment (2) 1 500 words each 50%; examination (3 hours), 50%.

SBM1820 NUTRITION, SOCIETY, AND COMMUNICATION

Campus St Albans

Prerequisite(s) Nil

Content Fundamental principles of nutrition science, including the importance of the various food groups in a balanced diet; common cultural dietary practices; effect of cultural and socio-economic influences on dietary habits; common nutritional epidemics; media and communication tools; strategies and attributes of nutrition health campaigns; the potential impact of such campaigns; maintenance of a media communication portfolio.

Required Reading Handbook of communication skills for first year students in the Faculty of Science, Engineering and Technology.


Class Contact 4 hours per week for one semester comprising 2 hours lecture, 2 hours tutorial.

Assessment Oral presentation, 20%; assignments(two of 1 500 words), 40%; examination, 40%.

SBM1830 DIET THERAPY 1

Campus St Albans

Prerequisite(s) Nil

Content Dietary assessment techniques, case history taking to assess the dietary habits of clients, dietary nutrient requirements for a balanced and healthy diet, basic counselling skills with respect to the assessment and evaluation of dietary habits and the communication of corrective strategies to clients, codes of ethical practice in dealing with clients.


Class Contact 4 hours/week for one semester comprising 3hours lecture, 1 hour tutorial

Assessment Examination(3 hour), 50%; Clinic observation journal, 50%.

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 hours lecture, 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 micro organisms and their growth requirements; normal flora; host defence mechanisms, immunoprotection, 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.


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%.

SBM2361 EPIDEMIOLOGY

Campus Saint Albans and Off campus.

Prerequisite(s) Nil

Content This unit will introduce basic concepts of epidemiology. It will describe types of epidemiological study, the research design and the advantages and disadvantages of each study type and covers the measurement of indicators of disease. Other topics covered include reviewing studies that show the causative factors relating to specific disease; measurement of the association between causative factors and disease; the advantages and disadvantages of different types of epidemiological study; epidemiological findings to show the degree of risk associated with exposure to specific hazards in industry; and the impact of chance, bias and confounding on findings of epidemiological studies.


Class Contact One hour per week for one semester.

Assessment Assignments, 40%; case study, 60%.
SBM2515 SURFACE ANATOMY

Campus St Albans
Prerequisite(s) SBM1515 Anatomy and Physiology 1; SBM1525 Anatomy and Physiology 2.
Content Surface anatomy of areas relevant to acupuncture.
Class Contact The equivalent of two hours per week over two semesters consisting of workshops.
Assessment One oral examination in semester 1, 50%; One oral examination in semester 2, 50%. Normally a pass must be gained in each component of assessment.

SBM2517 BIOSCIENCE 3: (NURSING)

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. 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, fluid and electrolyte imbalances, however specific systems in this subject may be interchanged with those in the fourth semester subject as appropriate.
Class Contact 40 hours per semester of lectures and tutorial.
Assessment Test, 30%; examination, 70%.

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%.

SBM2527 BIOSCIENCE 4: (NURSING)

Campus St Albans
Prerequisite(s) SBM2517 Bioscience 3
Content This subject further the understanding of pathophysiological principles and disease processes introduced in SBM2517 Bioscience 3. Topics will include neoplasia, and disorders of the nervous, endocrine and musculoskeletal systems and gastrointestinal tract. Disorders of the reproductive tract including infertility will be presented. 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 state 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 pathological processes and overall regulation of the human body discussed in SBM2530. Overall organ and system dysfunction such as hepatic, renal, cardiovasculare 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 appropriate. Sexuality will be discussed with respect to its physiological and psychosocial aspects. Students are introduced to further techniques for assessment of disorders, which may include the role and practice of molecular biology. 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.

**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 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, nucleotides, 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 drugs/toxins and hormonal regulation. Clinically measured enzymes for diseases will be studied and assayed.


**Class Contact** Six hours per week, comprising three hours of lectures and three hours of practicals/tutorials for one semester.

**Assessment** Tutorials and assignments, 25%; practical work (including test), 25%; final examination 50%.

**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 natural drugs acting on the various body systems; Active Constituents of the Chinese pharmacy; Toxic dosages — LD 50 concepts; toxic dosages of the Scheduled Poisons List — Chinese herbs; poisoning records and Chinese Medical antidotes.


**Class Contact** The equivalent of two hours per week over two semesters consisting of lectures, tutorials and workshops.

**Assessment** One assignment, 40%; final examination, 60%. A pass must be gained in each component of assessment.

**SBM2580 ADVANCED FUNCTIONAL ANATOMY**

**Campus** St Albans

**Prerequisite(s)** SBM 1524

**Content** The relevance of functional and clinical anatomy to health and healing will be highlighted through a detailed study of the mechanics and muscles affecting the movement of joints in the body. This information will be presented and highlighted through the study of a number of different areas including 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 included in the subject may be interchanged with those of the subject SBM 1514 Functional Anatomy 1 and SBM 1524 Functional Anatomy 2.


**Class Contact** Six hours per week for one semester comprising three one-hour lectures and one three-hour tutorial/practical session.
SBM2590 FUNCTIONAL HISTOLOGY

Campus St Albans

Prerequisite(s) SBM1524 Functional Anatomy or SBM1528 Human Physiology or equivalent

Content This subject aims to introduce students to light and electron microscopic study of the structure of cells and tissues. Students will develop skills in the identification of histological sections and electron micrographs. After a brief revision of basic cell types, the histological appearance and associated functions of the following systems are studied: cardiovascular, respiratory, immune, gastrointestinal, urinary, reproductive, endocrine, nervous and musculoskeletal. The relevance of functional histology to health will be highlighted.


Class Contact Three hours per week for one semester, 1-3h lectures, 1-3h practicals

Assessment Theory examination 50%, practical examination 25%

SBM2610 BIOメディカル SCIENCES and SOCIETY

Campus St Albans

Prerequisite(s) Completion of 1st year level tertiary studies.

Content The subject examines images of the human body in society with particular reference to health and disease. There are three 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 hour tutorial/session session for one semester.

Assessment Two essays, 60%; one tutorial presentation, 25%; tutorial attendance and participation, 15%.

SBM2850 NUTRITIONAL THERAPEUTICS A

Campus St Albans

Prerequisite(s) SBM1820 Nutrition, Society and Communication: SBM1810 Nutritional Biochemistry: SBM1830 Diet Therapy 1.

Content Normal GIT function; signs and pathophysiology of GIT dysfunction; lifestyle effects on normal function; effects of stress on function; pathogenesis of untreated signs and symptoms; nutritional support of liver function; clinical laboratory evaluation of GIT; nutrients required for normal GIT function; use of dietary supplements to restore normal GIT function; contraindications to the use of food supplements


Class Contact 4 hours per week for one semester comprising 2 hours lecture, 2 hours tutorial/workshop.

Assessment Assignment (2) 2000 words each , 50%; case history, 50%.
SBM2855 NUTRITIONAL THERAPEUTICS B  
Campus St Albans  
Prerequisite(s) SBM 1830 Diet Therapy I; SBM 2850 Nutritional Therapeutics A.  
Content Symptoms of system dysfunction in the following body systems – skin, respiratory system, nervous system, circulatory system, genito-urinary system, immune system, musculoskeletal system and hormonal system; using observation and evaluating case histories; working from case history records; identification of nutritional deficiency within a patients case history; prioritising treatment, including the use of dietary supplements; lifestyle effects that may flow from the treatment; lifestyle effects on normal function.  
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.

SBM3515 CLINICAL PHARMACOLOGY AND PATHOPHYSIOLOGY  
Campus St Albans  
Prerequisite(s) SBM2570 Phytopharmaceuticals  
Content Fundamental pathophysiology, commonly used pharmaceuticals, and pertinent medical terminology with particular emphasis on understanding the actions of specific pharmaceuticals and the identification of potentially life-threatening conditions.  
Class Contact The equivalent of six hours per week for one semester consisting of lectures, tutorials and clinical observation in appropriate health care settings.  
Assessment One assignment, 25%; one examination, 50%; and one clinical report, 25%.

SBM3525 CLINICAL PATHOPHYSIOLOGY  
Campus St Albans  
Prerequisite(s) SBM3515 Clinical Pharmacology and Pathophysiology  
Content Development of material covered in ‘Clinical Pharmacology and Pathophysiology’ with particular emphasis on the identification of potentially life-threatening conditions. An understanding of the main pathology tests and diagnostic techniques; the development of skill in the use of the stethoscope, sphygmonanometer, otoscope, organ palpation and other basic procedures employed by the health care professionals; a CM understanding of the biomedical conditions studied.  
Class Contact The equivalent of four hours per week for one semester consisting of lectures, tutorials and clinical observation in appropriate health care settings.  
Assessment One assignment, 25%; one examination, 50%; and one practical assessment on the use of diagnostic equipment, 25%.

SBM3550 ADVANCED BIOSCIENCE 5A  
Campus St Albans  
Prerequisite(s) SBM2540 Human Bioscience 4A or equivalent.  
Content This subject builds on the work of first and second year Human Bioscience. The overall concept to be studied is the process of human development and aging and the physiological and pathological changes that occur throughout the life cycle. This subject presents the major regulating systems of the body and thus involves advanced study in the areas of neurological, hormonal and reproductive changes. Life stages from the embryo to senescence will be studied and environmental, societal, psychological and cultural influences will also be discussed. 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 and five hours of workshop/laboratory for one semester.

Assessment Examination 55% and project/practical work 45%. Students are required to obtain a satisfactory grade in all components of the assessment to obtain a pass grade.

SBM3560 ADVANCED BIOSCIENCES 6A

Campus St Albans

Prerequisite(s) SBM350 Advanced Biosciences 5A or equivalent.

Content This subject continues on the theme of development and ageing and the physiological processes that occur, building on SBF3550 Advanced Biosciences 5A. 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 skills and techniques through the laboratory/workshop component and includes a minor project.

Required Reading To be advised by lecturer.

Class Contact Eight hours per week comprising three hours of lectures and five hours of workshop/laboratory work for one semester.

Assessment Examination 55% and laboratory work and project 45%. 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 Pharmaceutics or equivalent.

Co-requisite 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 equivalence 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 Off campus

Prerequisite(s) Nil.

Content The unit covers the possible adverse effects from exposure to hazardous chemicals in work environments. Chemicals 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) or Co-requisite with SBM2800, with a year 2 Credit average. This subject has competitive entry limited to 16 students.

Content This subject introduces students to a variety of statistical and experimental techniques and the role they play in medical research. There will be a particular emphasis on students receiving practical skills in a research laboratory setting. Students will obtain skills in animal handling, tissue sampling and preparation for light, electron and fluorescence microscopy, immunohistochemistry, real-time PCR, and in situ hybridization. Students will be introduced to light and fluorescence microscopy, transmission and scanning electron microscopy, morphology, morphometry and statistical principles for medical research.


Class Contact Six hours per week for one semester comprising a mix of lectures and 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 any 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.

**Recommended Reading**

**Course 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%.

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**SBM3630 SCIENCE, MEDIA AND COMMUNICATION**

**Campus** St Albans

**Prerequisite(s)** ACC1047 Culture and Communication; 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%.

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**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, neurophysiology and developmental neurobiology. This subject provides an advanced series of lectures in specialised areas of neuroscience research. The content of the subject may vary with respect to Molecular psychology. e.g; 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%

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**SBM3650 ADVANCED REPRODUCTION AND DEVELOPMENT**

**Campus** St Albans

**Prerequisite(s)**
- SBM2530 and SBM2540 Pathophysiology (Bioscience 3A & 4A)
- SBM 2540 Human Bioscience 4A and either SBM 2560 Medical Biochemistry or SBF2330 Cell biology

**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.

**Required Reading**

**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%.
SBM3750 NUTRITION AND PUBLIC HEALTH

Campus Werribee
Prerequisite(s) SBF 2750 Nutrition, or SBM 2260 Diet and Nutrition
Content The aim is to study the role of nutritional factors in aetiology of significant diseases conditions and processes involved in deriving public health data and statistics. Nutritional factors in the aetiology of significant disease conditions, designing and delivering nutritional education and intervention programs, case studies in nutritional education and intervention programs, locating public health data and health epidemiology.
Class Contact Four hours per week comprising lectures/tutorials for one semester.
Assessment Assignments, 40%; final examination, 60%.

SBM3800 PHARMACOLOGY

Campus 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.
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 20%; practical reports 35%; end of semester examination 45%.

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. Further, 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 are examined. Current research literature in the area will be analysed.
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 base 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, and explores complementary therapies, techniques, treatments and strategies that are used to promote and maintain health and well-being as well as treat disease.
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 STDs/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/seminar.
Assessment Assignment/tutorial work, 30%; examination, 20% for each of Module A and B.
SBM3850 NUTRITIONAL THERAPEUTICS C
Campus St Albans
Prerequisite(s) SBM2850 and SBM2855 Nutritional Therapeutics A and B.

Content
Diet, novel and common food supplementation support for the following – energy metabolism dysfunction, neurological dysfunction, behavioural disorders, life threatening illnesses; laboratory testing for system dysfunction; formulation and costing of supplementation programs to meet patient needs; regulation and boundaries when working with practitioners who treat patients with life threatening illnesses; Analysis of patient follow-up and reformulation of treatment protocols where required.


Class Contact 4 hours per week for one semester comprising 2 hours lecture, 2 hours tutorial/workshop.

Assessment Examination (3 hours), 50%; case history, 50%.

SBM3855 NUTRITIONAL THERAPEUTICS D
Campus St Albans
Prerequisite(s) Completion of 2nd year; SBM 3850 Nutritional Therapeutics C.

Content
Diet, novel and common food supplementation support, laboratory testing for system dysfunction, formulation and costing of supplementation programs to meet patient needs: Analysis of patient follow-up and reformulation of treatment protocols.


Class Contact 4 hours per week for one semester comprising 2 hours lecture, 2 hours tutorial/workshop.

Assessment Examination (3 hours), 50%; case history, 50%.

SBM3910 PROJECT
Campus Footscray Park, St Albans, Werribee
Prerequisite(s) Successful completion of the second year of the Biomedical Sciences degree

Content
Third year student projects provide students with an opportunity to select and undertake either (a) a brief research project in an area of interest with members of the Biomedical Sciences staff; or (b) a work-based placement in the industry he/she intends to enter. Both the research and work-based placements enable the student to undertake a structured work experience program as an integral part of their degree course. Gaining practical experience in their chosen field enables students to test interest and ability in these areas.

Selection
The number of Project places will be limited by the number of available projects. Places will be allocated on the basis of academic merit. It would be expected that students wishing to do Project would have a Credit average and be in their final semester of the course.

Required Reading Selected material as advised by the project supervisor.

Class Contact Six hours per week for one semester comprising laboratory work or work-based placement.

Assessment 20% project proposal; 80% final report.

SBM3950 NUTRITIONAL THERAPY IN PRACTICE 1
Campus St Albans
Prerequisite(s) HHN0021 Counselling Skills for Natural Therapies.

Content
Nutritional treatment for patients at critical life stages; managing patients with challenging nutritional and behavioural characteristics, eg addiction, non-compliance, aggression, eating disorders, vulnerable client groups; ethical dilemmas in clinical practice, patient record keeping.


Class Contact Minimum of 90 hours supervised clinical practice.

Assessment Examination (3 hours), 50%; case history, 50%.

SBM3955 NUTRITIONAL THERAPY IN PRACTICE 2
Campus St Albans
Prerequisite(s) SBM3950 Nutritional Therapy in Practice 1; SBM3850 Nutritional Therapeutics C.

Content
Nutritional treatment for patients at critical life stages; managing patients with challenging nutritional and behavioural characteristics, eg addiction, non-compliance, aggression, eating disorders, vulnerable client groups; ethical dilemmas in clinical practice; patient record keeping.


Class Contact Minimum of 90 hours supervised clinical practice.

Assessment Examination (3 hours), 50%; case history, 50%.

SBM3960 NUTRITIONAL FRONTIERS
Campus St Albans
Prerequisite(s) Nil.

Content
Advances in nutrition research in selected topics, including cardiovascular, cancer, infectious disease, mental, reproductive and public health, nutrigenomics. Evidence for and against the effectiveness of various therapies and non invasive solutions; comparison of qualitative and quantitative paradigms; role of audit in monitoring and evaluation of clinical work; social science research methods.


Class Contact 4 hours per week for one semester comprising 2 hours lecture, 2 hours tutorial/seminar.
SBM3970 OPERATING A CLINICAL PRACTICE
Campus St Albans
Prerequisite(s) Nil
Content Factors in establishing and operating a clinical practice; legal, professional and insurance issues, including personal and professional indemnity and OHS regulations; business banking and accountancy, including taxation laws and essential business record keeping and reporting requirements; basic marketing techniques; codes of ethics and practice; using media in practice; to find appropriate employment.
Class Contact 4 hours per week for one semester comprising 2 hours lecture, 2 hours workshop.
Assessment Examination (3 hours), 40%; assignment (2) 2500 words each, 40%; written application and interview, 20%.

SBM4000 SCIENCE HONOURS
Campus St Albans, Werribee, Footscray Park.
Prerequisite(s) Satisfactory completion of an undergraduate degree program with a credit average (65%) in the final year.
Content The Honours program consists of SBM4100 Honours Research Project, SBM4200 Honours Coursework and, if appropriate, a Research Design subject (HPG6010 or equivalent). The research project will be undertaken in one of the research areas of the School of Biomedical Sciences and may, subject to approval, be undertaken at an external location. The Coursework and Research Design components cover a range of information including advanced areas of medical research, literature analysis and critical appraisal, ethics in research, scientific writing, oral presentation, methodological techniques, experimental design, statistics, data analysis, computer applications and software data presentation.
Required Reading To be advised by the supervisor.
Class Contact An average of 20 hours per week for two semesters.
Assessment The nature of the coursework assessment will vary and may be based on written assignments, seminar presentations and a written examination. The research project assessment will consist of an oral presentation and submission of a thesis.

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 presented in an oral and written report, and judged against the 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 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.
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 4 hour workshop per week for one semester or equivalent.
Assessment Examination 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.
Class Contact 1 x 3 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
SCA2061 NAVIGATION FOR THE CPL
Campus Footscray Park
Prerequisite(s) SCA2103
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, Navigation 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 Civil Aviation Safety Authority, 2000, Human Factors Notes, CASA Canberra. 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.

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).
Required Reading To be advised.
Class Contact 2 x 1 hour lectures per week for one semester.
Assessment Internal examination determined by lecturer in charge.

SCA3011 IREX – THE CIVIL AVIATION INSTRUMENT RATING THEORY EXAMINATION
Campus Footscray Park
Prerequisite(s) SCA2013
Content Aircraft flight planning theory sufficient to pass the IREX examination set by the Civil Aviation Safety Authority.
Class Contact 2 x 3 hour workshops per week for one semester, or equivalent.
Assessment Examination as required by the Civil Aviation Safety Authority.

SCA3100 INSTRUMENT NAVIGATION (IREX)
Campus Footscray Park
Prerequisite(s) SCA2104 Intermediate Aeronautical Knowledge.
Content 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.
Required Reading To be advised by lecturer.
Class Contact 2 x 2 hour lectures per week for one semester.
Assessment One three-hour external examination.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Campus</th>
<th>Prerequisite(s)</th>
<th>Content</th>
<th>Required Reading</th>
<th>Assessment</th>
<th>Class Contact</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<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>Aircraft in flying sufficient to pass the Air Transport Pilot's Licence theory subject 'ATPL Human Factors' examined by the Civil Aviation Safety Authority.</td>
<td>Human Factors Notes, CASA Canberra. Subject study notes as provided by the subject lecturer.</td>
<td>Examination as required by the Civil Aviation Safety Authority.</td>
<td>1 x 3 hour workshop per week for one semester or equivalent.</td>
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<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, Aeroplane Operations Performance and Planning for the Air Transport Pilot, Aviation Theory Centre, Melbourne. Subject study notes as provided by the subject lecturer.</td>
<td>Examination as required by the Civil Aviation Safety Authority.</td>
<td>1 x 3 hour workshop per week for one semester or equivalent.</td>
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<tr>
<td>SCA3112</td>
<td>NAVIGATION 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 Navigation' examined by the Civil Aviation Safety Authority.</td>
<td>Thom, T. et al, 2000, Meteorology and Navigation, Aviation Theory Centre, Melbourne. Subject study notes as provided by the subject lecturer.</td>
<td>Examination as required by the Civil Aviation Safety Authority.</td>
<td>1 x 3 hour workshop per week for one semester or equivalent.</td>
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<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, Aeroplane Operations Performance and Planning for the Air Transport Pilot, Aviation Theory Centre, Melbourne. Subject study notes as provided by the subject lecturer.</td>
<td>Examination as required by the Civil Aviation Safety Authority.</td>
<td>1 x 3 hour workshop per week for one semester or equivalent.</td>
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<tr>
<td>SCA3116</td>
<td>PERFORMANCE AND LOADING FOR THE ATPL</td>
<td>Footscray Park</td>
<td>SCA2051, SCA2053, SCA2055, SCA2057, SCA2059, SCA2061, SCA2063</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, Aeroplane Operations Performance and Planning for the Air Transport Pilot, Aviation Theory Centre, Melbourne. Subject study notes as provided by the subject lecturer.</td>
<td>Examination as required by the Civil Aviation Safety Authority.</td>
<td>1 x 3 hour workshop per week for one semester or equivalent.</td>
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<tr>
<td>SCA3118</td>
<td>METEOROLOGY 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 Meteorology' examined by the Civil Aviation Safety Authority.</td>
<td>Thom, T., et al, 2000, Meteorology and Navigation for the Air Transport Pilot, Aviation Theory Centre, Melbourne. Subject study notes as provided by the subject lecturer.</td>
<td>Examination as required by the Civil Aviation Safety Authority.</td>
<td>1 x 3 hour workshop per week for one semester or equivalent.</td>
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<tr>
<td>SCA3120</td>
<td>AIR LAW FOR THE ATPL</td>
<td>Footscray Park</td>
<td>SCA2051, SCA2053, SCA2055, SCA2057, SCA2059, SCA2061, SCA2063</td>
<td>Air law sufficient to pass the Air Transport Pilot's Licence theory subject 'ATPL Air Law' examined by the Civil Aviation Safety Authority.</td>
<td>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.</td>
<td>Examination as required by the Civil Aviation Safety Authority.</td>
<td>1 x 3 hour workshop per week for one semester or equivalent.</td>
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<tr>
<td>SCM1164</td>
<td>INTRODUCTION TO COMPUTING AND THE INTERNET</td>
<td>Footscray Park, Hong Kong, Malaysia, Singapore</td>
<td>SCA2051, SCA2053, SCA2055, SCA2057, SCA2059, SCA2061, SCA2063</td>
<td>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.</td>
<td>Ibrahim, Z.,2000, Mastering the Internet and HTML, Prentice Hall.</td>
<td>Examination as required by the Civil Aviation Safety Authority.</td>
<td>1 x 3 hour workshop per week for one semester or equivalent.</td>
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</tbody>
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SCM1115 COMPUTER SYSTEMS AND ARCHITECTURE

Campus Footscray Park, Hong Kong
Prerequisite(s) Nil.
Required Reading Nil.
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%.

SCM1311 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%.

SCM1312 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, 70%; assignment, test and practical work, 30%.

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 Albright, Winston, Zappe, Data Analysis for Managers, 2nd edn, Thompson.
Class Contact Four hours per week for one semester, comprising two one-hour lectures and two one-hour tutorials.
Assessment Final examination, 60%; tests, 40%.
SCM2111 DATA COMMUNICATIONS AND NETWORKS 1
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 and deadlock resolution. Synchronization and overall functionality is discussed. In addition, the topics of memory organization including virtual memory and file management will be covered. Unix and Windows XP 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%.

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, synchronization and overall functionality. In addition, the topics of memory organization including virtual memory and file management will be covered. Unix and Windows XP 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%.

SCM2211 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 covered also include 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 Laboratory, 10%; Two assignment, 30%; Final examination, 60%.

SCM2218 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%.

SCM311 OBJECT ORIENTED PROGRAMMING 1
Campus Footscray Park, Sydney, Hong Kong, Malaysia
Prerequisite(s) SCM3111 Programming 1; SCM312 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, exceptions and system design. 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.
Class Contact Three hours per week for one semester, comprising two hours of lectures and one hour of laboratory/tutorial.
Assessment Final examination, 70%; assignments, 30%.

SCM312 SOFTWARE ENGINEERING 1
Campus Footscray Park, Sydney, Hong Kong
Prerequisite(s) SCM3111 Programming 1; SCM312 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, 80%; assignments: 20%.
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.
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, Macroeconomics, 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%.

SCM2611 LINEAR STATISTICAL MODELS
Campus Footscray Park
Prerequisite(s) SCM1614 Applied Statistics 2.
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%.

SCM2612 FORECASTING
Campus Footscray Park, Sydney, Hong Kong, Malaysia
Prerequisite(s) SCM1613, SCM1614
SCM2614 STATISTICAL DATAMINING
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.
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%.

SCM2711 DISCRETE MATHEMATICS
Campus Footscray Park, Hong Kong
Prerequisite(s) SCM1711 Mathematical Foundations 1.
Content Algorithmics— worst case and asymptotic analysis, o, O and \( \Theta \) notation. Algorithm design — greedy algorithms, divide and conquer, dynamic programming, backtracking, notation branch and bound heuristics. Comparisons and applications. Graph theory — definitions, terminology, adjacency, incidence, paths, cycles, multigraphs, digraphs, weighted graphs, Eulerian graphs and digraphs, Hamiltonian graphs and digraphs, path algorithms, trees, graph colouring, matching.
Required Reading Nil.
Class Contact Three hours per week for one semester, comprising two one-hour lectures and one hour of laboratory/tutorial.
Assessment Final examination, 80%; tests, 20%.

SCM2712 MATHEMATICS OF CONTINUOUS PROCESSES
Campus Footscray Park
Prerequisite(s) SCM1712 Mathematical Foundations 2.
Required Reading Nil.
Class Contact Three hours per week for one semester, comprising two one-hour lectures and one one-hour laboratory/torial.
Assessment Final examination, 80%; assignment and test, 20%.

SCM2713 MODELLING FOR DECISION MAKING
Campus Footscray Park, Hong Kong, Malaysia, Singapore
Prerequisite(s) SCM1711, SCM1712
Content Overview of the modelling process: problem identification, factors and assumptions, formulation and solution, interpretation comparison of results with original problem. Setting up models, interpretation of mathematical models. Interpolation, extrapolation, spectral decomposition and fitting models to data. Applications of continuous models via differential equations and data fitting. Discrete versus continuous modelling and discrete/continuous combinations with examples of general interest in a variety of fields.
Class Contact Three hours per week for one semester,
Assessment Final examination, 80%; assignments, 20%.

SCM2810 ADVANCED INTERNET PROGRAMMING
Campus Footscray Park, Sydney (Alpha Beta College), Hong Kong, Malaysia.
Prerequisite(s) SCM1114, SCM1311, SCM1711
Content XHTML and JavaScript:
- Interaction between a web-page and a user;
- Input validation and submission of a form;
- Response to submission of a form;
- Connecting an OOM to a GUI
The bridge between XHTML/JavaScript and an embedded object:
- Applets and scriptlets as examples of embedded objects;
- How to use XHTML to initialize parameters of an an applet, and to us JavaScript to control the parameters at runtime;
- How to adapt an applet to read initial values of parameters from an XHTML page, and to read parameter values at run-time from an XHTML/JavaScript page.
- DHTML: CSS style-sheets, positioning elements, layering a page, interaction between the user and the web-page.
- Server-side topics: communication through sockets, creating a simple browser and a simple HTTP server, PHP, MySQL.
- Emerging Internet technologies such as SOAP for accessing objects, and Wireless ML for WAP-enabled devices.
Required Reading The five parts of D.R. Watson's interactive hypertexts on Internet Programming, Powell, T. and Schneider, F., 2001 or later, JavaSCript: The Complete Reference, McGraw-Hill.
Class Contact Three hours per week for one semester, comprising one two-hour lecture and one one-hour laboratory/torial.
Assessment Laboratory work, 12% mid-semester practical examination (3 hours duration), 50%; end-of-semester practical examination (3 hours duration), 58%. In order to pass, students must obtain at least 50% of the total marks given in this subject.

153
progress and final oral presentations to other students, staff and industry partners.

Required Reading Nil.
Recommended Reading Nil.
Class Contact 3 hours per week.

Assessment Based on performance in the projects oral presentations and quality of final reports.

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.
Recommended Reading Nil.
Class Contact 3 hours per week.

Assessment Based on performance in the projects oral presentations and quality of final reports.

SCM311 DATA COMMUNICATIONS & NETWORKS 2
Campus Footscray Park.
Prerequisite(s) SCM2111 Data Communications & Networks 1.


Recommended Reading Halsall, F., Data Communications, Computer Networks and Open Systems. 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%.

SCM3112 USER INTERFACE DESIGN
Campus Footscray Park, Sydney, Hong Kong, Malaysia.
Prerequisite(s) SCM1114. Introduction to Computing and the Internet, plus 8 electives.


Recommended Reading Shneiderman, B., 1997, Designing the User Interface. 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, 60%; assignment and tests, 40%.

SCM3113 MULTIMEDIA SYSTEMS DESIGN
Campus Footscray Park.
Prerequisite(s) SCM1114. Introduction to Computing and the Internet; SCM1115 Computer Systems and Architecture.


Required Reading To be advised by lecturer.


Class Contact Three hours per week for one semester, comprising one one-hour lectures and one two-hour laboratory/tutorial.

Assessment Final examination, 80%; assignment and tests, 20%.

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.


Class Contact Three hours per week for one semester, comprising two hours of lectures and one hour of laboratory/tutorial.

Assessment Final examination, 70%; tests/assignments, 30%.

SCM3211 DATABASE SYSTEMS 3
Campus Footscray Park, Sydney, Hong Kong, Malaysia.
Prerequisite(s) SCM2218 Database Systems 2.

Content Data warehouse, datamart, knowledge discovery in databases, data mining algorithms, online analytic processing (OLAP), online transaction processing (OLTP), hypercubes, star schemas, Multidimensional analysis, ROLAP and MOLAP.

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, 70%; assignment and tests, 30%.

SCM331 OBJECT ORIENTED PROGRAMMING 2
Campus Footscray Park, Sydney, Hong Kong, Malaysia.
Prerequisite(s) SCM3132 Programming 2; SCM2311 Object Oriented Design 1.

Content Examination of Object Analysis (OOA) and Object Oriented Design (OOD) methodologies; introduction to the Unified Modelling Language (UML), including the graphic notation for the various concepts of OOD; development of designs that take advantage of the strengths of OOP generally; concept of three-tier architecture. Introduction to JADE language and development environment.

Required Reading To be advised by lecturer.

Recommended Reading Lee, R.C., & Tepfenhart, WM., 2003, Practical Object-Oriented Development with UML and Java. 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, 70%; assignment and tests, 30%.
Class Contact Three hours per week for one semester, comprising two one-hour lectures and one one-hour laboratory/tutorial.

Assessment Final examination, 70%; assignments and tests, 30%.

**SCM3312 INTELLIGENT SYSTEMS**

**Campus** Footscray Park, Sydney, Hong Kong, Malaysia

**Prerequisite(s)** SCM312 Programming 2 and SCM1114

**Content** Introduction to intelligent systems and artificial intelligence, including a study of knowledge representation and problem solving strategies: rule-based expert systems, fuzzy logic, artificial neural networks and genetic algorithms. Practical work includes JESS expert system shell.


**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%.

**SCM3313 SOFTWARE ENGINEERING 2**

**Campus** Footscray Park, Malaysia

**Prerequisite(s)** SCM2312 Software Engineering 1; SCM2311 Object Oriented Programming 1.

**Content** The subject will build on the software development techniques introduced in SCM2312 Software Engineering 1. Topics to be covered will include CASE, Object Oriented Development, traditional methodologies versus O.O. methodology, dynamic modeling, system analysis and design, databases and functional design, project management.


**Class Contact** Three hours per week for one semester, comprising two one-hour lectures and one one-hour laboratory/tutorial.

**Assessment** Final examination, 8%; assignment 20%.

**SCM3314 OBJECT ORIENTED ANALYSIS AND DESIGN**

**Campus** Footscray Park, Sydney, Hong Kong, Malaysia

**Prerequisite(s)** SCM2311 Object Oriented Programming 1.

**Content** Review of object oriented design approaches; the Unified Modeling Language (UML); introduction to Rational Rose; the Unified Method; design of domain layer; design of storage layer for the use of persistent objects; user interface design considerations; alternative approaches to analysis and design.


**Class Contact** Three hours per week for one semester comprising of two one-hour lectures and one one-hour laboratory/tutorial.

**Assessment** Final examination, 70%; Assignment and test, 30%.

**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 tests, 30%.

**SCM3511 IMAGE PROCESSING 2**

**Campus** Footscray Park

**Prerequisite(s)** SCM2511 Image Processing

**Content** Image file types. Topology and geometry; applications to boundary detection, skeletonization and image resizing. Quantization and dithering. Advanced frequency domain filtering, including inverse filtering and Wiener filtering; the Fast Fourier Transform. Shape and size analysis: grayscale morphology and shape descriptors. Lossy compression and the JPEG standard. Wavelets and their applications. Implementation of image processing algorithms.


**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%.

**SCM3613 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** 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 of experimental design and interpretation of data. The subject covers: The differences between experiments and observational studies; Completely randomised and randomised block experiments; Two level factorial and fractional factorial designs; Analysis of variance; Response surface designs and analysis; An introduction to designs with factors at more than two levels; Research ethics.

**Required Reading** To be advised by lecturers.

**Class Contact** Three hours per week comprising two one-hour lectures and one one-hour laboratory/tutorial for one semester.

**Assessment** Assignments and tests 30%, final examination 70%.

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Page 156
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%.

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SCM3617 QUALITY IMPROVEMENT AND EXPERIMENTAL DESIGN

Campus Footscray Park
Prerequisite(s) SCM1613 Applied Statistics 1, SCM1614 Applied Statistics 2.


Required Reading To be advised by the lecturer.

Class Contact Three hour mix of lectures, tutorials, practice and laboratory classes.

Assessment Final examination, 80%; Mid-semester test, 20%.

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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, set in a high level programming environment.

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%.

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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%.

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SCM3720 CRYPTOGRAPHY, COMPUTER AND NETWORK SECURITY

Campus Footscray Park, Sydney, Malaysia
Prerequisite(s) SCM1711 Mathematical Foundations 1 and SCM1712 Mathematical Foundations 2 or equivalent.


Required Reading To be advised by the lecturer.


Class Contact Three hours per week: two hours lecture and one hour tutorial.

Assessment Final examination, 80%; assignment and tests, 20%.

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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.


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%.

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SCM3940 COMPUTATIONAL RISK MODELLING

Campus Footscray Park.
Prerequisite(s) SCM1114, SCM1312, SCM2612, SCM2712, SCM2411.

Content Futures: Mechanics of futures and forward markets; Determination of forward and futures prices; Hedging strategies using futures.


Interest-rate futures. Swaps. Introduction to credit, weather, energy and insurance options.


Recommended Reading Hull, J.C., 2003, Options, Futures, and Other Derivatives, 5th edn, Prentice Hall.

Class Contact 2 hrs of lectures and 1 hr tutorial/labouratory per week for one semester.

Assessment Assignment, 20%; final examination, 80%.
SCM3950 INTERNET DATA MANAGEMENT

Campus Footscray Park, Sydney (Alpha Beta College), Hong Kong, Malaysia.

Prerequisite(s) SCM2313

Content Introduction to Class; Introduction to ASP.NET; Introduction to Visual Studio .NET; Using Server Controls; Using ASP.NET Rich Controls; Using Visual Basic .NET Within an ASP.NET Page; Managing Data Sources; Building Data-Driven ASP.NET Applications; Building Data-Driven Web Applications; Configuring an ASP.NET Application; Troubleshooting and Deploying an ASP.NET Application.

Required Reading Introduction to ASP .NET, Kathleen Kalata, © 2002 Course Technology, 0-619-06321-1.


Class Contact Three hours per week for one semester, comprising one two-hour lecture and one one-hour laboratory/tutorial.

Assessment Laboratory, 15%; Assignments, 15%; Mid-Semester Test (1 hour duration), 25%; final test (1 hour duration), 25%; Laboratory test (2 hour duration), 20%. In order to pass, students must obtain at least 50% of the total marks given in this subject.

SCM3960 INTERNET SECURITY

Campus Footscray Park, Sydney (Alpha Beta College), Hong Kong, Malaysia.

Prerequisite(s) SCM1711 and SCM1712 or equivalent.


Required Reading Supplied notes.


Class Contact 3 hours/week: 2 lectures and 1 computer laboratory.

Assessment 2 mid semester tests, 15% each (1 hour duration); 1 final exam, 70% (3 hours duration). In order to pass, students must obtain at least 50% of the total marks given in this subject.

SCM3970 COMPUTER GRAPHICS FOR GAME PROGRAMMING

Campus Footscray Park, Sydney (Alpha Beta College), Hong Kong, Malaysia, China.

Prerequisite(s) SCM3132 or equivalent, SCM2213

Content The graphics pipeline and graphics performance: texture mapping: description of surface and curve; advanced topics on hidden surface removal; using and manipulating scene graphs; design of interactive applications; collision detection, geometric level of detail; special effects such as shadows, billboard and motion blur; and hardware procedural shading.

Required Reading Lecture notes provided by lecturer.


Class Contact Three hours per week for one semester, comprising one two-hour lecture and one one-hour tutorial and computer laboratory.

Assessment Normally two assignments, 30%; final examination, 70%.

SCS1000 COURSE OVERVIEW AND GUIDANCE

Campus Werribee

Prerequisite(s) Nil.

Content The subject will reinforce the students’ understanding of the course structure and clarify various options within the course. Possible career paths relating to the application of chemistry to medical and forensic science will be explored with the assistance of guest presentations by invited professionals working in relevant areas. The possibility of proceeding to Honours and Postgraduate Studies will also be discussed.

Required Reading To be advised.

Class Contact One hour of lectures/discussion groups over one semester. Attendance is compulsory.

Assessment Assignment, 80%; Oral presentation, 20%.

SCS1008 INDUSTRIAL EXPERIENCE 1

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 School. Students should consult with appropriate staff prior to commencing the subject to ensure their 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.

SCS1110 CHEMISTRY FOR BIOLOGICAL SCIENCES A

Campus St Albans

Prerequisite(s) Nil.

Content Chemistry relevant to biological sciences including the topics which follow: Matter and energy, Measurement, Atomic theory and the periodic table, Chemical and physical bonding, Chemical formulae, reactions and equations, Molecular structure and the state of matter, Solutions and aqueous chemistry.


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%.

SCS1120 CHEMISTRY FOR BIOLOGICAL SCIENCES B

Campus St Albans

Prerequisite(s) SCS1110 Chemistry for Biological Sciences A or equivalent.

Content Chemistry topics relevant to biological sciences and which incorporate specific reference to biological systems. Topics will include the following: Basic physical chemistry including chemical
equilibrium and kinetics, acids and bases, Thermochemistry, Oxidation and reduction, Inorganic and nuclear chemistry with reference to selected elements of biological chemistry, Organic chemistry and biological chemistry.


**Recommended Reading** To be advised by lecturer.

**Class Contact** Three hours per week comprising one hour of tutorial and three hours of practical classes per week.

**Assessment** Assignment, 10%; Practical work, 20%; Examination, 70%.

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**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, systematics 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 one semester comprising three hours of lectures, one hour tutorial and two hour practical classes.

**Assessment** Assignment, 10%; Practical work, 20%; Examination, 70%.

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**SCS1602 CHEMISTRY 1B**

**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 ethers; 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 and assignment, 55%.

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**SCS1603 MEDICAL, FORENSIC AND ANALYTICAL CHEMISTRY 1A**

**Campus** Werribee

**Prerequisite(s)** Nil.

**Content** An introduction to the principles and methodology of forensic chemistry. Areas of study include 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%.

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**SCS1604 MEDICAL, FORENSIC AND ANALYTICAL CHEMISTRY 1B**

**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%.

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**SCS2000 INDUSTRIAL EXPERIENCE 2**

**Campus** Footscray Park

**Prerequisite(s)** Nil.

**Credit Points** 15 per semester for two semesters.
SCS2001 MINOR PROJECT

Campus Off campus
Pre requisite(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 Off campus
Pre requisite Nil
Content The aim of this unit is to cover chemical, biological and biochemical topics that have relevance to occupation 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.
Recommended Reading Aylward, G. and Finlay, T., 1994, SI Chemical Data, 3rd edn, Jacaranda Wiley Ltd.
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 Off campus
Pre requisite(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%.

SCS2250 PROCESS ENGINEERING 1

Campus Werribee
Pre requisite(s) Students would normally be expected to have successfully completed SPH1210 Physics 1F 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.
Assessment Assignments, 30%; final examination, 70%.

SCS2270 ENVIRONMENTAL SCIENCE A

Campus Footscray Park
Pre requisite(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 Off campus
Pre requisite(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, from sample to population, testing hypotheses about independence, testing hypotheses about dependence, measuring association.
Class Contact Two hours of lectures/tutorials per week for one semester.
Assessment Assignments, 100%.
SCS2372 TOXICOLOGY 1A

Campus St Albans and Off campus
Prerequisites SCS1110/SCS1120 Chemistry for Bioscience and SBM1518/1528 Human Physiology or equivalent units.

Content The 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 toxicity for specific drugs, solvents, metals and pesticides. Additional show specific toxicological effects and recognise the mechanism of toxicities 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.


Class Contact Two hour lectures or tutorials for one semester delivered through Web-CT.

Assessment Assignment (50%) and a case study (50%)

SCS2373 TOXICOLOGY IB

Campus Saint Albans and Off Campus
Prerequisites 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.


Class Contact Two hour lectures or tutorials for one semester delivered through Web-CT.

Assessment Assignments (65%) and a case study (35%)

SCS2341 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 Six hours per week for one semester comprising two hours of lectures, one one-hour tutorial and one three-hour laboratory session.

Assessment Practical work 40%, final examination 60%.

SCS246I RISK MANAGEMENT

Campus Off campus
Prerequisite(s) Nil.

Content Testing risk analysis data, single risk or total risk?, risk management plans or action plans, financial plans, vulnerability; financial, legal, public relations, counting the cost, responsibility for risk management.


Class Contact Two hours of lectures/tutorials per week for one semester.

Assessment Written assignments (30%, 30% and 40%), 100%.

SCS2502 MEDICAL CHEMISTRY 2

Campus Werribee
Prerequisite(s) SCS1601 Chemistry 1A and SCS1603 Medical, Forensic and Analytical Chemistry 1A.

Content The aim of this subject is to introduce students to aspects of Medical Chemistry. The topics covered include Nuclear Chemistry and the application of Radioisotopes in Medical Chemistry. Bioinorganic Chemistry and the role of inorganic compounds in medicine. The synthesis and analysis of proteins, the structure and physiology of carbohydrates and lipids and a brief introduction to drug/molecule interactions.

Recommended Reading To be advised by lecturer

Class Contact Two hours of lectures and three hours of practical classes per week for one semester.

Assessment A combination of assignments, practical work, short tests and a final examination.

SCS2503 FORENSIC CHEMISTRY 2

Campus Werribee
Prerequisite(s) SCS1603 Medical, Forensic & Analytical Chemistry 1A or equivalent.

Content This subject draws upon real life investigations to introduce students to forensic chemical techniques. Modern methods of analysis and materials identification will be studied 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 Saferstein, R., (ed), Forensic Science Handbook Vol 1, 2 and 3, Prentice Hall.

161
SCS2521 APPLIED CHEMISTRY 1&2 – ORGANIC

Campus Werribee
Prerequisite(s) SCS1601 Chemistry 1A & SCS1602 Chemistry 1B.
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 nucleophile aromatic substitution – use in synthesis. Physical, organic chemistry, spectroscopy, including UV, IR, NMR and mass spectroscopy. Chemistry of carbamions – applications in synthesis. The chemistry of free radicals. The chemistry of carboxyls. 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 spectrosopic 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) SCS1531/1542 Chemistry 1B/2B or SCS1511/1522, 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 1F
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 spectrometry, trace element toxicity, metalloproteins and metalloenzymes, the biochemistry of iron and other metals, biological electron transfer, bioinorganic modelling, allali and alkaline earths in biological systems, 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) SCS1601 Chemistry 1A, SCS1602 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.

SCS2602 ANALYTICAL CHEMISTRY 2B

Campus Werribee
Prerequisite(s) SCS1601 Chemistry 1A, SCS1602 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%.

SCS2620 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 of 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 Off campus

Prerequisite(s) SCS2301 Study Design, SCS2461 Risk Management

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.


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 Off campus

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 Off campus

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 St Albans and Off campus

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 Saint Albans and Off campus
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.
http://www.ea.gov.au/soe/ [Reading texts removed]
Recommended Reading To be advised
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 Off campus
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 consulting 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 with which the student can be comfortable.
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 EMA rather than theory of instrumental operation. [This subject can be undertaken as an extension to the material presented in SCS2431 Environmental Measurement and Analysis 1. However, the subject focuses more on the application of modern instrumental methods to EMA and, as such, 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 Wastes 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; legal 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) SCS3251 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. Toxidology: Reaction mechanisms in photochemistry and molecular reactions. Practical work providing substantial ‘hands-on’ experience will complement the lecture material.

**Required Reading**

**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)** SCS2601 Analytical Chemistry 2A and SCS2602 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**

**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)** SCS2601 Analytical Chemistry 2A and SCS2602 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 voltammetry. 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.

**Required Reading**

**Recommended Reading**
Students will be referred to various texts and journals during the subject and will be expected to read widely from them.

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**SCS3603 MEDICAL CHEMISTRY 3 (DRUG DESIGN)**

**Campus** Werribee

**Prerequisite(s)** SCS2502 Medical Chemistry 2.

**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.

**Required Reading**

**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.

**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**

**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)** SCS1603 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.

**Required Reading**

**Recommended Reading**
Students will be directed to relevant sections of Safarstein, 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) SCS1603 Medical, Forensic & Analytical Chemistry 1A and SCS2503 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 manufacturer 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.


Recommended 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 on the basis of 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' supervisors. 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 competently 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.

SMA120 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.

SMA1201 MATHMATICS 1AP

Campus Footscray Park, Werribee
Prerequisite(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%.
### SMA202 MATHEMATICS 1AQ

**Campus** Footscray Park, Werribee  
**Prerequisite(s)** SMA1201 Mathematics 1AP  
**Co-requisite(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%.

### SMA2321 MATHEMATICS 2Q

**Campus** Footscray Park  
**Prerequisite(s)** SMA2201.  
**Required Reading** To be advised by lecturer.  
**Class Contact** Four hours per week for one semester comprising lecture and tutorial work.  
**Assessment** End-of-semester examination, 100%.

### SMA2801 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%.

### SMA3071 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 MATHEMATICS 3P

**Campus** Footscray Park  
**Prerequisite(s)** SMA2211 Engineering Mathematics.  
**Content** Second order differential equations – reduction of order, variation of parameter, Dirac delta and more generalized functions, series solutions. Laplace transformation of differential equations including those with Generalized functions, discontinuous terms, convolution, extension to Fourier transform. Partial differential equations – separation of variables, solution via Fourier series and Laplace transformation – Laplace’s equation, the wave and heat equations. Functions defined by integrals, gamma and beta functions – introduction to asymptotic analysis.  
**Class Contact** Four hours per week for one semester comprising lecture and tutorial work.  
**Assessment** End of semester examination, 90%; assignment, 10%.

### SNH2110 DISEASE AND HEALTH

**Campus** Werribee  
**Prerequisites** Nil  
**Content** The unit will study inflammatory and immune responses and pathogenic process of common disorders. Inflammatory and immune responses, essentials of the pathologic process of the common disorders with nutritional involvement, including; anaemia, alimentary dysfunction, cardiovascular disease, cancer, obesity, diabetes, inborn errors of metabolism. Diagnostic and therapeutic modalities.  
SNH3210 SPECIAL TOPICS IN NUTRITION, FOOD AND HEALTH SCIENCE

Campus Werribee

Prerequisites SBF 2750 Nutrition, or SBF 2260 Diet and Nutrition, or equivalent, and SBF 2210 Food Components or equivalent.

Content To develop and study a selected aspect of nutrition and food science, requiring conduct of a project of a selected topic. Recent advances and controversies in selected topics of nutrition and food science, including: GMOs, nutrition labelling, nutrient fortification, reference intake levels, nutrigenomics.

Required Reading Student will be responsible for reviewing current literature on their project topic.

Class Contact Nil, however, students are expected to spend at least three hours per week in the library.

Assessment Presentation 20%, report 80%.

SNH3210 SPECIAL TOPICS IN NUTRITION, FOOD AND HEALTH SCIENCE

Campus Footscray Park

Prerequisites SBF 2750 Nutrition, or SBF 2260 Diet and Nutrition, or equivalent, and SBF 2210 Food Components or equivalent

Content To develop and study a selected aspect of nutrition and food science, requiring conduct of a project of a selected topic. Recent advances and controversies in selected topics of nutrition and food science, including: GMOs, nutrition labelling, nutrient fortification, reference intake levels, nutrigenomics.

Required Reading Student will be responsible for reviewing current literature on their project topic.

Class Contact Nil, however, students are expected to spend at least three hours per week in the library.

Assessment Presentation 20%, report 80%.

SHP1000 DIRECTED STUDIES IN PHYSICS

Prerequisite(s) There are no prerequisites for this subject but Year 11 or equivalent physics background is preferred.

Content A selection of topics from the following:
- Kinematics and Mechanics
- Thermodynamics
- Electricity and Magnetism
- Electronics
- Optics
- Wave Motion and Sound
- Quantum Physics
- Nuclear Physics

Aim To introduce students to the principles and techniques of physics and their applicability. It is principally designed for students who do not have a strong physics background or those who do not intend to major in physics or the allied technologies. Alternatively it can be used by students seeking a basic knowledge and understanding of physics with a view to examining whether they wish to study physics further.

The detailed curriculum for an individual student, or a group of students with a common background, will depend on their prior studies in the area and the purpose to which they wish to put the subject. The detailed content will, therefore, vary but will, in general, be taught at a level equivelant to a standard first year physics subject in a technological degree.

Required Reading Giancoli, D.C., Physics for Scientists and Engineers with Modern Physics 3rd Edition Prentice Hall or equivalent.

Class Contact Equivalent to 36 hours per semester of lecture/tutorial/demonstration and laboratory experiences per semester.

Assessment A series of regular assignments and tests as negotiated for each individual student or group of students with a similar background. The assessment regime will be equivalent to that for a first year physics subject in a technological degree.

Credit Points 15 (prior to 2006) 12 thereafter.

SHP1601 PHYSICS ISA

Campus Footscray Park, Werribee.

Prerequisite(s) Nil.

Content Physical Units and Dimensions: physical quantities; systems of units; standards; dimensions; uses of dimensions; dimensional analysis; order of magnitude calculations; significant figures. Kinematics: vectors and scalars, displacement, velocity, acceleration; equations of uniformly accelerated motion in one and more dimensions; average and instantaneous velocity and acceleration, relative velocity and acceleration. Dynamics: Concept of momentum and force; Newton's laws of motion; friction; applications of Newton's laws in one dimensions; motion in a circle; work done by a force, kinetic and potential energy; conservation of energy and momentum. Fluids: Density; fluid pressure; variation of pressure with depth Pascal's law.


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.

SHP1602 PHYSICS ISB

Campus Footscray Park, Werribee.

Prerequisite(s) SHP1601 Physics ISA.

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.
Water: Wave motion; frequency, period, amplitude and wavelength; waves in strings; moduli of elasticity; sound waves in media; pressure variation; intensity of a wave; sould 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.


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.

SPH4243 DATA ACQUISITION AND INTERFACING

Campus Footscray Park


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.

SPH3000 PHYSICS 3

Campus Footscray Park

Required Reading SPH2000 or its equivalent

Co-requisite(s) SMA2321 or SMA3311

Content Semester 1: SPH3011 Classical Mechanics, SPH3021 Optics 1, SPH3031 Fibre Optics, SPH3091 Physics Laboratory 3A, Semester 2: SPH3012 Quantum Mechanics, SPH3022 Lasers, SPH3032 Atomic Physics & Atomic Spectroscopy, SPH3092 Physics Laboratory 3B

Required Reading See references under each unit

Recommended Reading See references under each unit

Assessment End of semester examination, comprising lectures, tutorials and laboratory sessions.

SPH3011 CLASSICAL MECHANICS

Campus Footscray Park

Prerequisite(s) SPH1010 or its equivalent.

Co-requisite(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.

SPH3012 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 Bra-ket 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.

SPH3021 OPTICS 3

Campus Footscray Park

Prerequisite(s) At least SPH2022 or its equivalent


Required Reading Hecht E., 2002, Optics, 4th edn, Addison-Wesley.

SPH3022 LASERS

**Campus** Footscray Park

**Prerequisite(s)** SPH2000 or its equivalent

**Co-requisite(s)** SMA2321

**Content**

**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.

SPH3031 FIBRE OPTICS

**Campus** Footscray Park

**Prerequisite(s)** SPH2022 or its equivalent

**Co-requisite(s)** SMA2321 and/or SMA3311

**Content**

**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.

SPH3032 ATOMIC PHYSICS AND ATOMIC SPECTROSCOPY

**Campus** Footscray Park

**Prerequisite(s)** SPH2000 or its equivalent

**Content**


**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.

SPH3091 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.

SPH3092 PHYSICS LABORATORY 3B

**Campus** Footscray Park

**Prerequisite(s)** SPH3091, 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.

**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.

SPH3100 PHYSICS 3C

**Campus** Footscray Park

**Prerequisites** SPH2000 or its equivalent

**Co-requisite(s)** SMA2321 or SMA3311

**Content**

**Semester 1**: SPH3011 Classical Mechanics, SPH3021 Optics 3, SPH3031 Fibre Optics, SPH3091 Physics Laboratory 3A. **Semester 2**: SPH3012 Quantum Mechanics, SPH3032 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.

SPH3200 OPTOELECTRONICS 3

**Campus** Footscray Park

**Prerequisite(s)** SPH2000 or its equivalent

**Co-requisite(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.

SPH3430 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.

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 reports(s).

SPH3441 OPTICAL PROPERTIES OF MATERIALS
Campus: Footscray Park
Prerequisite(s): SPH2000
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 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, semi-conductors, active ions; colour centres. Non-linear Materials Electro-optic effect; magneto-optic effect. Thin Film Materials Substrates. Optical damage mechanisms; self focusing damage thresholds; specification of cosmetic surface quality of optical components.

Recommended Reading: Hecht E., 2002, Optics, 4th edn, Addison-Wesley.

Class Contact: Two hours per week for one semester, comprising two one-hour lectures.

Assessment: Semester tests and/or assignments, 50%; end of semester examination or major report, 50%. Students are expected to pass each component of the assessment to gain a pass in this subject. Supplementary assessment will not normally be available in this subject.

SPH3451 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.

SPH3462 OPTICAL WAVEGUIDES AND SENSORS
Campus: Footscray Park
Prerequisite(s): SPH3021 Optics 3 and SPH3031 Fibre Optics
Co-requisite(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 gyroscopes, intensity and wavelength-based sensors, multiplexed and distributed sensors, applications of fibre sensors, e.g smart structures.

Required Reading: To be advised by the 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.

SPH3472 TECHNICAL PROJECT

Campus Footscray Park

Prerequisite(s) Completed second year of the course plus satisfactory progress in semester one of third year.

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. Supplementary assessment will not normally be available in this subject.

SPH3941 COMPUTATIONAL PHYSICS A

Prerequisite(s) SCM311 Programming 1 and SCM312 Programming 2

Co-requisite(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.

SPH3942 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.

SPH41410 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.

SPH41531 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. Attenuation 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

Faculty of Science, Engineering and Technology

Courses Offered
The Faculty of Science, Engineering and Technology offers postgraduate courses leading to the award of:

- Master's Qualifying Program

Master's Qualifying Program
Course Code: ENMQ

Course Objectives
The Faculty of Science, Engineering and Technology Masters Qualifying Program is designed to facilitate entry to coursework masters degrees for a wide range of students who lack the formal qualifications or experience for direct entry into the master by coursework degree of their choice. Note that the program:

- Does not lead to a formal qualification of the faculty;
- Is suitable for a wide range of students with varying entry qualifications;
- Is designed to prepare students for the full range of masters degrees by coursework available in the faculty;
- Has flexible entry points;
- Will be individually designed for each student;
- Can have varying lengths;
- Satisfactory completion of the program will enable a student to enter directly into the masters course for which the qualifying program has been designed.

Admission Requirements
A wide range of selection criteria will be applied to this program to cater for the range of prior qualifications and experiences.

For International students a minimum IELTS score of 6.5 is required for entry into the program.

In exceptional cases a student may be considered for admission with an IELTS score of 6.0. In these cases the program advisor will take special care to ensure that the student is meeting the English language demands of the program and, if necessary, arrange for special assistance from appropriate sources within the university.

Course Structure
As indicated above, the Masters Qualifying Program is individually structured for each student undertaking the program. Upon acceptance into the program each student will be assigned a program advisor who will, with the student, work out in which areas the student requires further study and develop a program to meet those needs. This will generally comprise a selection of undergraduate and/or postgraduate subjects in the general area of their preferred Masters degree but may also include English language and research method instruction.

The length of the program will vary from student to student and may take one, two or three semesters depending on the 'gap' between the student's prior experiences and qualifications and the masters course they are seeking to enter.

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)
- 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.

Example 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;
- Response of Building Subsystems to Fire;
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 original Facility was 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, CFA, BHPSteel and OneSteel. This new facility was completed in 2004.

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 $1m/\$2m.

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. This new facility was completed in 2004.

A separate building provides storage, office instrumentation and workshop facilities.

The Facility is located at the Country Fire Authority Training Wing at Fiskville, some 90km west of Melbourne.

Collaboration with Industry

The Centre undertakes collaborative research and development projects with key industry and government organisations, including:

- BHPSteel and OneSteel;
- CSIRO;
- Scientific Services Laboratory, Commonwealth Department of Administrative Services.

For example, the Centre was the major research provider to the Fire Code Reform Centre Ltd (FCRC) that was undertaking a multi-million dollar reform program of Australian building and fire codes. FCRC was established with funding provided by Australian Governments, via the Australian Building Codes Board, and industry. The Centre now provides research direct to the Australian Building Codes Board.

The Centre undertakes collaborative research and development projects, and promotes the practice of fire safety engineering by technology transfer programs via workshops and short courses. The Centre provides a forum where industry and government organisations can interact with the University.

For example, the Centre in conjunction with the Building Control Commission, Victoria introduced a new Graduate Certificate in Performance-Based Building and Fire Codes to support the introduction of the Performance-based Building Code of Australia.

In 1999 the BHP Fire and Construction Research Unit, with five staff, relocated to the Werribee Campus and is now part of the Centre for Environmental Safety and Risk Engineering.

Research Degrees

Masters by Research and Doctor of Philosophy degree programs are available. A wide variety of challenging research projects can be undertaken, including projects of a multi-disciplinary nature.

Entry to these awards is available to applicants who have achieved high honours results in their undergraduate course. Initial enquiries regarding research areas should be directed to the Centre on telephone (03) 9216 8027.

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 recommend for exclusion from the course.
Graduate Certificate in Performance-Based Building and Fire Codes  
Course Code: ETQB

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.

Candidates with other academic qualifications can be admitted to the course provided they can demonstrate an equivalent combination of additional relevant professional experience and qualification.

A letter of recommendation and an interview may be required.

Graduates of the course may be offered advanced standing in the Graduate Diploma in Building Fire Safety and Risk Engineering.

Course Duration
The course is offered on a part-time basis over one year, and is offered in block modules (four blocks of 4 days, spread throughout the year). Students must complete 60 credit points. The maximum time period in which to complete the course is three years.

Course Structure

<table>
<thead>
<tr>
<th>Semester One</th>
<th>Credit points</th>
</tr>
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<tbody>
<tr>
<td>EQB5611</td>
<td>Risk Assessment &amp; Human Behaviour</td>
</tr>
<tr>
<td>EQB5621</td>
<td>Fire Growth, Detection and Extinguishment</td>
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<table>
<thead>
<tr>
<th>Semester Two</th>
<th>Credit points</th>
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<tbody>
<tr>
<td>EQB5632</td>
<td>Smoke and Fire Spread, Fire Safety System Design</td>
</tr>
<tr>
<td>EQB5642</td>
<td>Performance Codes Methodology and Structure</td>
</tr>
</tbody>
</table>

Assessment
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.
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.

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Credit points</th>
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<tbody>
<tr>
<td>Semester One</td>
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<tr>
<td>EQB5611</td>
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</tr>
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<td>EQB5621</td>
<td>Fire Growth, Detection &amp; Extinguishment</td>
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<td>Semester Two</td>
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<td>EQB5642</td>
<td>Performance Codes Methodology and Structure</td>
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</table>

<table>
<thead>
<tr>
<th>Year 2</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semester One</td>
<td></td>
</tr>
<tr>
<td>EQB5751</td>
<td>Fire Technology Modelling</td>
</tr>
<tr>
<td>EQB5761</td>
<td>Fire Safety Systems Modelling</td>
</tr>
<tr>
<td>Semester Two</td>
<td></td>
</tr>
<tr>
<td>EQB5772</td>
<td>Fire Safety System Design</td>
</tr>
<tr>
<td>EQB5782</td>
<td>Fire Spread and Fire Safety System Design Project</td>
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<table>
<thead>
<tr>
<th>Year 3</th>
<th>Credit points</th>
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</thead>
<tbody>
<tr>
<td>EQT6050</td>
<td>Building Fire Research – full-time</td>
</tr>
<tr>
<td>(over one semester) or</td>
<td></td>
</tr>
<tr>
<td>EQT6060</td>
<td>Building Fire Research – part-time</td>
</tr>
<tr>
<td>(per semester for two semesters)</td>
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</tbody>
</table>

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.

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 Telecommunication and Micro-Electronics

Centre for Telecommunication 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 Telecommunication Research Centre: www.telecommunication.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

Propagation measurement and modeling

- Wideband and ultra wide band 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 Telecommunication Cooperative Research Centre
The Australian Telecommunication Cooperative Research Centre (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, IPv6 handover.
• Networking: AAL type 2 traffic management and switching, routing algorithms for IP.
• Wireless: W-CDMA scatter, 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 Soeware, 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 Telecommunication 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 Telecommunication and Microelectronics Strategic Research Areas.
These courses are:
• M.Eng. Microelectronic Engineering;
• M.Eng.Sc. in Telecommunication 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:
• Radio System Design. Capacity modeling and performance enhancement of cellular networks;
• RF Systems circuits, and Antennas. Terminal and Basestation Architectures. Analog and Digital Electronics, Amplifier Design;
• 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 e.g., Applied Maths), good analytical and communications skills, and enthusiasm for radio and signal processing. Australian Postgraduate Awards (APA), Internationally Postgraduate Research Scholarships (IPRS) and Vice Chancellor’s Research Scholarships are due October every year. Scholarships are worth approx. $16,000.
A top-up bonus of $5,000 p.a. is offered to successful candidates undertaking approved research projects with the Centre for Telecommunication 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 analyzer, spectrum analysers, radio test set and network analysers etc.) providing continuous coverage of all frequencies up to 6GHz. A recently acquired scalar network analyzer extends this range to 50GHz. 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 HIP93000 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.
Integrated Freight Systems
Research Unit

Courses Offered
The Unit 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 Systems Management;
- Master of Engineering Science (Intermodal);
- Master of Engineering Science (Research);
- Doctor of Philosophy.

Focus
This Unit focuses on a particular way of thinking about efficient, fully integrated freight systems; on the functionality and success of firms in efficient freight systems; and on the ‘disintegrative’ factors in chains and supply chains, including for example, the impact of corporate business and financial models.

It has particular interest, and expertise, in the efficiency of Australia's export and trade-oriented chains that are focused through national and international ports including containerised freight chains and bulk freight chains, and in air freight systems and the efficiency of air freight chains.

It has a view that optimal freight systems are fully integrated, value-driven, end-to-end systems that operate on a sustainable basis; and its research and teaching programs are informed by this view.

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

<table>
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<tr>
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<tbody>
<tr>
<td>EPM5000</td>
<td>Intermodal Freight Markets – Dynamics and Structure</td>
<td>20</td>
</tr>
<tr>
<td>EPM5001</td>
<td>Integrating Intermodal Freight Systems</td>
<td>20</td>
</tr>
<tr>
<td>EPM5002</td>
<td>Defining Strategies for Intermodal Freight Systems</td>
<td>20</td>
</tr>
</tbody>
</table>

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: ETBF

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 the development of skills for operators and third party service providers and for traditional transport providers.

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 system, 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 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 efficient chains. It investigates how service providers set prices; whether prices are efficient; what impact inefficient prices have on chain system efficiency. It also focuses on the amount and timing of investments, on policy and regulatory constraints and on 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 include the impact of technological changes; investment planning; e-Business; alliance formation; chain smoothing; 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 week intervals.

Required Reading
Current available text book — students to be advised

Class Contact
Teaching for each unit is over a five day block.

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</tr>
<tr>
<td>EPM5002</td>
<td>Defining Strategies for Intermodal Freight Systems</td>
<td>20</td>
</tr>
<tr>
<td>EPM5003</td>
<td>Advanced Chain Systems Management</td>
<td>20</td>
</tr>
<tr>
<td>EPM5004</td>
<td>Financial and Investment Planning</td>
<td>20</td>
</tr>
<tr>
<td>EPM5005</td>
<td>Strategy, Strategic Options and Business Success</td>
<td>20</td>
</tr>
</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.

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.
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 academic partnerships with institutions and individuals locally, nationally and internationally in the areas of safety and authenticity.

The Unit collaborates with a number of resident institutions on the Werribee Technology Precinct in areas of mutual interest which it is expected will also provide expert teaching into appropriate courses with the Faculty. Current research projects include:

- Enzymes profile – involving enzyme profiles of probiotic bacteria to produce bioactive isoflavones and breakdown soy oligosaccharides
- Stability of isoflavones – involving stability of enzyme activity produced by bifidobacteria and stability of bioactive isoflavones such as equol.
- Food security – investigating strategies for local intervention support for developing improved post-harvest handling, storage and distribution of food.

Food Marketing Research Unit

The Food Marketing Research Unit provides marketing and market-oriented research, education and consultancy services targeted at all segments (producers, processors, re-sellers, and industry stakeholders) of the food value chain. The Unit undertakes projects awarded through nationally competitive grants and through negotiated contracts. It has a large number of clients comprising of government agencies, food processing companies, food re-sellers, food service companies, industry associations, and R&D corporations. The Unit also undertakes a number of cross-disciplinary research projects in partnership with other operational areas in the University and with other institutions. It has a strong record of R&D collaborations with Australian and overseas organisations and has established individual- and institution-level research partnerships with R&D organisations and universities in the USA, UK, France, Korea, Japan, India and Malaysia. A summary of the major activities of the Unit is as follows:

Core R&D and Post Graduate (PhD and Masters) Projects

The Unit’s R&D and post-graduate research projects cover the entire food value chain (from paddock to plate) and incorporate a cross-section of macro and micro issues and trends pertaining to consumers, firms, industry, government, and stakeholders in the industry. Past and on-going research projects address issues such as organisational and governance structures such as business networks, strategic partnerships, and strategic alliances; entrepreneurship and the relationship of entrepreneurial orientation to factors such as innovation orientation, innovation adoption, and business performance; business-to-business and consumer buyer beliefs and attitudes, and the influence of buyer beliefs and attitudes on behaviors such as the consumption and marketing of functional foods or ‘Green’ foods; business-to-business relationship marketing and management issues arising from developments such as the digitisation and convergence of economic activities; problems focusing on organisational culture and personal culture in business partnerships, trade relationships, and ethnic/minority community businesses; externalities such as interest group influence on food production and marketing; public policy issues and trends in regard to matters such as the development of ‘new’ industries, and food trade and investment flows; analysis of the commercialisation of research and development programs in the food industry; the interface between community, business and government in food industry development; and issues on food security, food self-sufficiency, and the globalization of food markets.

Cross Disciplinary and Collaborative R&D Projects

The Unit also undertakes a wide range of cross-disciplinary projects in collaboration with other operational areas in Victoria University. Recent collaborative projects included the sensory evaluation and development of a quality index for fish (School of Molecular Sciences); development of an energy saving and water saving mobile hydro cooler for the fresh vegetable industry (School of Architectural, Civil and Mechanical Engineering, and School of Molecular Sciences); sustainable and environmentally friendly food production and marketing (Key Research Area in Integrated Food Value Chain; and School of Hospitality, Tourism and Marketing); assessment of trends and developments in the use of different methods of fertilising and irrigating food crops (School of Applied Economics).

Undergraduate Student Exchange Projects

The Unit also developed and is lead managing an undergraduate-level student exchange project, funded by the Department of Education, Science and Training under its University Mobility in Asia and the Pacific Program, between the School of Molecular Sciences in Victoria University and the Faculty of Food Science and Biotechnology in Universiti Putra Malaysia.

Contract Research and Consultancy Projects

The Unit provides contract research and consultancy services for activities such as developing business plans, undertaking market and/or product feasibility reports, developing marketing reports, undertaking customer satisfaction surveys, and the crafting of proposals for R&D grants.

Research Dissemination and Mentoring Activities

The Food Marketing Research Unit is the Secretariat for the ASEAN Food Journal, a peer reviewed academic journal in food science, food technology, and food business. The ASEAN Food Journal is a joint enterprise between Victoria University of Technology and Universiti Putra Malaysia in Malaysia.

The Unit undertakes a wide variety of research dissemination and mentoring activities such organising and hosting seminars, workshops, conferences, and assisting in peer reviewing manuscripts for academic journals, conferences, and trade publications.

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 (Project Management) Block Mode (Dual Language course with Mandarin tutorials ) (coursework program, based on the above graduate diplomas)
- Master of Engineering in Mechanical Engineering (coursework)
- Master of Engineering (Research)
- Doctor of Philosophy

Research Activities

Members of staff in the School of Architectural, Civil and Mechanical Engineering (ACME) carry out a wide range of fundamental and applied research. Much of the work is carried out in close collaboration with industry, government bodies and other research institutions.
Research in ACME is focused into three areas, namely:

- Structural Dynamics and Vibrations
- Thermofluids
- Engineering for Sustainability

### Structural Dynamics and Vibrations

The Structural Dynamics and Vibrations research group undertakes research in the fields of vibration, structural dynamics, system dynamics and protective packaging. Research of this nature is broad-ranging and finds applications in all modes of transport, distribution, manufacturing, the military, the electronics industry, acoustics and sound, offshore activities, power generation and distribution, mining and resources exploitation, building services and architecture, structural engineering, seismic and wind engineering, sensor technology and even space exploration. Although the potential applications of our research are considerable in both number and breadth, the activities within the group have been and are, by necessity, focused on the following applications:

- **Environmental vibrations and distribution hazards**
  Investigations include the study and investigation of novel and practical methods to monitor, measure, analyse and simulate shock and random vibrations to products and packages being transported.

- **Pavement–vehicle–consignment interaction**
  The study of the interaction between pavement topography, vehicles and consignments/passengers. This includes classifying the nature of random pavement and terrain topography as well as the study of dynamic forces and motion generated at the interface of pavements and vehicles and between vehicles and consignments. The behaviour of packaging systems under stochastic loads is also being elucidated.

- **Protective packaging and cushioning materials**
  Entails the development of new protective packaging materials, cushioning systems as well as the development of enhanced methods to determine the effectiveness and improve the optimisation of protective packaging systems.

- **Non-linear vehicle dynamics**
  Involves the study on the non-linear behaviour of vehicles and suspension systems and includes the development of methods to identify and non-linearities and simulate non-linear effects.

- **Structural dynamics and modal analysis**
  Focuses on the vibrational behaviour of structures and includes the development of methods for optimising the modal properties of structures to reduce vibrational response and noise generation as well as increase the endurance properties of structures.

- **Structural Damage Detection**
  It was common to observe railway workers striking the wheels of locomotives with hammers – if a wheel did not ring properly it was an indication that it had a crack in it. A similar, but more refined method is being developed using frequency response functions to detect cracks or degradation in engineering structures.

- **Computational Mechanics**
  Areas of research include development of finite element analysis methods for structural optimization Fracture and crack analysis application in nano-mechanics.

### Laboratory facilities

Laboratory facilities used to support the research activities of the group have been built up since the establishment of the Modal Analysis Laboratory in 1988 and the Packaging Dynamics Laboratory in 1991. Since then the School has made significant investments in dynamics and vibration–based research equipment so that, today, the laboratory is very well equipped to support activities in the field.

Some of the more significant experimental facilities available are:

- Vibration shakers (ranging from 20 N – 10kN in capacity)
- Shock generating system (600 g)
- Vibration controller
- Real time signal analysers (3 dual channel systems and one 8-channel system)
- Dynamic universal testing machine.
- Modal analysis system
- Cushion testing machines
- Sound level meters and acoustic intensity probe.
- Laser vibrometer
- A wide range of conventional and non-contact displacement sensors.
- A wide range of strain-gauge type and piezoelectric load cells
- Numerous accelerometers and amplifiers
- Miscellaneous test equipment such as function generators, pulse generators, digital storage oscilloscopes, tuneable frequency filters, portable data acquisition systems and PC-based data acquisition systems
- A variety of specialist software packages such as Matlab®, Simulink®, Labview®, Dadtsp®, HPVee®, SignalStar®, Adams®, Icats®, MScope®, Ansys® and Abacus.

### Thermofluids

The thermofluids research group carries out a range of theoretical and experimental studies on fluid dynamics and heat transfer. A strand of its work considers the interaction of fires and structures, and Thermofluids makes significant contributions to the area of manipulating environments within building-enclosures. Some of the specific projects include:

- **Thermal plumes**
  Thermal plumes arise in many applications, such as the spread of fires in buildings, heating and ventilation and the spread of pollutants. The research in this group studies the basic mechanisms of buoyancy-driven flows and their effect on the behaviour of turbulence.

- **Dynamic response of hot-wires**
  Hot-wires are used to measure the not only the average flow rates of gases, but also they enable small deviations from the average to be measured. This enables engineers to gain insights into the nature of turbulent flows. ACME has a strong research team studying the dynamic response of hot-wires and how their construction can be improved to avoid erroneous measurements being recorded.

### Computational Fluid Dynamics

Computers can be used to study the flow of fluids under very diverse situations such as air flows in a room, air flows between buildings in cities, the flow of liquids in oil reservoirs, the sloshing of liquids in containers and so on. The computer programs used to simulate these flows depend ultimately on a good understanding of the physics of fluids and computational algorithms. Members of this research group develop and use computational fluid dynamics software.

### Fluid dynamics and fire engineering

Members of the Thermofluids research group use the tools of fluid dynamics and computing to study the behaviour of fires in buildings. One project involves the study of the spread of smoke in a building, another is concerned with the response of structural elements of buildings to fires and a member of the group is studying flows in a complex network of an aspiration smoke detector.
Adverse pressure flows
We generally think of fluids being forced along a pipe, say, as a result of a pressure driving force that goes from high to low in the direction of flow. However, once a flowing fluid has gained momentum it can continue to flow against a pressure gradient, just as a cyclist can continue to climb a hill without pedalling (at least for a little while). ACME has a renowned reputation for studying these so-called adverse pressure gradient flows.

Flows in porous media
Porous media are encountered in many applications such as the flow of water in aquifers, air flow through stored food grains and fluid flows in chemical reactors. A problem is that the flow through the interstices between the solid particles is on length scales that are much smaller than the size of the porous medium. A grain silo, for example, is much larger than the sizes of the grain kernels stored within it. Researchers in ACME work on reconciling these differences and formulating appropriate design equations.

Automobile engineering
Research is being conducted on improving the design of automobile engines. A new system for actuating valves has been designed and work is being conducted on the use of alternative fuels.

Laboratory facilities
The thermal fluids research group has well-established facilities that include:
- A 21-m long hot-wire anemometer calibration facility
- A flying hot-wire system for traversing large distances
- A range of wind tunnels – one of which has variable geometry to study adverse pressure gradients
- Secondary standards for calibrating manometers
- A range of humidity, temperature sensors and data loggers
- Excellent workshop and fabrication facilities
- Signal analysers to characterise turbulent flows
- A particle image velocimeter
- A range of software including computational fluid dynamics software including CFX® and COMPACT®

Engineering for Sustainability
There are a large number of definitions of sustainability, one of which is 'a sustainable society is one that permits the personal, social, aesthetic and intellectual well-being of all people to grow throughout their entire lives'.

Engineering is embedded in this definition which implies that people will be free from drudgery, they will not have to worry about being hungry and they will have shelter and infrastructure that are adequate for them to grow physically, emotionally and intellectually. Research areas in Engineering for Sustainability include:

Water supply planning and management
Reliable supplies of clean and potable water are increasingly scarce and they require adequate planning. Research activities in this area include:
- Reservoir management
- Water conservation and demand management
- Urban and rural water supply
- Water sharing principles

Urban water cycle management
Although much of the water used in cities is harvested and stored in catchment areas in rural areas a large amount of rain also falls on urban areas. These areas are characterized by large areas of impermeable surfaces such as roofs, roads and perhaps airport runways, and they have large networks of storm water disposal systems.

Urban environments therefore provide a potential source for harvesting and supplying water. As a result the following projects are being carried out:
- Water sensitive urban design
- Reuse of wastewater / Use of storm water
- Urban drainage
- Holistic management of urban water cycle

River water quality modelling and management
A safe water supply and environmentally sound water distribution system relies on a clean, unpolluted system of rivers. This research is aimed at studying factors that affect the integrity of water quality.

Educational research
Universities are the institutions charged with educating future generations of professional engineers. It is important that this education process is carried out in a scholarly manner and that it is effective. For this reason, members of staff work closely with colleagues in the University's Centre for Educational Development and Support in devising and evaluating its courses. The principal beneficiaries are undergraduate students but it also leads to members of staff being able to make contributions to the profession of university teaching. Areas of research include:

- Sustainability teaching; how to teach principles/concepts to engineers
- Conversazioni as a vehicle for participatory learning
- Educational development of concepts specific to Fluid Mechanics

Post harvest technology
Each year billions of dollars worth of stored grains such as wheat, rice and maize is destroyed during storage. The main causes of loss result from attack by insect pests and moulds. Insects can be controlled by applying pesticides to the grains but within a few years they become resistant to these chemicals, and consumers are wary of eating chemically treated grains. An alternative to using pesticides is to cool grains. Moulds can be controlled by ensuring that all regions of a bulk of stored grains are sufficiently dry. This research area is developing engineering, as opposed to chemical methods of maintaining stored grains in good condition. A further project in post harvest technology is aimed at developing water-efficient methods ofcooling horticultural produce.

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) 9919 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 initiative 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.

- IELTS – an overall band score of 6+, subject to individual profile; or IELTS – an overall band score of 5+, for Dual Language Course.
- TOEFL – a score of 550+, and a Test of Written English score of 5+. TOEFL – a score of 450+, and a Test of Written English score of 4+.

**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>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>Core Subjects</td>
<td></td>
</tr>
<tr>
<td>Two</td>
<td>ECP5600 Project Management Fundamentals</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>ECP5610 Project Management Planning and Control</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>ECP5620 Project Management &amp; Contracts Information Technology</td>
<td>- 15</td>
</tr>
<tr>
<td></td>
<td>ECP5705 Project Management Information Technology</td>
<td>- 15</td>
</tr>
<tr>
<td></td>
<td>ECP5716 Project Development Analysis Management</td>
<td>- 15</td>
</tr>
<tr>
<td></td>
<td>ECP5726 Project Procurement Management</td>
<td>- 15</td>
</tr>
<tr>
<td></td>
<td>ECP5736 Facility Life Cycle Costing Management</td>
<td>- 15</td>
</tr>
<tr>
<td></td>
<td>ECP5745 Building Regulatory Management</td>
<td>- 15</td>
</tr>
<tr>
<td></td>
<td>ECP5800 Telecommunication Project Management</td>
<td>- 15</td>
</tr>
</tbody>
</table>

plus approved subjects currently available at Victoria University, Footscray Campus, such as:

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Computer Science</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>SCM5404 Financial Decision Support Systems</td>
<td>15</td>
</tr>
<tr>
<td>Two</td>
<td>SCM5801 Introduction to Computer Science</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>SCM5802 Information Systems</td>
<td>15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Decision Support Science</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>SCM5602 Quality Management and Statistics</td>
<td>15</td>
</tr>
<tr>
<td>Two</td>
<td>SCM5901 Introduction to Decision Support Systems</td>
<td>15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Business Management</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>BAO5735 Advanced Forecasting, Planning and Control</td>
<td>15</td>
</tr>
<tr>
<td>Two</td>
<td>BLO5513 Law of Employment</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>BLO5537 Business Law</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>BLO 6502 Law of Management</td>
<td>15</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Industrial Relations</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>BEO5544 Human Resource Economics</td>
<td>15</td>
</tr>
<tr>
<td>Two</td>
<td>BMO5545 Comparative Industrial Relations Systems</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>BMO5537 Topics in Employee Relations Management</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>BMO5589 Industrial Relations &amp; the Building Industry</td>
<td>15</td>
</tr>
</tbody>
</table>

The availability of electives from other areas/schools depends on staff resources and enrolments.

183
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 all 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 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 IELTS – an overall band score of 5+, for Dual Language Course.
- TOEFL – a score of 550+, and a Test of Written English score of 450+, and a Test of Written English score of 4+.

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.

Admission Requirements

In total, four electives are selected from the following:

- ECP5705 Project Management and Information Technology 15
- ECP5716 Project Development Analysis - 15
- ECP5726 Project Procurement Management 15
- ECP5736 Facility Life Cycle Costing - 15
- ECP5745 Building Regulatory Management 15
- ECP5800 Telecommunication Project Management

-plus approved subjects currently available at Victoria University, Footscray Park Campus. These approved subjects may include:

Computer Science

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCM5404</td>
<td>15</td>
</tr>
<tr>
<td>SCM5801</td>
<td>15</td>
</tr>
<tr>
<td>SCM5802</td>
<td>15</td>
</tr>
</tbody>
</table>

Decision Support Science

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCM5602</td>
<td>15</td>
</tr>
<tr>
<td>SCM5901</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: EMPM

Course Objectives

Since 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.

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+, TOEFL – a score of 450+, and a Test of Written English score of 4+.

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 approved Graduate Diplomas of Engineering plus a thesis/project of six 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 minor thesis of 12 hours per week for one semester or six hours per week for one semester or three hours per week for two semesters.

The Masters Degree structure is:

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Credit points</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>One</td>
</tr>
<tr>
<td>Four Graduate Diploma subjects</td>
<td>60</td>
</tr>
<tr>
<td>Four Graduate Diploma subjects</td>
<td>-</td>
</tr>
<tr>
<td>or part-time over 2 or 3 years</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 2</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>One</td>
</tr>
<tr>
<td>ECC8000 Research Thesis (full-time) or</td>
<td>60</td>
</tr>
<tr>
<td>ECC8010 Research Thesis (part-time) or</td>
<td>30</td>
</tr>
<tr>
<td>ECC8040 Project work (full-time)</td>
<td>30</td>
</tr>
<tr>
<td>Two Graduate Diploma subjects (full-time) or</td>
<td>-</td>
</tr>
<tr>
<td>ECC8050 Project work (part-time)</td>
<td>15</td>
</tr>
<tr>
<td>Two Graduate Diploma subjects</td>
<td>15</td>
</tr>
</tbody>
</table>

The Masters Degree program uses subjects of the existing Graduate Diplomas within the area for the coursework content. Additionally, students who complete other Graduate Diploma courses with Honours averages may be admitted to the Degree with advanced standing.

Students may choose from the following Graduate Diploma subjects:

- BLO5537 Business Law
- BLO5513 Law of Employment
- BAO5735 Human Resource Economics
- BLO6502 Law for Management
- BMO5545 Comparative Industrial Relations Systems
- BMO5537 Topics in Employee Relations Management
- BMO5589 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
- ECP5716 Project Development Analysis
- ECP5726 Project Procurement Management
- ECP5736 Facility Life Cycle Costing
- ECP5745 Building Regulatory Management
- ECP5800 Telecommunication Project 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.

Master of Engineering in Mechanical Engineering (Coursework)

Course Code: EMME

Course Objectives

The aim of this course is to provide students with an opportunity to achieve in-depth comprehension of engineering fundamentals and advanced skills of research and development essential in modern practice of Mechanical Engineering.

Admission Requirements

Admission to the course may be granted to the following applicants:

- Holders of a Four Year Bachelor of Mechanical Engineering degree, or an equivalent, accredited for Graduate membership of the Institution of Engineers, Australia, having either an Honours degree or an ordinary degree with significant professional industrial experience.
- Applicants with overseas degree in Mechanical Engineering at least at Bachelor level and judged by the School of Architectural, Civil and Mechanical Engineering to be of excellent standard.
- Applicants with qualifications at least at Bachelor level in other engineering and science disciplines with a minimum of three years industrial experience.

In addition, full fee international students must provide evidence of proficiency in the English Language:

- IELTS: an overall band score of 6+.
- TOEFL: a minimum score of 550+ and a TWE (Test of Written English) score of 5+'.

Course Duration

The Course is offered over a period of two years full time. Applicants of exceptional standard may get exemption of Semester 1 and may complete the course in one and a half years full time.

Course Structure

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Credit Points</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>ECC8000 Research Thesis (full-time) or</td>
<td>60</td>
</tr>
<tr>
<td>ECC8010 Research Thesis (part-time) or</td>
<td>30</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>
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<tr>
<td>ECP5620 Project Management and Contracts</td>
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<td>ECP5736 Facility Life Cycle Costing</td>
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<td>ECP5745 Building Regulatory Management</td>
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<tr>
<td>ECP5800 Telecommunication Project Management</td>
<td>15</td>
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<tr>
<td>SCM5404 Financial Decisions Support Systems</td>
<td>15</td>
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<tr>
<td>SCM5602 Quality Management and Statistics</td>
<td>15</td>
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<tr>
<td>SCM5801 Introduction to Computer Science</td>
<td>15</td>
</tr>
<tr>
<td>SCM5802 Information Systems</td>
<td>15</td>
</tr>
<tr>
<td>SCM5901 Introduction to Decision Support Systems</td>
<td>15</td>
</tr>
</tbody>
</table>

185
The School has a number of specific research areas such as:

- Research organisations.
- School staff members are active in a number of research projects.
- Policies of object-oriented languages. There is also interest in optimal pricing.
- Networking, modelling and simulation and the theory and application of database systems, parallel and image processing, computer systems, reliability, experimental design, statistical process control, multimedia information systems, industrial automation and power.

Additional areas of research focus include visual information and mathematicians in the area.

(RGMIA) is the focus of an international collaboration of leading 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. See the School website at http://csm.vu.edu.au for details.

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)

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) 9919 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.

Master of Science (Research)

Course Code: SRNL.

Coursework Programs

The School offers a range of coursework programs at postgraduate level:

Graduate Diplomas in:

- Computer Science
- Computer and Mathematical Sciences
- Multimedia Information Networking
- Software Engineering
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. The 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
- Multimedia & Networking
- Software Engineering

Mathematical Sciences:
- Production and Distribution Management
- Modelling for Finance
- Data Analysis

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
- SCM5813 Artificial Intelligence
- SCM5820 Networked Operations Systems Administration
- SCM5821 Introduction to Multimedia Systems
- SCM5822 Network Multimedia Systems
- SCM5824 Object Oriented Programming GD2

Mathematical Sciences Stream
- SCM5601 Statistical Forecasting
- SCM5602 Quality Management and Statistics
- SCM6902 Mathematical Programming I
- SCM6904 Simulation
- SCM6905 Sequencing and Scheduling
- SCM6906 Optimisation Techniques

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 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 Administration
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.

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.

(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 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: SGSE

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.

Course Structure
To complete the Graduate Diploma in Software Engineering requires the successful completion of four core subjects and four elective subjects.

Core Subjects

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCM5824</td>
<td>Object Oriented Programming GD2</td>
<td>15</td>
</tr>
<tr>
<td>SCM6822</td>
<td>Internet Programming</td>
<td>15</td>
</tr>
<tr>
<td>SCM5804</td>
<td>Software Engineering 1</td>
<td>15</td>
</tr>
<tr>
<td>SCM6841</td>
<td>Software Engineering 2</td>
<td>15</td>
</tr>
</tbody>
</table>

Elective Subjects

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credit points</th>
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</thead>
<tbody>
<tr>
<td>SCM5800</td>
<td>Object Oriented Programming GD1</td>
<td>15</td>
</tr>
<tr>
<td>SCM5802</td>
<td>Information Systems</td>
<td>15</td>
</tr>
<tr>
<td>SCM5803</td>
<td>Data Structures and Programming</td>
<td>15</td>
</tr>
<tr>
<td>SCM5805</td>
<td>Communication and Networks</td>
<td>15</td>
</tr>
<tr>
<td>SCM5807</td>
<td>Advanced Information Systems</td>
<td>15</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCM6845</td>
<td>Object Oriented Technology 1M</td>
<td>15</td>
</tr>
<tr>
<td>SCM6846</td>
<td>Object Oriented Technology 2M</td>
<td>15</td>
</tr>
<tr>
<td>SCM5804</td>
<td>Software Engineering 1</td>
<td>15</td>
</tr>
<tr>
<td>SCM6841</td>
<td>Software Engineering 1M</td>
<td>15</td>
</tr>
<tr>
<td>SCM6842</td>
<td>Software Engineering 2M</td>
<td>15</td>
</tr>
<tr>
<td>SCM6819</td>
<td>User Interface Design</td>
<td>15</td>
</tr>
<tr>
<td>SCM6821</td>
<td>Decision Support Technology</td>
<td>15</td>
</tr>
<tr>
<td>SCM6822</td>
<td>Internet Programming</td>
<td>15</td>
</tr>
<tr>
<td>SCM6823</td>
<td>Database Design, Management and Administration</td>
<td>15</td>
</tr>
<tr>
<td>SCM6824</td>
<td>Advanced Database Paradigms</td>
<td>15</td>
</tr>
<tr>
<td>SCM6825</td>
<td>Multimedia Systems Design and Development</td>
<td>15</td>
</tr>
<tr>
<td>SCM6827</td>
<td>Research Perspectives in Computer Science</td>
<td>15</td>
</tr>
</tbody>
</table>

Mathematical Sciences

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCM6502</td>
<td>Image Processing Algorithms</td>
<td>15</td>
</tr>
<tr>
<td>SCM6601</td>
<td>Reliability and Maintenance</td>
<td>15</td>
</tr>
<tr>
<td>SCM6606</td>
<td>Time Series Analysis</td>
<td>15</td>
</tr>
<tr>
<td>SCM6608</td>
<td>Multivariate Analysis</td>
<td>15</td>
</tr>
<tr>
<td>SCM6902</td>
<td>Mathematical Programming I</td>
<td>15</td>
</tr>
<tr>
<td>SCM6904</td>
<td>Simulation</td>
<td>15</td>
</tr>
<tr>
<td>SCM6905</td>
<td>Sequencing and Scheduling</td>
<td>15</td>
</tr>
<tr>
<td>SCM6906</td>
<td>Optimisation Techniques</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>Minor Thesis</td>
<td>15</td>
</tr>
</tbody>
</table>

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.

Courses:
- 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) Supplementary assessment may be initiated by a subject
(iii) Supplementary assessment will require application, authorisation, and the payment of fees as defined by the School from time to time.
(iv) Where a student's progress is unsatisfactory, the School's regulations apply to both full-time and part-time students.

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.

Course Structure
To complete the Master of Science in Software Engineering requires the successful completion of eight (8) core 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).
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 Telecommunication, 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
- Telecommunication

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) 9919 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)
or
SPH8000 Research (Full Time)
SPH8010 Research (Part Time)

Master of Engineering (Research)
Course Code: ERER

Master of Science (Research)
Course Code: SRMS

Course Structure
EEE8000 Research (Full Time)
EEE8010 Research (Part Time)
or
SPH8000 Research (Full Time)
SPH8010 Research (Part Time)

Postgraduate Programs by Coursework
The School offers a range of coursework programs at postgraduate level:
Graduate Certificate in:
• Microelectronic Engineering
• Systems and Control Engineering
• Telecommunication Engineering
Graduate Diplomas in:
• Microelectronic Engineering
• Systems and Control Engineering
• Telecommunication Engineering
• Master of Engineering in:
• Electrical and Electronic Engineering
• Microelectronic Engineering
• Systems and Control Engineering
• Telecommunication Engineering
• Master of Engineering Science in:
• Computer and Microelectronic Engineering (Coursework)
• Double Degree
• Master of Engineering in Microelectronic Engineering/
  Master of Engineering Science in Computer and
  Microelectronic 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.
(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.
(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 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:

- high levels of both logical and lateral thinking development so that the graduates can lead constructive change through innovation;
- the ability to use a multi-disciplinary engineering philosophy towards the synthesis, design and integration of solutions; and
- 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:

- 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;
- 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 6.5, 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.

Core Units

<table>
<thead>
<tr>
<th>Code</th>
<th>Course 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>
</tbody>
</table>

Electives

<table>
<thead>
<tr>
<th>Code</th>
<th>Course Name</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<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</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>
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<tr>
<td>EEE6015</td>
<td>Special Electives</td>
<td>15</td>
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<tr>
<td>EEE6016</td>
<td>Verilog HDL</td>
<td>15</td>
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<tr>
<td>EEE6017</td>
<td>Digital System Design with Verilog 15</td>
<td>15</td>
</tr>
<tr>
<td>EEE6018</td>
<td>Analog &amp; Mixed Signal Design</td>
<td>15</td>
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<tr>
<td>EEE6020</td>
<td>Minor Project</td>
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<tr>
<td>EEE6030</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 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.
Graduate Certificate in Systems and Control Engineering

Course Code: ETSY

Graduate Diploma in Systems and Control Engineering

Course Code: EGSY

Master of Engineering in Systems and Control Engineering

Course Code: EMSY

Course Objectives
The objective of this group of courses is to provide opportunities for suitably qualified persons to acquire skills and expertise necessary to undertake research and development in the field of automation and control engineering.

Admission Requirements
Admission to the course requires a four year Bachelor of Engineering degree in Electrical & Electronic Engineering, or an equivalent.

Full-fee paying international students are required to have qualifications equivalent to above, and in addition, they must provide evidence of proficiency in English Language, as assessed by:

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

Course Duration
The duration of the course, in the normal mode of delivery, is one and half year for Master of Engineering, one year for Graduate Diploma, and a half year for Graduate Certificate.

Course Structure
The course is unit based and consists of two core subjects (each of one unit), a set of elective subjects (each of one unit), a minor project (of two units), and a major project (of four units). A unit is worth 12 credit points.

The eligibility for the Graduate Certificate requires the successful completion of the two core subjects and two elective subjects.

The eligibility for the Graduate Diploma requires the successful completion of either (a) the two subjects and six elective subjects, or (b) the two core subjects, four elective subjects, and a minor subject.

The eligibility for the Master of Engineering requires the successful completion of either (a) the two core subjects, eight elective subjects, and a minor project, or (b) the two core subjects, six elective subjects, and a major project.

Projects

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Project Name</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEA6350</td>
<td>Minor Project</td>
<td>30</td>
</tr>
<tr>
<td>EEA6360</td>
<td>Major Project</td>
<td>60</td>
</tr>
</tbody>
</table>

Assessment
Assessment will be based on a combination of written assignments, laboratory exercises, project work, and formal examinations. Supplementary assessments are not normally available.

Graduate Certificate in Telecommunication Engineering

Course Code: ETTT

Graduate Diploma in Telecommunication Engineering

Course Code: EGTE

Master of Engineering in Telecommunication Engineering

Course Code: EMTT

Course Objectives
The objective of the course is to provide opportunities for suitably qualified persons to acquire skills and expertise necessary to undertake research and development 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 an equivalent.

Full-fee paying international students are required to have qualifications equivalent to above, and in addition, they must provide evidence of proficiency in English Language, as assessed by:

- 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+.

Course Duration
The duration of the course, in the normal mode of delivery, is one and half year for Master of Engineering, one year for Graduate Diploma, and a half year for Graduate Certificate.

Course Structure
The course is unit based and consists of two core subjects (each of one unit), a set of elective subjects (each of one unit), a minor project (of two units), and a major project (of four units). A unit is worth 12 credit points.

The eligibility for the Graduate Certificate requires the successful completion of the two core subjects and two elective subjects.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Subject Name</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEA6310</td>
<td>Linear Systems and Control</td>
<td>15</td>
</tr>
<tr>
<td>EEA6320</td>
<td>Optimal Filtering and Parameter Estimation</td>
<td>15</td>
</tr>
<tr>
<td>Elective Subjects</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EEA6311</td>
<td>Modelling and Computer Control</td>
<td>15</td>
</tr>
<tr>
<td>EEA5321</td>
<td>Fuzzy and Neural Control</td>
<td>15</td>
</tr>
<tr>
<td>EEA6331</td>
<td>Robotics and Programmed Control</td>
<td>15</td>
</tr>
<tr>
<td>EEA6341</td>
<td>Measurement Technology</td>
<td>15</td>
</tr>
<tr>
<td>EEA6351</td>
<td>Power Systems Operation and Control</td>
<td>15</td>
</tr>
</tbody>
</table>
The objective of the course is to provide practising electrical and electronic engineers with higher levels of knowledge and skills in their chosen areas of specialization. The course enables graduates to:

- Broaden their technological base from their first degree to a chosen area of specialization;
- Obtain an in-depth understanding of the relevant theoretical principles involved in the chosen area of specialization;
- Develop skills necessary to carry out independent research and development work related to the chosen areas of specialization;
- Acquire expertise and keep abreast with the latest developments in the chosen area of specialization.

Assessment
Assessment will be based on a combination of written assignments, laboratory exercises, project work, and formal examinations. Supplementary assessments are not normally available.

Master of Engineering in Electrical and Electronic Engineering

Course Code: EEME:
The Master of Engineering in Electrical and Electronic Engineering (Coursework) was introduced in 1988 and was revised in 2004. The course is application oriented and is intended for those who aspire to senior technical positions in various specialised areas of Electrical and Electronic Engineering.

Course Objectives

The eligibility for the Master of Engineering requires the successful completion of either (a) the two core subjects, eight elective subjects, and a minor project, or (b) the two core subjects, six elective subjects, and a major project. The major project may be substituted with the project subjects.

Core Subjects

- EET6510 Communication Theory
- EET6520 Digital Communication Principles

Elective Subjects

- EET6511 Data Network Analysis and Design
- EET6521 Digital Switching and Signalling Systems
- EET6531 Wireless Communication Subsystems
- EET6541 Multimedia and Internet Technology
- EET6551 Microwave Electronic Circuit Design
- EET6561 Local Area and Broadband Networks
- EET6512 Intelligent Networks and Network Management

Project Subjects

- EET6501 Communication System Modelling and Simulation 1
- EET6502 Communication System Modelling and Simulation 2

Projects

- EET6550 Minor Project
- EET6560 Major Project

Assessment
Assessment will be based on a combination of written assignments, laboratory exercises, project work, and formal examinations. Supplementary assessments are not normally available.

Admission Requirements

Admission to the course requires a four year Bachelor of Engineering degree in Electrical & Electronic Engineering, or an equivalent.

Full-fee paying international students are required to have qualifications equivalent to above, and in addition, they must provide evidence of proficiency in English Language, as assessed by:

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+

Course Duration
The duration of the course, in normal mode of delivery, is two years for full-time students and a part-time equivalent for part-time students.

Course Structure

The course is unit based and offers a range of study units in a chosen area of specialisation, consisting of core and elective subjects (each of one unit), a research project (of four units), and a project management program (of four units). A unit is worth 15 credit points. The completion of the course requires the completion of 16 units comprising the 4 core subjects in a chosen area of specialisation, 4 elective subjects in the chosen area of specialisation, 4 other units at Masters level from any Masters programs, and, either a research project in the chosen area of specialisation, or the project management program.

Automation Engineering Specialisation

Course Code: EEE:
The Master of Engineering in Electrical and Electronic Engineering (Coursework) was introduced in 1988 and was revised in 2004. The course is application oriented and is intended for those who aspire to senior technical positions in various specialised areas of Electrical and Electronic Engineering.

Course Objectives

The objective of the course is to provide practising electrical and electronic engineers with higher levels of knowledge and skills in their chosen areas of specialization. The course enables graduates to:

- Broaden their technological base from their first degree to a chosen area of specialization;
- Obtain an in-depth understanding of the relevant theoretical principles involved in the chosen area of specialization;
- Develop skills necessary to carry out independent research and development work related to the chosen areas of specialization;
- Acquire expertise and keep abreast with the latest developments in the chosen area of specialization.

Assessment
Assessment will be based on a combination of written assignments, laboratory exercises, project work, and formal examinations. Supplementary assessments are not normally available.

Microelectronic Engineering Specialisation

Course Code: EE:
The course is application oriented and is intended for those who aspire to senior technical positions in various specialised areas of Electrical and Electronic Engineering.

Course Objectives

The objective of the course is to provide practising electrical and electronic engineers with higher levels of knowledge and skills in their chosen areas of specialization. The course enables graduates to:

- Broaden their technological base from their first degree to a chosen area of specialization;
- Obtain an in-depth understanding of the relevant theoretical principles involved in the chosen area of specialization;
- Develop skills necessary to carry out independent research and development work related to the chosen areas of specialization;
- Acquire expertise and keep abreast with the latest developments in the chosen area of specialization.

Assessment
Assessment will be based on a combination of written assignments, laboratory exercises, project work, and formal examinations. Supplementary assessments are not normally available.
Elective Subjects

EEH6007 Advanced VLSI Design  15
EEH6008 VLSI Digital Signal Processing Systems  15
EEH6009 Reliability and Testability in IC Design  15
EEH6104 RF & Mixed Signal Design  15
EEH6106 Verilog HDL  15
EEH6107 Digital System Design with Verilog  15
EEH6108 Analog & Mixed Signal Design  15

Photonic Engineering Specialisation

Elective Subjects

EPP6511 Fibre Optic Communication Systems  15
EPP6512 Advanced Fibre Optics  15
EPP6521 Optics and Lasers  15
EPP6522 Digital Communication over Optical Networks  15

Telecommunication Engineering Specialisation

Core Subjects

EET6510 Communication Theory  15
EET6520 Digital Communication Principles  15
EET6521 Digital Switching & Signalling Systems  15
EET6522 Telecom. Tariffs & Teletraffic Engineering  15

Elective Subjects

EET6511 Data Network Analysis & Design  15
EET6512 Intelligent Networks & Network Management  15
EET6531 Wireless Communication Subsystems  15
EET6532 Microwave & Satellite Communication Systems  15
EET6541 Multimedia & Internet Technology  15
EET6542 Mobile & Personal Communication Systems  15
EET6551 Microwave Electronic Circuit Design  15
EET6552 Computer Networks & Networking Software  15
EET6561 Local Area & Broadband Networks  15
EET6562 Digital Signal Processing  15

Project Units

EIEE6000 Research Project  60
EIEE6050 Project Management Program  60

Assessment

Assessment will be based on a combination of written assignments, laboratory and project works, and formal examinations and presentations. Supplementary assessments are not normally available.

Master of Engineering Science in Computer & Microelectronic Engineering (Coursework)

Course Code: EMCE

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:
- 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 5+.

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

Project Subjects

EEH6101 ASIC Design  12
EEH6102 Custom IC Design B  12

Core Subject

EEH6003 EDA Tools and Design Methodology  12

Elective Subjects

EEH6111 Digital Circuit Design  12
EEH6121 Basic IC Design/Devices  12
EEH6122 Custom IC Design A  12
EEH6132 Integrated Circuit Testability  12
EEH6016 Verilog HDL  12
EEH6017 Digital System Design with Verilog  12
EEH6018 Analog & Mixed Signal Design  12
EEH6151 VHDL and High Level Synthesis  12
EEH6152 Advanced Microprocessors  12

Plus other discipline electives.

Assessment

Assessment will be based on a combination of written assignments, laboratory exercises, project works, tests, and examinations.
Double Degree

Master of Engineering in Microelectronic Engineering / Master of Engineering Science in Computer and Microelectronic Engineering

Course Code: EMMC

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 and/or the computer systems engineer today is faced with many challenges brought about by the rapid advances in computer, multimedia and telecommunication technology. The double degree in Master of Engineering in Microelectronics Engineering & Master of Engineering Science in Computer and Microelectronic Engineering course addresses all aspects of this technology, from high level specification of microelectronic and computer systems, through implementation alternatives, and the effective use of design tools, to realisation of integrated circuits and advanced computer architectures. The course aims to produce engineers with the necessary skills and practical experience to satisfy the requirements of the microelectronics and the computer systems industry.

Course Objectives
The general aims of the course are to provide graduates with:

- high levels of both logical and lateral thinking development so that the graduates can lead constructive change through innovation;
- the ability to use a multi-disciplinary engineering philosophy towards the synthesis, design and integration of solutions; and
- 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:

- develop integrated circuit design expertise in embedded systems, digital, mixed signal and system-on-chip systems design and verification, and advanced computer systems architecture;
- develop a basic understanding of the device physics, the fabrication process and the testing to the level needed by IC designers and computer systems engineers;
- develop the advanced technical and algorithmic skills necessary to master state of the art microelectronic technology and computer system;
- develop research skills necessary to obtain specialist knowledge of issues pertinent to integrated circuit design and computer systems;
- 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 the university will carry out student selection into this course.

Course Duration
The duration of the double degree, in normal mode of delivery, is two years full-time or part-time equivalent.

Course Structure
The double degree in Master of Engineering in Microelectronics Engineering & Master of Engineering Science in Computer and Microelectronic Engineering course is structured to allow students to exit at five different academic levels with either, Graduate Certificate, Graduate Diploma, Master of Engineering Science (Computer & Microelectronic Engineering), Master of Engineering (Microelectronic Engineering) or Double Degree – Master of Engineering (Microelectronic Engineering)/Master of Engineering Science (Computer & Microelectronic 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 four core units and four microelectronics electives or six units and minor project, Master of Engineering Science (Computer & Microelectronic Engineering) requires successful completion of 4 core units and 4 computer systems electives, Master of Engineering (Microelectronic Engineering) requires successful completion of either four core unit, six microelectronics electives and a minor project or four core units, four microelectronics electives and a major project. The Double Degree - Master of Engineering (Microelectronic Engineering) / Master of Engineering Science (Computer & Microelectronic Engineering) requires successful completion of either four core unit, six microelectronics electives, four computer systems electives and a minor project four core units, four microelectronics electives, four computer systems electives and a major project.

Core Units

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course 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>EEH6013</td>
<td>Project Management &amp; Entrepreneurship</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>EEH6014</td>
<td>RF Design</td>
<td>15</td>
</tr>
<tr>
<td>EEH6018</td>
<td>Analog and Mixed Signal Design</td>
<td>15</td>
</tr>
<tr>
<td>EEH6102</td>
<td>Custom IC Design B</td>
<td>15</td>
</tr>
</tbody>
</table>
Muscle Physiology

A wide variety of valuable skills within a project tailored to satisfy muscle metabolism and physiology, nutrition, lifestyle management, reproductive physiology, molecular biology, cancer, genetics, exercise, research techniques to investigate the functioning of the human body. The major focus of their work includes: Biochemistry of muscle and development of the foetal and neonatal lung; diabetes during pregnancy; the development of the neural tube of the embryo; and the interrelationships between physiological and psychological parameters in response to stressors on the regulation of the maternal and reproductive cycles.

Implantation and Embryo Development: Studies into implantation and embryo development include: the role of steroid and peptide hormones in the regulation and function of the placenta; 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 focus must have developed sufficiently to adapt to its extraterrestrial 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.

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.
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 groups 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
- 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.

Biotechnology Research Group

Research within the Biotechnology 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 exopoly saccharide 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 Faculty’s Food Safety, Authenticity and Quality Unit, and with external organisations including Food Science Australia and Agrifood Technology.

Coursework Program
Master of Science in Food Science and Technology
Master of Science in Biotechnology (Biotechnology and Bioinformatics Streams)

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 240 credit points.

Subject to demand, the course is offered on a full time basis over two year or on a part time basis over four years.

Course Structure

Two-year program

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBF2410</td>
<td>Food Components</td>
<td>10</td>
</tr>
<tr>
<td>SBF6710</td>
<td>Food Analysis</td>
<td>20</td>
</tr>
<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>
<tr>
<td>SBF6920</td>
<td>Major Project (to run over 2 semesters)</td>
<td>40</td>
</tr>
<tr>
<td>SCM3614</td>
<td>Experimental Design</td>
<td>10</td>
</tr>
</tbody>
</table>

Elective subjects (commodity)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBF6721</td>
<td>Fruit &amp; Vegetable Science &amp; Technology</td>
<td>20</td>
</tr>
<tr>
<td>SBF6722</td>
<td>Grain Science &amp; Technology</td>
<td>20</td>
</tr>
<tr>
<td>SBF6723</td>
<td>Muscle Food Science &amp; Technology</td>
<td>20</td>
</tr>
<tr>
<td>SBF6724</td>
<td>Dairy Science &amp; Technology</td>
<td>20</td>
</tr>
</tbody>
</table>

Elective subjects (general)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBF3240</td>
<td>Functional Foods</td>
<td>10</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>SBF6930</td>
<td>Industry Training</td>
<td>20</td>
</tr>
</tbody>
</table>

40 credit points selected from the following or relevant subjects complementary to objective of the course:

60 credit points selected from the following:

40 credit points selected from the following or relevant subjects complementary to objective of the course:
Master of Science – Biotechnology (Biotechnology and Bioinformatics Streams)

Course Code: SMBT

Course Objectives
This Masters program is designed to provide students with skills, knowledge and expertise in the field of Biotechnology and related areas. The specific aims of the course are to provide students with:

(a) A sound knowledge at an advanced level of the scientific principles underlying the basis of the biotechnology industry and research.
(b) Problem solving skills.
(c) The skills to use and locate information on problems relating to biotechnology from textbooks, scientific journals and the Internet.
(d) The skills to develop a research project proposal which will include a summary of the techniques and methodology required for a research proposal.
(e) Excellent oral and written communication skills including discussions on intellectual property, commercialization and ethical considerations.

Admission Requirements
Applications will be considered from graduates who have completed an undergraduate degree, comprising the equivalent of at least three years full-time study in an approved area of study. Eligible areas include Biology, Chemistry, Biochemistry, Biomedical Sciences, Veterinary Science, MBBS and other related fields. Academic performance will be required to be, on average, at least at credit level in the undergraduate degree. A substantial amount of laboratory work will be required to have been completed in the undergraduate degree so that students are already proficient in basic biological, microbiological and chemical laboratory techniques. In addition, there will be the normal requirement for a minimum score of 6.5 in the IELTS English language test. The Selection Officer for the course will assess each application to ensure that the applicant meets all of the above requirements before an offer is made. An interview may also be required in some cases.

Course Duration
The duration of the course is two years full-time with the option of a part-time equivalent.

Course Structure
This Biotechnology course consists of two streams, Biotechnology and Informatics, each of which involves a total of 16 subjects totaling 240 credit points for the course. In the first year of the degree, students for each stream are required to take 8 core subjects. In the second year of the degree students in the Biotechnology stream are required to choose 4 elective subjects from group A and 4 electives from group B. Students in the Bioinformatics stream must take 4 core subjects and choose 4 electives from group B.

### Biotechnology and Bioinformatics Streams

#### (Group A, Core Subjects)

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Semesters</th>
<th>Credit Points</th>
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</thead>
<tbody>
<tr>
<td>Semester 1</td>
<td></td>
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<tr>
<td>SMS5110 Molecular Genetics Theory</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>SMS5120 Applied Genetic Engineering</td>
<td>15</td>
<td></td>
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<tr>
<td>SMS5140 Bioprocessing Technology Principles</td>
<td>15</td>
<td></td>
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<tr>
<td>SMS5145 Bioprocessing Technology Applications</td>
<td>15</td>
<td></td>
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<tr>
<td>Semester 2</td>
<td></td>
<td></td>
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<tr>
<td>SMS5130 Functional Genomics &amp; Bioinformatics</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>SMS5135 Functional Genomics and Bioinformatics Applications</td>
<td>15</td>
<td></td>
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<tr>
<td>SMS5150 Ethics and Regulatory Affairs in Biotechnology</td>
<td>15</td>
<td></td>
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<tr>
<td>SMS5160 Intellectual Property and Commercialization</td>
<td>15</td>
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</tbody>
</table>

#### Year 2

#### Elective subjects for Biotechnology Stream

**Group B, Choice of 4**

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Credit Points</th>
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</thead>
<tbody>
<tr>
<td>Semester 1</td>
<td></td>
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<tr>
<td>SMS6130 Bioinformatics 1</td>
<td>15</td>
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<tr>
<td>SMS6140 Cell Culture and Fermentation Technology</td>
<td>15</td>
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<tr>
<td>SMS6141 Animal and Plant Biotechnology</td>
<td>15</td>
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<tr>
<td>SMS6170 Drug Design and Development</td>
<td>15</td>
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<tr>
<td>Semester 2</td>
<td></td>
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<tr>
<td>SMS6135 Bioinformatics 2</td>
<td>15</td>
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<tr>
<td>SMS6142 Biotechnology Research Methods</td>
<td>15</td>
</tr>
<tr>
<td>SMS6145 Protein Production, Purification and Analysis</td>
<td>15</td>
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</tbody>
</table>

### Core Subjects for Bioinformatics Stream

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>Credit Points</th>
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<tbody>
<tr>
<td>Semester 1</td>
<td></td>
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<tr>
<td>SMS6130 Bioinformatics 1</td>
<td>15</td>
</tr>
<tr>
<td>SCM5800 Object Oriented Programming</td>
<td>15</td>
</tr>
<tr>
<td>Semester 2</td>
<td></td>
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<tr>
<td>SMS6135 Bioinformatics 2</td>
<td>15</td>
</tr>
<tr>
<td>SCM6607 Statistical Computing</td>
<td>15</td>
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</tbody>
</table>

### Electives

(4 Electives from Group B for Biotechnology and Bioinformatics Streams)

<table>
<thead>
<tr>
<th>Credit Points</th>
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<tbody>
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201
Packaging and Polymer Research Unit

Courses Offered
The Packaging and Polymer Research Unit offers postgraduate courses leading to the award of:
- Doctor of Philosophy
- Master of Engineering (Research)
A wide variety of research projects are available. Most programs offer participation in industry projects.
Additionally the Unit is currently developing a program for a degree qualification in packaging.
The Unit also offers a variety of short training courses on various topics relevant to the packaging science and technology domain. In addition the Unit offers the following 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 Packaging and Polymer Research Unit (PPRU) has strong associations with scientists and engineers from Schools across the Faculty as well as the wider University. Its purpose is to complement the University's educational courses as relevant to packaging technology with research programs in areas concerned with the packaging and distribution of goods. Through the Sustainable Packaging Alliance, a strategic R&D initiative in collaboration with RMIT Centre for Design and Birubi Innovation, the Unit's research focus is very much driven by the need to develop environmentally, economically and socially sustainable packaging systems. In addition to its research program and education activities, the Unit undertakes technical studies and testing for industry clients.

Mission
The mission of the Unit is to be a leading, internationally-recognized provider of education, research and related services in packaging and polymer science and technology.

The Unit is particularly mindful of its role in the development of partnerships with industry, commerce and government through collaborative research, consultancy, educational and training programs and dissemination of technical information. It has established a variety of research collaborations and networks with various research organizations in Australia and overseas.

Research Activities
The Unit's research program is very much driven by the needs of industry, government and community that are identified through the Sustainable Packaging Alliance. Research programs currently in progress include anti-microbial and active food packaging; the use of recycled materials in food contact applications; environmental impact evaluation and strategy development; measurement, analysis and laboratory simulation of distribution environments; odour characterization and oxidative stability of polymer materials; development of new techniques for sustainable packaging design and evaluation; and others.

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 environmental leadership, ecology of freshwater wetlands, invertebrate systematics and biogeography, microbial ecology of aquatic systems, ecology and management of exotic marine pests and ecotoxicology of marine 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 Queenscliff laboratories of the Victorian Marine Science Consortium 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 other aspects of global change such as the greenhouse effect.

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>
</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.

<table>
<thead>
<tr>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCS6000 Thesis</td>
</tr>
<tr>
<td>SCS6010 Thesis part-time</td>
</tr>
<tr>
<td>(60 per semester)</td>
</tr>
<tr>
<td>SCS6020 Thesis part-time</td>
</tr>
<tr>
<td>(30 per semester)</td>
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</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.
## Postgraduate Subject Details

### BAO5735 ADVANCED FORECASTING, PLANNING AND CONTROL

**Campus** City Flinders  
**Prerequisite(s)** Nil  
**Content** The subject aims to develop students' 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.

### BEO5304 INTERNATIONAL BUSINESS OPERATION

**Campus** Footscray Park  
**Prerequisite(s)** Nil  
**Content** This subject examines the different methods of conducting international trade in goods and services. It involves a mixture of economic, management, marketing and legal principles. In identifying and understanding the limitations of a traditional export based expansion program, alternative strategies involving one or more expansion methods are developed. Topics include: an overview of the imperatives and problems associated with trade expansion starting with the basic import/export transaction; the strategic aspects of distribution and agency arrangements; more complex international arrangements; strategic alliances focusing on contract manufacturing and agency service provision arrangements; and the challenges of intellectual property based and technology transfer agreements.  
**Required Reading** To be advised by lecturer.  
**Class Contact** Three hours per week comprising of two hours of lecture and one hour of tutorial.  
**Assessment** Term papers and presentation, 40%; final examination, 60%.

### BEO5544 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 labour market groups; the impact of unions on wages; payment 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** 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.

### BEO6400 RETAIL MANAGEMENT STRATEGIES

**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 between 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.

### BHO6505 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.

### BLS5513 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 for 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, formation of a contract. Examination of the 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 Mistatements, 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.


**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.

**BLO5602 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 Mistatements, 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.

**BMO5537 TOPICS IN EMPLOYEE RELATIONS MANAGEMENT**

**Campus** City Flinders.

**Prerequisite(s)** Nil.

**Content** The subject aims to provide students with an opportunity to study in School, issues of contemporary importance in industrial relations. On completion of the subject, students should be able to critically examine issues and identify their impact on industrial relations and examine the change process as well as understanding the options for dealing with change. It will include topics such as new technology, industrial democracy, women and the labour market, occupational health and safety, and contemporary reforms to organisations.

**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** Two class papers, 50%; research essay, 50%. 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 principles, 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 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** Twelve hours per week for one semester.

**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.

**ECC8040 PROJECT WORK (FULL-TIME)**

**Campus** Footscray Park

**Prerequisite(s)** Nil.

**Content** The subject enables students to: identify a project 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 process 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.

**ECC8050 PROJECT WORK (PART-TIME)**

**Campus** Footscray Park

**Prerequisite(s)** Nil.

**Content** The subject enables students to: identify a project 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 process 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.

**ECP5600 PROJECT MANAGEMENT FUNDAMENTALS**

**Campus** Footscray Park

**Prerequisite(s)** Nil.

**Content** The subject will introduce and define 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; trend 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 control and regulations applicable to buildings. (New BCA) Role and task of functional activities of project managers: setting of project objectives; feasibility analysis; setting of budget; control of contract time and quality; risk apportionment between various parties. Design to verify: requirements planning for urban developments; Value management of small to medium size projects; role descriptions of project manager, architect, consultants and owners. Environmental and social constraints. Preparation EIS for building development project. Case studies illustrating the various aspects of project management.

**Required Reading** To be advised by lecturer.

**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.

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**ECP5610 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 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 manager. Planning 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.

**Required Reading** To be advised by lecturer.

**Recommended Reading**

Class Contact Three hours per week for one semester.

Assessment By assignments and projects and class participation. Assignment 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 procurement considerations, current computer usage in this industry; overview of computer hardware and software; current computer trends; overview of Project Management Information Systems (spreadsheet/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.

ECP5716 PROJECT DEVELOPMENT ANALYSIS

Campus Footscray Park

Prerequisite(s) Nil.


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.

ECP5726 PROJECT PROCUREMENT MANAGEMENT

Campus Footscray Park

Prerequisite(s) Nil.

Content The subject will develop an understanding of modern building technology with respect to build-ability 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 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.

ECP5736 FACILITY 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. Discounting 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 refurbishment or demolition 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 maintenance 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 degradation. Information and management systems. Building services 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.

**Recommended Reading**

**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 component to pass this subject. Supplementary assessment will not be available.

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**ECP5800 TELECOMMUNICATION PROJECT MANAGEMENT**

**Campus** Footscray Park

**Prerequisite(s)** ECP5600 Project Management Fundamentals (normally).


**Required Reading** To be advised by lecturer.

**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 at least 50% in each assessable component to pass this subject.

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**EEA6310 LINEAR SYSTEMS AND CONTROL**

**Campus** Footscray Park

**Prerequisite(s)** A knowledge of linear control systems covered in a standard B.Eng course.


**Required Reading**

**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** Two Class Tests (1 hr each) 20%; Final Examination (3 hrs) 80%. A pass in each component is necessary for a subject pass.
EEA6310 MODELLING AND COMPUTER CONTROL

Campus Footscray Park

Prerequisite(s) EEA6310 or equivalent subjects.

Co-requisite Nil


Required Reading

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.

EEA6312 MODEL BASED PROCESS CONTROL

Campus Footscray Park

Prerequisite(s) EEA6310 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.

Recommended Reading

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.

EEA6320 OPTIMAL FILTERING AND PARAMETER ESTIMATION

Campus Footscray Park

Prerequisite(s) A knowledge of linear control systems covered in a standard B.Eng. course.


Required Reading

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 Two Class Tests (1 hr each) 20%; Final Examination (3 hrs) 80%. A pass in each component is necessary for a subject pass.

EEA6321 FUZZY AND NEURAL CONTROL

Campus Footscray Park

Prerequisite(s) Nil

Co-requisite Nil


Required Reading

Recommended Reading

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 lecturer.

EEA6322 PROCESS INSTRUMENTATION AND CONTROL

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. This includes two hours of lecture per week, one hour of tutorial and one hour of laboratory for every two weeks.

Assessment Laboratory exercises, 20%; Examination, 80%. A pass in each component of assessment is required for a subject pass.

EEA6331 ROBOTICS AND PROGRAMMED CONTROL

Campus Footscray Park

Prerequisite(s) Completed an undergraduate degree in Engineering or Science


Required Reading

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.

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.

EEA6341 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.

EEA6350 MINOR PROJECT
Campus Footscray Park
Prerequisite(s) EEA6310, EEA6320
Content Each student will undertake an individual research on a topic allocated to him or her under the supervision of an academic staff over the duration of a semester. Regular meetings will be held between the students and their supervisors in the form of seminars where students will report their progress in the form of formal presentations. In addition, informal meetings between students and their supervisors will take place as and when required. In the process, the student will be exposed to research related matters such as Research Methodology, Literature Reviews, Feasibility Studies, Experiment Design, Modelling and Simulation Techniques and Tools, Results Validation and Decision Making, Report Writing, Structured Documentation, and Scientific Presentation.
Required Reading To be advised by the supervisor of the project.
Recommended Reading To be advised by the supervisor of the project.
Class Contact Six hours per week for one semester, comprising three hours per week group seminar, and three hours per week (on average) individual meetings, discussions, etc. with respective supervisors.
Assessment Regular seminar presentations (3 seminars, each of 20 min. duration) 30%; Final report (Approximately 12,000 words) 50%; Final presentation (of 30 min. duration) 20%.

EEA6360 MAJOR PROJECT
Campus Footscray Park
Prerequisite(s) EEA6310, EEA6320
Content Each student will undertake an individual research under the guidance of an academic staff on a suitable topic, over the duration of a semester. Lectures, seminars, and regular meetings will be held collectively to expose students to research related matters such as Research Methodology, Literature Reviews, Feasibility Studies, Experiment Design, Modelling and Simulation Techniques and Tools, Results Validation and Decision Making, Report Writing, Structured Documentation, and Scientific Presentation.
Required Reading To be advised by the supervisor of the project.
Recommended Reading To be advised by the supervisor of the project.
Class Contact Twelve hours per week for one semester, comprising three hours per week group seminar, three hours per week group meetings and discussions with fellow researchers and project supervisors, and six hours per week of independent study.
Assessment Regular seminar presentations (3 seminars, each of 20 min. duration) 30%; Final Report (Approximately 25,000 words) 50%; Final presentation (of 40 min. duration) 20%.

EEC6012 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.

EEE6000 RESEARCH PROJECT
Campus Footscray Park
Prerequisite(s) Completion of at least eight units of the course.
Content Each student will undertake an in-depth investigation of a topic allocated in the student's area of specialisation, over the duration of a semester, under the guidance of an academic supervisor. The student will produce a report and present it to an audience as a publication. In the process the student will be exposed to research related matters such as research methodology, literature surveys, problem definition, feasibility studies, experiment design, modelling and simulation, analysis of results, formulation of conclusions, documentation, and presentation.
Required Reading To be advised by the supervisor of the project.
Recommended Reading To be advised by the supervisor of the project.
Class Contact Twelve hours per week for one semester comprising three hours per week group seminar, three hours per week group meetings and discussions with fellow researchers and project supervisors, and six hours per week of independent study.
Assessment Regular seminar presentations (3 seminars, each of 20 min. duration) 30%; Final Report (Approximately 25,000 words) 50%; Final presentation (of 40 min. duration) 20%.
### EEE6050 PROJECT MANAGEMENT PROGRAM

**Campus** Footscray Park  
**Prerequisite(s)** Completion of at least eight units of the course.  
**Required Reading** Project Management Institute, 2000, A Guide to Project Management Body of Knowledge, Newton Square, Pennsylvania, USA.  
**Class Contact** For each unit: Three hours per week, comprising lectures, tutorials, seminars, and group activities.  
**Assessment** For each unit: Class Test (Two Hours) 20%; Assignment (report not exceeding 5000 words) 20%; Final examination (Three Hours) 60%.  

### EEE5012 MANAGING SOFTWARE PROJECTS

**Campus** Footscray Park  
**Prerequisite(s)** EEE5011 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 DP 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; relationship to other project management disciplines; project management processes. Initiating, planning, executing, controlling, and closing. Process interactions. Unit 2 Project integration management. Project plan development and execution. Integrated change control. Project scope management. Initiation, scope definition, scope planning, scope verification, and scope change control. Project time management. Activity definition, activity sequencing, activity duration estimating, schedule development, and schedule control. Project cost management. Resource planning, cost estimating, cost budgeting, and cost control. Project quality management. Quality assurance, quality control. Unit 3 Project human resource management. Organizational planning. Staff acquisition. Team building. Project procurement management. Procurement planning, procurement solicitation, source selection, contract administration, and contract closure. Project communication management. Communication planning, information distribution, performance reporting, and administrative closure. Project risk management. Risk identification, qualitative risk analysis, quantitative risk analysis, risk management planning, risk response planning, risk monitoring and control. Unit 4 Systems approach to project management. Project proposals. Business case, rationale, feasibility, and cost/benefit analysis. Project selection. Project selection models. Project evaluation. Project management organization. Project manager selection. Project team establishment.  
**Required Reading** Project Management Institute, 2000, A Guide to Project Management Body of Knowledge, Newton Square, Pennsylvania, USA.  
**Class Contact** For each unit: Three hours per week, comprising lectures, tutorials, seminars, and group activities.  
**Assessment** For each unit: Class Test (Two Hours) 20%; Assignment (report not exceeding 5000 words) 20%; Final examination (Three Hours) 60%.

### EEE5001 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%.  

### EEE5002 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%.

### EEE6001 HDL AND HIGH LEVEL SYNTHESIS

**Campus** Chippies Partner Universities  
**Prerequisite(s)** Completed Digital Systems at undergraduate level or equivalent.  
**Content** Hardware modelling and design flow; Features requirements of Hardware Languages (structural and behavioural), Abstract Models, Compilation and Optimisation Techniques. Hardware Description Language VHDL and/or Verilog. Architectural – Level Synthesis and Optimisation Modelling, the Fundamental architectural synthesis problems, Area and performance estimation, Data path and Control Unit Synthesis, Synthesis of Pipelined Circuits. Synthesis Techniques, Logic synthesis and optimisation, FPGAs synthesis, folding and partitioning, Multi-level logic synthesis techniques; Structured layout styles, Local and global transformations. State machine synthesis techniques. High level synthesis techniques: Strategies for high level synthesis, Scheduling and allocation operations. High-level optimisations. Realisation using FPGAs and CPLDs. Coding standards. 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, 50%; and final examination, 30%.  

### EEH6002 INTEGRATED CIRCUIT DESIGN

**Campus** Chippies 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, CMOS 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. ASIC 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.
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, 60%; research project, 40%.

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 and laboratory exercises, 30%; project, 40% and final examination, 30%.

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 modeling. 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, 30%; project, 40%; and final examination, 30%.

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, 40%; and research project, 30%.

EEH6007 ADVANCED VLSI DESIGN

Campus Chipskills Partner Universities

Prerequisite(s) EEH6002 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, 30%; project, 50%; and final examination, 20%.
EEH6009 RELIABILITY AND TESTABILITY IN IC DESIGN

Campus Chipskills Partner Universities
Prerequisite(s) Nil
Content Any of the above courses, equivalent.
Assessment 20% Assignments, 30% laboratory exercises, and final examination, 50%.

EEH6010 INTRODUCTION TO MICROSYSTEM TECHNOLOGY

Campus Chipskills Partner Universities
Prerequisite(s) Nil

Required Reading
Recommended Reading
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, 30%; project, 40%; and final examination, 30%.

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, barrel 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.

Required Reading
Recommended Reading
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%; project, 30%; and final examination, 20%.

EEH6011 INTRODUCTION TO SEMICONDUCTOR DEVICE FABRICATION

Campus Chipskills Partner Universities
Prerequisite(s) Nil
Content Fundamentals of fabrication processes, physical and chemical models for crystal growth, oxidation, ion implantation, doping, deposition, lithography, metallisation. Emphasis is on practical aspects of device fabrication, including wafer cleaning, photolithography, etching, oxidation, diffusion, ion implantation, chemical vapour deposition, physical sputtering and wafer testing. Imperfections in semiconductors, crystal growth, 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).
Required Reading
Recommended Reading

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
EEH6016 VERILOG HDL
Campus Footscray Park
Prerequisite(s) Nil.
Content The role of HDL in design, Top-down introduction to Verilog, Verilog for description of logic circuits, Verilog language constructs, behavioural modelling, logic level modelling, concurrent process and switch level modelling. Timing analysis, synthesis and test benches.
Recommended Reading Seidman, B., 2001, Introduction to Verilog, IEEE.

Class Contact 4 hours per week for one semester, comprising of 2 hour lecture and 2 hours of tutorial/laboratory and project work.
Assessment Assignments and laboratory exercises, 20%; project, 30%; final examination, 50%.

EEH6017 DIGITAL SYSTEM DESIGN WITH VERILOG
Campus Footscray Park
Prerequisite(s) Nil.
Content Introduction to Verilog and digital systems design for VLSI, combinational and sequential circuits, design verification, algorithmic state machine design, finite state machine specifications in Verilog, hierarchical modelling concepts, synchronous and asynchronous systems, pipelined architectures, processor architectures, clocks timing and clock distribution, synthesis and advanced concepts in brief.

Class Contact 4 hours per week for one semester, comprising of 2 hour lecture and 2 hours of tutorial/laboratory and project work.
Assessment Assignments and laboratory exercises, 35%; project, 33%; final examination, 30%.

EEH6018 ANALOG & MIXED SIGNAL DESIGN
Campus Footscray Park
Co-requisite(s) EEH6003 - EDA Tools & Design Methodology
Content The design of CMOS analog and mixed-signal integrated circuits is covered. Design concepts of high speed low power amplifiers, filters, sample and hold circuits, comparators, digital to analog and analog to digital converters are fully analysed. Noise and performance 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 4 hours per week for one semester, comprising of 1 hour lecture and 3 hours of laboratory and project work.
Assessment Assignments and laboratory exercises, 20%; project, 50%; final examination, 30%.

EEH6020 MINOR PROJECT
Campus Footscray Park
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.

Recommended Reading

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 of the same or similar 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

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.

Content

Required Reading

Recommended Reading

Class Contact
Four hours per week for one semester comprising two hours per week of lecture and two hours per week of tutorial/laboratory.

Assessment
Assignments and laboratory exercises 30%, Project 40%; final examination 30%.

EEH6102 CUSTOM IC DESIGN B

Campus
Footscray Park

Prerequisite(s)
EEH6101 ASIC Design

Content

Required Reading
Selected papers from IEEE/IEE Journal. To be advised by the lecturer.

Recommended Reading

Class Contact
Four hours per week for one semester comprising one hour per week of lecture and three hours per week of tutorial/laboratory.

Assessment
Assignments 20%; Research Project 80%.

EEH6111 DIGITAL CIRCUIT DESIGN

Campus
Footscray Park

Prerequisite(s)
Nil.

Content

Required Reading

Recommended Reading

Class Contact
Four hours per week for one semester comprising two hours per week of lecture and two hours per week of tutorial/laboratory.

Assessment
Assignments and laboratory exercises 30%, Project 40%; final examination 30%.

EEH6112 DEDICATED INTEGRATED CIRCUIT DESIGN

Campus
Footscray Park

Prerequisite(s)
Nil.

Co-requisite
Nil.

Content
The subject will expose students to alternative approaches to designing systems in silicon and develop concepts of semi-custom and full-custom implementation. In addition, the subject will examine the total design process from initial conception to chip implementation, manufacture, testing and commercial aspects. The subject includes review of MOS technologies; MOS circuit topology and CAD tools; analog and digital CMOS circuit design using ISD VLSI design suite; circuit protection and scaling; ASIC and GaAs design and technology.
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. This includes two hours of lecture per week, one hour of tutorial and one hour of laboratory for every two weeks.

Assessment Laboratory exercises 20%; project: 50%; Examination: 30%. A pass in each component of assessment is required for a subject pass.

EEH6121 BASIC IC DESIGN/DEVICES
Campus Footscray Park
Prerequisite(s) Nil

Content Bipolar and CMOS structures. Logic design: Introduction to CMOS circuit design: Switch level analysis of NMOS and CMOS structures, CMOS logic gates using static and dynamic logic, Precharging techniques, latch up, pass transistor/transmission gate logic. PLA logic: static and dynamic design. Memory: Design of subsystems using sequential logic.


Class Contact Four hours per week for one semester comprising two hours per week of lecture and two hours per week of tutorial/laboratory.

Assessment Test, assignments and laboratory exercises 40%, final examination 60%.

EEH6122 CUSTOM IC DESIGN A
Campus Footscray Park
Prerequisite(s) EEH6121 Basic IC Design/Devices or equivalent

Content CMOS cell design: device-level design constraints, Circuit optimisation techniques, gate matrix method. Review of tools for low-level cell design: Mentor Graphics circuit design and verification tools, HSPICE and PSPICE 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 comprising two hours per week of lecture and one hour per week of tutorial/laboratory.

Assessment Assignments and laboratory exercises 30%, project 50%; final examination 20%.

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, modeling 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


Recommended Reading Pucknell, D.A. and Eshraghian, K., 1994, Basic VLSI Design System and Circuits, Prentice Hall.

Class Contact Four hours per week for one semester comprising two hours per week of lecture and two hours per week of tutorial/laboratory.

Assessment Assignments and laboratory exercises 60%, final examination 40%.

EEH6141 REAL TIME EMBEDDED SYSTEMS
Campus Footscray Park
Prerequisite(s) Nil

Co-requisite Nil

Content Real-time computer systems, an ASM description and the components of a real-time system. Using C as a real-time programming language; software development for embedded systems. 68020 programming model, data organisation, addressing modes and instruction set. Exception processing, stack frames, parameter passing and procedure calls. Linking high and low-level programs. Startup routines, interrupt systems and service routines. Interface to external signals and devices, real-time clock interfaces. Task scheduling and synchronisation, data transfer between tasks. Examples of monitors and real-time executives. Factors in selecting a real-time operating system.

Required Reading Antonakos, J.L., The 68000 Microprocessor, Prentice Hall.


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%.

EEH6151 VHDL AND HIGH LEVEL SYNTHESIS
Campus Footscray Park
Prerequisite(s) Nil


**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 Four hours per week for one semester comprising two hours per week of lecture and two hours per week of tutorial/laboratory.  
Assessment Assignment & laboratory exercises 20%, project 50%; final examination, 30%.  

**EET5000 COMMUNICATION SYSTEMS CASE STUDY**  
Campus Footscray Park  
Prerequisite(s) EET5510 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 Test, assignments and laboratory exercises 40%, final examination 60%.  

**EET5510 COMMUNICATION THEORY PRINCIPLES**  
Campus Footscray Park  
Prerequisite(s) Nil  
Class Contact Three hours per week for one semester.  
Assessment Examination, 70%; assignments, 30%.  

**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%.  

**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%.  

**EET6510 COMMUNICATION THEORY**  
Campus Footscray Park  
Prerequisite(s) Nil  
Class Contact Three hours per week, comprising lectures, tutorials and seminars.  
Assessment Class test (Two Hours) 20%; Assignment (report not exceeding 5000 words) 20%; Final examination (Three Hours) 60%.  

**EET6511 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.

EET6512 INTELLIGENT NETWORKS AND NETWORK MANAGEMENT

Campus Footscray Park
Prerequisite(s) Nil
Co-requisite Nil
Required Reading Thorne, J., 1995, Intelligent 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.

EET6520 DIGITAL COMMUNICATION PRINCIPLES

Campus Footscray Park
Prerequisite(s) Nil
Co-requisite Nil
Class Contact Three hours per week, comprising lectures, tutorials and seminars.
Assessment Class test (Two Hours) 20%; Assignment (report not exceeding 5000 words) 20%; Final examination (Three Hours) 60%.

EET6521 DIGITAL SWITCHING AND SIGNALLING SYSTEMS

Campus Footscray Park
Prerequisite(s) Nil
Co-requisite Nil

EET6522 TELECOMMUNICATION TARIFF STRUCTURES AND TELETRAFFIC ENGINEERING

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.

EET6531 WIRELESS COMMUNICATION SUBSYSTEMS

Campus Footscray Park
Prerequisite(s) Nil
Co-requisite Nil
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.
Recommended Reading Parsins and Gardner, Mobile Communication Systems, Blackie.
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

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.

EET6541 MULTIMEDIA AND INTERNET TECHNOLOGY

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.

EET6542 MOBILE AND PERSONAL COMMUNICATION SYSTEMS

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.

EET6550 MINOR PROJECT

Campus Footscray Park
Prerequisite(s) EET6510, EET6520
Co-requisite Nil

Content Each student will undertake an individual research on a topic allocated to him or her under the supervision of an academic staff over the duration of a semester. Regular meetings will be held between the students and their supervisors in the form of seminars where students will report their progress in the form of formal presentations. In addition, informal meetings between students and their supervisors will take place as and when required. In the process, the student will be exposed to research related matters such as Research Methodology, Literature Reviews, Feasibility Studies, Experiment Design, Modelling and Simulation Techniques and Tools, Results Analysis and Validation, Report Documentation and Presentation.

Required Reading To be advised by the supervisor of the project.

Recommended Reading To be advised by the supervisor of the project.

Class Contact
Six hours per week for one semester, comprising three hours per week group seminar, and three hours per week (on average) individual meetings, discussions, etc. with respective supervisors.

Assessment Regular seminar presentations (3 seminars, each of 20 min duration), 30%. Final report (Approximately 12,000 words), 50%. Final presentation (of 30 min duration), 20%.

EET6551 MICROWAVE ELECTRONIC CIRCUIT DESIGN

Campus Footscray Park
Prerequisite(s) Nil
Co-requisite 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 (i.e. 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.
EET6552 COMPUTER NETWORKS AND NETWORKING SOFTWARE

Campus Footscray Park

Prerequisite(s) Nil


Required Reading Pahrei, I.O., 1995, UNIX Internetworking, Artech House.

Recommended Reading Freer, J., Communications and Networks, 2nd edn, IEEE Press. Stevens, W.R., TCP/IP Illustrated; Vol 1, 2 and 3, Addison Wesley.

Class Contact Three hours per week for one semester comprising two hour lecture and one hour tutorial/laboratory.

Assessment Assignments: 40%; Examination: 60%. A pass in each component of assessment is required for a subject pass.

EET6550 MAJOR PROJECT

Campus Footscray Park

Prerequisite(s) EET6510, EET6520

Content Each student will undertake an individual research under the guidance of an academic staff on a suitable topic, over the duration of a semester. Lectures, seminars, and regular meetings will be held collectively to expose students to research related matters such as Research Methodology, Literature Reviews, Feasibility Studies, Experiment Design, Modelling and Simulation Techniques and Tools, Results Validation and Decision Making, Report Writing, Structured Documentation, and Scientific Presentation.

Required Reading To be advised by the supervisor of the project.

Recommended Reading To be advised by the supervisor of the project.

Class Contact Twelve hours per week for one semester, comprising three hours per week group seminar, three hours per week (on average) individual meetings, discussions, etc. with the respective supervisor, and six hours per week independent study including laboratory and library activity.

Assessment Regular seminar presentations (3 seminars, each of 20 min. duration), 30% Final report (Approximately 25,000 words), 50% Final presentation (of duration 40 min.) , 20% Final report is to be examined by an external examiner (who could also be present at the final presentation).

EET6561 LOCAL AREA AND BROADBAND NETWORKS

Campus Footscray Park

Prerequisite(s) 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


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.

EMC5672 NUMERICAL TECHNIQUES AND PROGRAMMING

Campus Footscray Park

Prerequisite(s) Nil


EME5782 SPECIALIST ELECTIVE

Campus Footscray Park
Prerequisite(s) EMM5771 Research Techniques.
Content One of the following topics, subject to staff availability:
- EMM5782 Composite materials design
- EMF5882 Flow measurement techniques
- EMM5772 Optimization
- EMV5772 Transportation and packaging dynamics
- EMV5882 Random processes and spectral analysis

Required Reading As recommended by the lecturers.
Class Contact Three hours weekly comprising of lectures and laboratory for 12 weeks
Assessment As specified by the Lecturer of the Specialist Elective chosen.

EMF5882 FLOW MEASUREMENT TECHNIQUES

Campus Footscray Park
Prerequisite(s) Nil.
Content Introduction to the principles of Pitot tube, CTHWA, LDA, PIV, thermocouple and CCCWA. The advantages and limitations of the different measurement techniques. The calibrations of each measurement technique. The digitisation of the experimental data. The analysis of the experimental data in terms of correlations, energy spectral densities, and probability distribution.


Class Contact 3 hours of lecture, tutorials/week for 12 weeks.
Assessment Two assignments, 50% (each of 25% of 5000-7500 words); one Major Assignment, 50% (7500-10000 words). Students must attain a mark of at least 50% in each component to pass this subject.
EMT5772 OPTIMIZATION
Campus Footscray Park
Prerequisite(s) EMC5771 Computer Aided Engineering.
Class Contact Three hours per week comprising of two lectures and one tutorial for 12 weeks.
Assessment Three assignments, 60% (each of 20%), on implementing optimisation algorithms to solve optimisation problems with a report of 4000-5000 words); one three-hour final examination, 40%. Students must attain a mark of at least 50% in each component to pass this subject.

EMT5601 ADVANCED FLUID-THERMO DYNAMICS
Campus Footscray Park
Prerequisite(s) Nil.
Class Contact Three hours of lectures per week, tutorials, and laboratory for 12 weeks.
Assessment Two assignments, 20% (each of 10%, 2500-5000 words), one one-hour test, 10%; laboratory, 20%; final three-hour examination, 50%. Students must attain a mark of at least 50% in each component to pass this subject.

EMT5882 COMPUTATIONAL FLUID DYNAMICS
Campus Footscray Park
Prerequisite(s) Nil.
Content The numerical schemes used for CFD, their accuracy and stability limit. Turbulence models: eddy viscosity concept, k- model, RNG models; turbulence models near the wall. Boundary and initial conditions specification, wall boundary, open boundary, inlet and exit; How to divide the computation domain into small regions; Grid generation and near wall requirement; CFD simulations for smoke spread during a fire in building, air-conditioning system, air flow inside an engine manifold and exhaust system. Basic concept of LES and DNS, their applications and limitations.
Class Contact Three hours of lectures, tutorials, and computer-based laboratory per week for 12 weeks.
Assessment Two assignments, 20% (each of 10%, 2500-5000 words); one one-hour test, 10%; laboratory, 20%; final three-hour examination, 50%. Students must attain a mark of at least 50% in each component to pass this subject.

EMV5772 TRANSPORTATION AND PACKAGING DYNAMICS
Campus Footscray Park
Prerequisite(s) EMV 5781 Advanced Dynamics and Vibration
Class Contact 3 hours per week comprising of lectures and tutorials for 12 weeks.
Assessment Two major assignments, 50% (each of 25%, 5000-7500 words); final three-hour examination, 50%. Students must attain a mark of at least 50% in each component to pass this subject.

EMV5781 ADVANCED DYNAMICS AND VIBRATIONS
Campus Footscray Park
Prerequisite(s) Nil.
Class Contact Three hours weekly of lectures and tutorials, laboratory for 12 weeks.
Assessment Three assignments, 30% (each of 10% based on analytical and numerical analysis and a report of 2000-3000 words); laboratory, 20%; one three-hour open book examination, 50%. Students must attain a mark of at least 50% in each component to pass this subject.

EMV5782 COMPUTATIONAL DYNAMICS
Campus Footscray Park
Prerequisite(s) EMV5781 Advanced Dynamics and Vibration.


Class Contact Three hours per week for 12 weeks, comprising of lectures, tutorials, experimental laboratory and computer-based laboratory.

Assessment Three assignment, 20% (each of 10% and 2500-5000 words); laboratory, 20%; one three-hour final examination, 50%. Students must attain a mark of at least 50% in each component to pass this subject.

**EMV5882 RANDOM PROCESSES AND SPECTRAL ANALYSIS**

Campus Footscray Park

Prerequisite(s) Nil.

Content Reminder/introduction of the basic probability concepts including probability, correlation, coherence and cross spectrum analysis and the dynamics of a mechanical oscillator. Spectral frequency transformation, its properties, digram representations of the relevant concepts. Introduction to Wavelets.


Class Contact Three hours per week for 12 weeks.

Assessment Five assignments, 50% (each of 2500-5000 words); major assignment based on a research project, 50% (7500-10000 words). Students must attain a mark of at least 50% in each component to pass this subject.

**EMW5682 MANUFACTURING MATERIALS**

Campus Footscray Park

Prerequisite(s) Nil.

Content Advanced topics in the following areas: Fabrication processes in casting, cutting and solid shaping and their relationship to polymers, ceramics and metallic materials. Selection of materials for clean manufacturing.


Class Contact Lectures, tutorials and seminars, three hours/week for 12 weeks.

Assessment Three assignments, 60% each of 4000-5000 words; two two-hour tests, 40%.

**EMW5771 RESEARCH TECHNIQUES**

Campus Footscray Park

Prerequisite(s) Nil.

Content An overview of the history of engineering and scientific research. An introduction to the philosophy of science and the ideas of Poppert, Kuhn, Feyerabend and others. Design and Analysis of Experiment. Error and uncertainty. Statistical Data Analysis. Taguchi methods for design and experiments.


Class Contact Three hours per week of lectures, tutorials and laboratory-based assignments for twelve weeks.

Assessment Four assignments, 40% (each of 10% of 2500-5000 words); final three hour examination, 60%. Students must attain a mark of at least 50% in each component to pass this subject.

**EMY5682 EXPERIMENTAL TECHNIQUES AND SIGNAL PROCESSING**

Campus Footscray Park

Prerequisite(s) Nil.

Content Engineering measurement theory and fundamentals; Instrumentation for mechanical processes; Signal conditioning and dynamic response of measurement systems; Data acquisition systems; Frequency filters. Interfacing with computers. Signal theory; Time domain analysis; Synchronous averaging, probability distribution estimates and statistical parameters; Frequency domain analysis: Fast Fourier Transform (FFT); Shock Response Spectrum; Frequency response functions, coherence, signal-to-noise ratio; Non-stationary signals; Non-Gaussian signals.


Class Contact Two-hour lecture weekly. One-hour laboratory session / tutorial fortnightly.

Assessment Five assignments (50%) based on laboratory exercises. Final three-hour examination (50%). Students must attain a mark of at least 50% in each component to pass this subject.

**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 how 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 Asia and Pacific Rim countries, in the United States and in Europe.

Required Reading Course Handbook provided to each student.

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 seamlessness in 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%.

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 hours of block mode teaching.

Assessment Case study and seminar presentation, 10%; Syndicate group project, 40%; Research report, 50%.

EPM5003 ADVANCED CHAIN SYSTEMS MANAGEMENT

Campus Werribee

Prerequisite(s) Nil

Content This subject focuses on managing firms in chain systems 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. This unit will add further to the students’ understanding of process mapping, the design of static and dynamic KPIs and dynamic modelling solutions for efficient chains.

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%.

EPM5004 FINANCIAL AND INVESTMENT PLANNING IN CHAIN SYSTEMS MANAGEMENT

Campus Werribee

Prerequisite(s) Nil

Content Third party service providers, like other firms, must understand the relationship between the costs of investments and the use of capital and the benefits of investment. The timing of investments, cost/price relationships and the risks associated with investment are of exceptional importance to business success. This unit focuses on these issues and introduces students to concepts, financial modelling and technique for developing investment scenarios.

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%.
EPP6505 STRATEGY, STRATEGIC OPTIONS AND BUSINESS SUCCESS IN CHAIN SYSTEMS

MANAGEMENT

Campus Werribee

Prerequisite(s) Nil

Content Rapid 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? And on what basis can the traditional ‘transport provider’ firms achieve sustained business success? This unit examines in depth the basis for business success and examines particularly the notions of market and supply chain power and draws on current research into real-world examples to provide guidance for stakeholder firms.

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%.

EPP6511 FIBRE OPTIC COMMUNICATION SYSTEMS

Campus Footscray Park

Prerequisite(s) Eligibility for admission to Master's course.


Required Reading Palais, J.C. 1998, Fibre Optic Communications, 4th edn, Prentice-Hall, NJ.


Class Contact 36 hours lectures/tutorials/laboratories

Assessment Two assignments (each assignment report not exceeding 5000 words) 10% each. Two laboratory reports (word length of each not exceeding 2500 words) 10% each; Final examination (Two Hours) 60%.

EPP6512 ADVANCED FIBRE OPTICS

Campus Footscray Park

Prerequisite(s) EPP6511 FIBRE OPTIC COMMUNICATION SYSTEMS


Class Contact 36 hours lectures/tutorials.

Class Contact 36 hours lectures/tutorials/laboratories.

Assessment Two assignments (each assignment report not exceeding 5000 words) 10% each. Two laboratory reports (word length of each not exceeding 2500 words) 10% each; Final examination (Two Hours) 60%.

EPP6521 OPTICS AND LASERS

Campus Footscray Park

Prerequisite(s) Eligibility for admission to Master's course.


Class Contact 36 hours lectures/tutorials/laboratories.

Assessment Two assignments (each assignment report not exceeding 5000 words) 10% each. Two laboratory reports (word length of each not exceeding 2500 words) 10% each; Final examination (Two Hours) 60%.

EPP6522 DIGITAL COMMUNICATIONS OVER OPTICAL NETWORKS

Campus Footscray Park

Prerequisite(s) EPP6511 FIBRE OPTIC COMMUNICATION SYSTEMS

Content Fibre Optic transmission systems. Issues of chromatic dispersion, fibres and operational wavelengths, sources and receivers. LANs, Gigabit and 10 gigabit Ethernet, WANs, MANs, power budget. Protocols for modern communication systems - SONET/SDH: Architecture and protocols, speeds, architecture layers, network elements, rings, switching, routing, and diversity. WDM and DWDM: special fibres, erbium-doped fibre amplifier (EDFA), tunable laser diode at 1550 nm. Practical issues in Optical Networking, non linearties, Raman amplifiers. Future trends.

Required Reading Goralski, W. 2001, Optical Networking & WDM, SPIE, Bellingham WA


Class Contact 36 hours lectures/tutorials/laboratories exercises.

Assessment Two assignments (each assignment report not exceeding 5000 words) 10% each. Two laboratory reports (word length of each not exceeding 2500 words) 10% each; Final examination (Two Hours) 60%.
EPP6531 QUANTUM OPTICS
Campus Footscray Park
Prerequisite(s) Eligibility for admission to Master's course.
Class Contact 36 hours lectures/tutorials/laboratories exercises.
Assessment Two assignments (each assignment report not exceeding 5000 words) 10% each. Two laboratory reports (word length of each not exceeding 2500 words) 10% each; Final examination (Two Hours) 60%.

EPP6532 OPTICAL FIBRE SENSORS
Campus Footscray Park
Prerequisite(s) EPP6511 FIBRE OPTIC COMMUNICATION SYSTEMS
Content 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. Fibre Bragg gratings for strain or temperature measurement. Applications of fibre sensors, e.g. smart structures.
Class Contact 36 hours lectures/tutorials/laboratories exercises.
Assessment Two assignments (each assignment report not exceeding 5000 words) 10% each. Two laboratory reports (word length of each not exceeding 2500 words) 10% each; Final examination (Two Hours) 60%.

EPP6541 OPTICAL MATERIALS
Campus Footscray Park
Prerequisite(s) Eligibility for admission to Master's course.
Content 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 ultraviolet, 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; magneto-optic effect. Thin Film Materials Substrates. Optical damage mechanisms; self-focusing; damage thresholds; specification of cosmetic surface quality of optical components.
Class Contact 36 hours lectures/tutorials.
Assessment Four assignments (each assignment report not exceeding 5000 words) 10% each. Final examination (Two Hours) 60%.

EPP6542 DATA ACQUISITION
Campus Footscray Park
Prerequisite(s) Eligibility for admission to Master's course.
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 36 hours including 24 hours of laboratory classes, 12 hours of lectures/tutorials.
Assessment Two assignments (each assignment report not exceeding 5000 words) 10% each. Laboratory project (report not exceeding 10,000 words) 80%.

EQB5611 RISK ASSESSMENT AND HUMAN BEHAVIOUR
Campus Werribee
Prerequisite(s) Nil
EQB5632 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. Pre 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.


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, ISO6241, 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 PBCA performance designs. Through life performance and maintenance. Essential services recognition and documentation. Quality assurance and the building permit/inspection process.


EQB5633 SMOKE AND FIRE SPREAD, FIRE SAFETY SYSTEM DESIGN

Campus Werribee
Prerequisite(s) Nil


EQB5751 FIRE TECHNOLOGY MODELLING

Campus Werribee
Prerequisite(s) EQB5621 and EQB5632

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; atriums 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.
FACULTY OF SCIENCE, ENGINEERING AND TECHNOLOGY

EQT6050 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 a minimum 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.
SBF6710 FOOD ANALYSIS  

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.  

**Recommended Reading**  


**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.  

SBF6720 FOOD MICROBIOLOGY  

Campus Werribee  

**Prerequisite(s)** Eligibility for entry to the Master of Science in Food Science and Technology.  


**Required Reading**  


**Class Contact** Six hours per week comprising three hours of lectures and tutorials and three hours of practical work for one semester.  

**Assessment** Assignments 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.  

**Recommended Reading**  


**Class Contact** Six hours per week comprising lectures, tutorials, practical work and/or field trips for one semester.  

**Assessment** Assignments 20%, practical work 30%, 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...
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 characters 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 20%, practical work 30%, 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.


Class Contact Six hours per week comprising lectures, tutorials, practical work and/or field trips for one semester.

Assessment Assignments 30%, practical work 20%, final examination 50%.

SBF6730 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%.

SBF6740 SPECIAL TOPICS IN FOOD TECHNOLOGY

Campus Werribee

Prerequisite(s) Eligibility for entry to the Master of Science in Food Science and Technology.

Content This subject allows students to develop and study a selected aspect of food science and technology and requires the students of a project on the selected topic. This project is not laboratory based but is designed to allow students to research the literature on a topic of interest to themselves. 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 includes: Design and development of the study, collection and analysis of data and submission of a written report. Presentation of a seminar on the topic. Subject to approval, the project may be related to the students' work situation and/or may involve plant based work.

Required Reading Students will be responsible for reviewing the current literature on their project topic.

Class Contact Three hours per week comprising tutorial work and self-directed learning activities for one semester.

Assessment Oral presentation 20%; Written report 80%.

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 20%, practical work 30%, final examination 50%.

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**SBF6750 FOOD SAFETY AND QUALITY ASSURANCE**

**Campus** Werribee

**Prequisite(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, microbiological 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.


**Class Contact** Six hours per week comprising lectures/tutorials and practical work for one semester.

**Assessment** Assignments and tests 20%, practical work 20%, final examination 60%.

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**SBF6910 MINOR PROJECT**

**Campus** Werribee

**Prequisite(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%.

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**SBF6920 MAJOR PROJECT**

**Campus** Werribee

**Prequisite(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%.

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**SBF6930 INDUSTRY TRAINING**

**Campus** Werribee (the unit will be offered at various food companies).

**Prequisite(s)** Successful completion of two semesters of study or equivalent.

**Content** The unit will be based on a project agreed upon by an industry partner and a supervisor from the School of Molecular Sciences. An example of project will include impact of various types of starter cultures on acidity and resulting shelf life of yoghurt. Such type of project is proposed to be carried out at Nestle Dairy. Another example will include impact of exo-poly saccharide production on sensory properties of dairy foods. This type of project is suited for National Foods.

**Required Reading** The required reading will depend upon the type and nature of project students are undertaking. The names of text books will be provided depending on the type of work students are doing.

**Recommended Reading** Students will be required to read relevant websites and concerned company’s profile. The web sites will depend upon the nature of the project students will be undertaking. The students will have to read annual report and relevant information of the company.

**Class Contact** 6 hours per week for 12 weeks for a total of 72 hours, subject to availability and approval by the course coordinator.

**Assessment** Assessment will be based on a report of approximately 3000 words (80%); based on industry training or a project and an oral presentation (20%).

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**SBM5401 THE SCIENCE OF CANCER**

**Campus** Footscray Park

**Prequisite(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.

SCM5404 FINANCIAL DECISION SUPPORT SYSTEMS
Campus Footscray
Prerequisite(s) Two undergraduate statistics subjects.
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 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.

SCM5602 QUALITY MANAGEMENT AND STATISTICS
Campus Footscray Park
Prerequisite(s) Nil.
Content Fundamental ‘quality’ and quality management’ issues; Specifications and the loss function. Process capability and statistical process control. An introduction to feedback control. Factorial experiments and fractional designs. Taguchi methods.
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 Final examination, 80%; Mid-semester tests, 20%.

SCM5800 OBJECT ORIENTED PROGRAMMING GD1
Campus Footscray Park, Hong Kong
Prerequisite(s) Nil.
Content Programming language; basic object oriented concepts; programming, algorithm development and elementary data structures objects and classes.
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.

SCM5802 INFORMATION SYSTEMS
Campus Footscray Park, Hong Kong
Prerequisite(s) Nil.
Content Database concepts and design methodology; hierarchical, network and relational models; relational approach and relational calculus; object-oriented approach to database design; conceptual models and query interfaces; database management and administration functions, shared access control, security, recovery and query interfaces; study and use of fourth generation languages for query, update and report generation.
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.

SCM5803 DATA STRUCTURES AND PROGRAMMING
Campus Footscray Park
Prerequisite(s) SCM5800 Object Oriented Programming GD1
Content Program development and testing using Software Engineering principles; object oriented programming languages;
organisation and manipulation of data; the software environment; object oriented design and analysis. Abstract data types.

**Required Reading** To be advised by lecturer.

**Class Contact** Three hours per week for one semester comprising one one-hour lecture and one two-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.

**SCM5805 COMMUNICATION AND NETWORKS**

**Campus** Footscray Park, Hong Kong.

**Prerequisite(s)** Nil.

**Content** Introduction – types of networks, master/slave polling networks, equality networks, circuit switches and packet switched networks, topologies, network structure, costs; layered design of networks and the ISO reference model – protocols, interfaces, communication techniques, multiplexing; public networks in Australia – Datal, DDS, Austpac, etc.; local area networks – transmission media, topologies, access control, comparison of local area network products; PC Networks – servers, workstations, network disks, directory structure, network security, access control and file locking.

**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 work.

**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, checkpointing, 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.

**SCM5820 NETWORK OPERATING SYSTEMS ADMINISTRATION**

**Campus** Footscray Park

**Prerequisite(s)** SCM5805 Communication and Networks.


**Required Reading** To be advised by the lecturer.

**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 lectures 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.
FACULTY OF SCIENCE, ENGINEERING AND TECHNOLOGY

Class Contact: Three hours per week for one semester comprising two hours of lectures and one-hour laboratory.

Recommended Reading: Deitel, H.M., and Deitel, P.J., 2003, Java How to Program, 5th edn, Prentice-Hall.

Assessment: Final examination, 75%; assignment and laboratory, 25%.

SCM6101 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 in 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.

SCM6102 THEESIS (2 UNITS) (FULL-TIME) (FOR ONE SEMESTER)

SCM6103 THEESIS (4 UNITS) (FULL-TIME) (FOR ONE SEMESTER)

Campus: Footscray Park

Prerequisite(s): Nil.

Content: The aim of this subject is to enable students to competently research an area of study utilising knowledge and skills gained in previous studies, and it consists of a project carried out by students on an individual basis. The project is expected to be an investigation of an approved topic, followed by the submission of a suitably formatted thesis in which the topic is introduced and formulated, the 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 normally be assessed by at least two examiners from an appropriate areas of expertise.

SCM6501 IMAGE PROCESSING ALGORITHMS

Campus: Footscray Park

Prerequisite(s): Nil.

Content: An introductory subject which covers the fundamental alorithms used in image processing and pattern recognition. The topics include: point, algebraic and geometric operations; smoothing and edge detection, linear convolution, median and max/min filters, segmentation, Hough methods, morphological operations; image coding and compression. Introduction to pattern recognition algorithms. Artificial neural networks for pattern recognition, face recognition.

Required Reading: To be advised by lecturer.

Class Contact: Three hours per week for one semester comprising lectures/practicals/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. Final examination, 70%; assignments and laboratory works, 30%.

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, mensuration; similarities and differences between continuous and discrete spaces. 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 lecture/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.

SCM6606 TIME SERIES ANALYSIS

Campus: Footscray Park

Prerequisite(s): SCM5601 or equivalent.

SCM6607 STATISTICAL COMPUTING

Campus Footscray Park

Prerequisite(s) Nil.


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.

SCM6608 MULTIVARIATE ANALYSIS

Campus Footscray Park

Prerequisite(s) Nil.

Content This subject extends the concepts of estimation and statistical analysis to handle problems involving dependent 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.

SCM6702 INTERNET DATA REPRESENTATION 1

Campus Footscray Park, Hong Kong, Malaysia

Prerequisite(s) SCM6822 Internet Programming or equivalent subject.

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%.

SCM6710 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 a 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.

Recommended Reading Morreau, K., and Batistick, J., 2001 Active Server Pages, Course technology, Thomson Learning.

Class Contact Two hour lecture and one laboratory/tutorial per week.

Assessment Final examination, 50%; Tests/Laboratory work, 50%.

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; 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.

SCM6806 ARTIFICIAL INTELLIGENCE 2

Campus Footscray Park

Prerequisite(s) SCM6805 Artificial Intelligence 1 or equivalent.

Content Advanced LISP/Prolog programming techniques; nondeterministic programming. Incomplete data structures; search techniques. Applications: implementing natural language processing, finite state techniques, recursive and augmented transition networks, grammars, chart parsing, semantics, data base 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.

237
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.

Assessment 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.

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 semantics; complexity and classification schemes, parallel processing applications. Introduction to parallel programming: sequential programming languages, asynchronous parallel programming languages, synchronous parallel programming languages, data flow languages. Parallel machines: Transporter, 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 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.

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.


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.

SCM6818 DATA STRUCTURES AND PROGRAMMING

Campus Footscray Park, Hong Kong

Prerequisite(s) SCM5800 Object Oriented Programming GD1 (Introduction to Computer Science or equivalent).

Content Pointers, structures, pointers to functions, dynamic memory allocation; recursion, abstract data types, polymorphism, software development, complexity; lists, stacks and queues, circular and
double-linked lists; binary trees, heaps, graphs; sets, searching and sorting. Practical Program Laboratory and tutorial sessions designed to give students practical experience in developing application software.

**Required Reading** To be advised by lecturer.

**Class Contact** Three hours per week for one semester 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.

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**SCM6821 USER INTERFACE DESIGN**

**Campus** Hong Kong, Footscray Park.

**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


**Class Contact** Three hours per week two hours lecture and one-hour laboratory/tutorial.

**Assessment** Final examination 70%, Assignment/Test 30%.

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**SCM6822 INTERNET PROGRAMMING**

**Campus** Footscray Park, Hong Kong

**Prerequisite(s)** Competency in Java.


**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 scm6822/Launcher.html or http://melba.vu.edu.au/~scm6822/


**Class Contact** Two hour lectures and one hour laboratory per week

**Assessment** Final Examination 58%, mid-semester practical test 30%, laboratory 12%.

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**SCM6823 DATABASE DESIGN, MANAGEMENT AND ADMINISTRATION**

**Campus** Footscray Park, Hong Kong

**Prerequisite(s)** Good knowledge of relational databases; basic understanding of UNIX.

**Content** Database Environment. Database planning, design and administration. Methodology – physical database design. Database integrity and security. Transaction management. Distributed database systems.


**Class Contact** Two hour lectures and one hour laboratory per week

**Assessment** Final Examination, 70%; Assignment, 30%.

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**SCM6825 MULTIMEDIA SYSTEMS DESIGN AND DEVELOPMENT**

**Campus** Footscray Park, Hong Kong

**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 subject introduces some new 3D web graphics technologies related to multimedia system development, including java 3D and Virtual Reality Modeling Language (VRML).

**Required Reading** to be advised by the lecturer


**Class Contact** Three hours per week for one semester, comprising two one-hour lectures and one one-hour laboratory.

**Assessment** Final Examination, 50%; Project, 50%.
SCM6841 SOFTWARE ENGINEERING 2
Campus Footscray Park, Hong Kong, Malaysia
Prerequisite(s) SCM6844 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 30%.

SCM6842 ADVANCED TOPICS IN SOFTWARE ENGINEERING
Campus Footscray Park, Hong Kong, Malaysia
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. Topics include: Analyzing Requirements, Prototyping, Usability Evaluation, etc.
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%.

SCM6844 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%.

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, URLDecoder Class, URLConnection Class, Sockets, Server Sockets, Datagram Clients/Servers; Servlet overview and architecture, HttpServlet Class, HttpServletRequest Interface, HttpServletResponse Interface, HttpServletRequest Request, HttpServletResponse Interface, Handling HTTP get and post Requests, setting up the Apache Tomcat Server, deploying a web application, session tracking; JSP Overview, scripting components, standard actions, directive, custom tag libraries; EJB Overview, session beans, EJB transactions.
Overall mark of 50%. Students must obtain at least 40% standard in the practicals and assessment.

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) SCM6824 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 1
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 available for vehicle scheduling. Mathematical programming approaches to vehicle scheduling; algorithms for fixed-charge problems; partitioning and decomposition methods; commercial packages available for location problems; background to distribution 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 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.

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 queuing, 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 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 Three hours per week for one semester comprising lectures/tutorials.
Assessment Assignments and project, 40% final examination, 60%.

SCM6908 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 citing problems; mathematical programming formulations; algorithms for fixed-chage 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 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.

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; Queueing 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, tests 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/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.

Recommended Reading


Class Contact 1 hour/week x 26 weeks – lectures and computer labs.

Assessment Assignment only.

SCS5101 PRINCIPLES OF ENVIRONMENTAL SCIENCE

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%.

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; radionuclivity; 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 and 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%.

### SCS5192 CLEAN PRODUCTION TECHNOLOGY AND WASTE MINIMISATION

**Campus** Footscray Park  
**Prerequisite(s)** Nil  
**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)

**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.  
**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

### SMS5110 MOLECULAR GENETICS THEORY

**Campus** Werribee  
**Prerequisite(s)** Nil  
**Content** This subject will cover principles of and developments in molecular biology, gene structure and function, and molecular genetics. The theoretical component will include topics such as prokaryotic and eukaryotic genome structure, multigene families, genomic rearrangements including transposable elements, methylation and imprinting of DNA and repair mechanisms. The subject will also cover theoretical aspects of genetic engineering or recombinant DNA technology such as plasmid biology, cloning vectors and recombinant cloning strategies, and ethical concerns related to these technologies.  
**Class Contact** Three hours of class contact time per week consisting of lectures and tutorials.  
**Assessment** One assignment (3000 words, 50%); tests (5x15 min, 10%) and final examination (3h, 40%).

### SMS5120 APPLIED GENETIC ENGINEERING

**Campus** Werribee  
**Prerequisite(s)** or Co-requisite: Molecular Genetics Theory  
**Content** This subject will cover practical aspects of molecular genetics and recombinant DNA technology. This will include more practical aspects of topics covered in Molecular Genetics Theory such as such as plasmid biology, cloning vectors and recombinant cloning strategies, Northern and Southern blotting, PCR and DNA sequencing. Applications of these techniques in plant, animal biotechnology and in human applications will be discussed.
**FACULTY OF SCIENCE, ENGINEERING AND TECHNOLOGY**


**Class Contact** Three hours per week for one semester.

**Assessment** Practical work (70%); One assignment (3000 words, 30%).

**SMS5130 FUNCTIONAL GENOMICS AND BIOINFORMATICS THEORY**

**Campus** Werribee

**Prerequisite(s)** Molecular Genetics

**Content** Topics covered include genome and proteome analysis, expression analyses such as microarrays, proteome analysis such as 2-D electrophoresis, MALDI-TOF and ESI analysis. The bioinformatics section will cover sequence analysis using worldwide databases such as GenBank, EMBL and KEGG. It will examine how the databases have been organized, what they contain and programs available to analyse the data from them. Programs used for sequence similarity searching, alignment of sequences, in silico PCR primer design, translation and finding of protein motifs will be examined.


**Class Contact** Three hours lectures/tutorials per week for one semester.

**Assessment** One written assignment (3000 words, 30%); tests (5x 15min, 10%) and final examination (3 h, 60%).

**SMS5135 FUNCTIONAL GENOMICS & BIOINFORMATICS APPLICATIONS**

**Campus** Werribee

**Prerequisite(s)** Molecular Genetics

**Content** Topics covered include genome and proteome analysis, expression analyses such as microarrays, proteome analysis such as 2-D electrophoresis, MALDI-TOF and ESI analysis. The bioinformatics section will cover sequence analysis using worldwide databases such as GenBank, EMBL and KEGG. It will examine how the databases have been organized, what they contain and programs available to analyse the data from them. Programs used for sequence similarity searching, alignment of sequences, in silico PCR primer design, translation and finding of protein motifs will be examined.


**Class Contact** Three hours lectures/tutorials per week for one semester.

**Assessment** One written assignment (3000 words, 30%); tests (5x 15min, 10%) and final examination (3 h, 60%).

**SMS5140 BIOPROCESSING TECHNOLOGY PRINCIPLES**

**Campus** Werribee

**Prerequisite(s)** Nil.

**Content** Principles of biochemical engineering, material and energy balance, fermentation technologies, bioreactor design and applications, harvesting and purification of bioproducts, filtration systems and commercial-scale applications of biological-based systems.


**Class Contact** Three hours per week of lectures/tutorials.

**Assessment** One assignments (3000 words, 50%); examination (3h, 70%).

**SMS5145 BIOPROCESSING TECHNOLOGY APPLICATIONS**

**Campus** Werribee

**Prerequisite(s)** or Co-requisite SMS5140 Bioprocessing Technology Principles

**Content** Laboratory-scale experiments will be conducted that train students in the areas of downstream processing, plant and algal products, heat-exchange, fermentation, fluid flow, enzyme engineering, biomass conversion and sustainable energy systems.


**Class Contact** Three hours/week of laboratory practicals.

**Assessment** Laboratory reports (100%).

**SMS5150 ETHICS AND REGULATORY AFFAIRS IN BIOTECHNOLOGY**

**Campus** Werribee

**Prerequisite(s)** Nil.

**Content** This unit will examine social and technical issues in biotechnology from an ethical viewpoint. Environmental and human impacts of genetic engineering will be discussed. The obligations to patients and the community will be described in the regulations governing manufacture and clinical trials of new drugs. Comparisons will be made between drugs and devices, human and veterinary products, and different national systems.


**Class Contact** Three hours lectures per week for one semester.

**Assessment** One assignment (3000 words, 50%); final examination (3h, 50%).

**SMS5160 INTELLECTUAL PROPERTY AND COMMERCIALISATION IN BIOTECHNOLOGY**

**Campus** Werribee

**Prerequisite(s)** Nil.

**Content** This unit of study will examine the need for patent protection, patent procedures in Australia, the USA and Europe, and methods of patent searching. Laboratory practices needed in protecting discoveries will be described, as well as the defence of intellectual property (IP) rights. The various options for commercial development will be compared, including licensing, partnerships, and start-up companies. The problems of raising finance will be
demonstrated with the preparation of a business plan. Case studies will be used to illustrate both IP and commercialisation issues, and all students will prepare a business plan for a biotechnology product.


**Assessment** Three hours per week lectures/tutorials for one semester.

**Required Reading** Tisdall, J., 2001, *Interscience, New York, USA.\*


**Class Contact** Three hours per week lectures/tutorials for one semester.

**Assessment** One assignment (3000 words, 50%); final examination (3h, 50%).

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**SMS6130 BIOINFORMATICS I**

**Campus** Werribee

**Prerequisite(s) or Co-requisite(s)** Molecular Genetics Theory, Functional Genomics and Bioinformatics Theory, Functional Genomics and Bioinformatics Workshops

**Content** Topics will include alignment methods, substitution scores and gap penalties, the HMM model, recognition of motifs and patterns, phylogenetic data analysis and tree-building methods, detection of functional sites in DNA such as ORFs and CpG islands, folding changes in proteins, protein structure prediction and homology modelling.


**Class Contact** Three hours per week of lectures and/or computer laboratory for one semester.

**Assessment** Practical and workshops (30%), tests (5 x 15min, 10%) and final examination (3h, 60%).

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**SMS6135 BIOINFORMATICS II**

**Campus** Werribee

**Prerequisite(s) or Co-requisite(s)** Molecular Genetics Theory, Functional Genomics & Bioinformatics Theory, Functional Genomics & Bioinformatics Workshops, Bioinformatics I

**Content** Topics will include sequence assembly and finishing, large-scale genome analysis, simple and integrated genome and proteome circuits. In addition, examples of how the programming language, Perl, is used for biological analysis will be examined, such as the use of Perl modules and subroutines to find a common ancestor, splice junction recognition and enzyme kinetics.


**Class Contact** Three hours per week of lectures and/or tutorials with some computer laboratory demonstrations.

**Assessment** Practical and workshops (30%); tests (5 x 15min, 10%) and final examination (3h, 60%).

**SMS6140 CELL CULTURE AND FERMENTATION TECHNOLOGY**

**Campus** Werribee

**Prerequisite(s)** Nil.

**Content** This subject will provide students with knowledge in the cultivation of microorganisms and higher eukaryotic cells at the small-scale laboratory and commercial scales. This includes plant culture, microbial fermentations and animal cell culture techniques. Topics will include batch, fed-batch and continuous cultures and bioreactors. The technology of stem cells will also be introduced and ethical issues regarding these will be discussed.


**Assessment** Three practical reports (40%); final examination (3h, 60%).

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**SMS6170 DRUG DESIGN & DEVELOPMENT**

**Campus** Werribee

**Prerequisite(s)** First year undergraduate chemistry.

**Content** The concept of drugs and drug targets; drug action at proteins, nucleic acids and receptors; structural considerations; drug discovery, design and development; drug-target interactions; pharmacokinetics and quantitative structure-activity relationships (QSAR); combinatorial synthesis and computational chemistry in medicinal chemistry; specific drugs such as antibacterials, opium analgesics, etc.; case studies with respect to rational drug design.


**Class Contact** Two hours lectures and one hour computer laboratory per week for one semester.

**Assessment** One assignment (3000 words, 20%); one test (1 h each, 20% each) and final examination (3h, 60%).

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**SMS6141 ANIMAL AND PLANT BIOTECHNOLOGY**

**Campus** Werribee

**Prerequisite(s)** Molecular Genetics Theory.

**Content** This subject will provide an in-depth understanding of how animal productivity and efficiency have been improved using technology such as embryo transfer, embryo splitting, in vitro fertilisation and cloning principles of genetic engineering as applied to a wide range of plant species including wheat, canola oil and soy beans; use of transgenic technology to produce novel proteins and other biomolecules for the pharmaceutical industry.


**Class Contact** Two hours lectures and one hour computer laboratory per week for one semester.

**Assessment** One assignment (3000 words, 20%); one test (1 h each, 20% each) and final examination (3h, 60%).
Class Contact
Class contact will be three hours per week for one semester.

Assessment
One assignment (3000 words, 30%); one test (20%) and final examination (3h, 50%).

SMS6142 RESEARCH METHODS IN BIOTECHNOLOGY

Campus Werribee

Prerequisite(s) Nil.

Content
The content of this subject will include information on how to write a literature review, information on how to source the most appropriate techniques and methodology that are used in the biotechnology industry and to provide a framework for formulating a research proposal. Other items covered will include information on the critical analysis of research papers, the importance of milestones in the research project and an overview of statistical methods that will be used to interpret the data. The subject will also include information on preparing seminar presentations, on techniques for preparing and presenting budgets and preparing ethic approval applications.

Required Reading

Recommended Reading

Class Contact
Class contact will be three hours per week including lectures, tutorials and workshops for one semester.

Assessment
Assessment for this subject will include two assignments (2000 words each, 30% each), a seminar presentation (15%) and a final examination (2h, 25%).

SMS6145 PROTEIN PRODUCTION, PURIFICATION & ANALYSIS

Campus Werribee

Prerequisite(s) Nil.

Content
Topics covered in the subject will include protein production in mammalian, bacterial, yeast and insect cell expression systems, protein purification and characterization using methods such as SDS-PAGE, purification using affinity and ion-exchange chromatography, protein crystallization, determination of protein structure, principles of X-ray crystallography and NMR in determining the structure of biological molecules including proteins.

Required Reading

Recommended Reading

Class Contact
Three hours a week lectures, tutorials or practicals.

Assessment
Practical reports (20%); one assignment (3000 words, 30%); final examination (3h, 50%).

SMS6980 STATISTICAL METHODS FOR BIOLOGICAL RESEARCH

Campus Werribee

Prerequisite(s) SMA1120 or equivalent.

Content
Revision of basic statistical concepts such as experimental design, frequency distributions, hypothesis testing, means, variance and standard deviation, ANOVA, chi square and goodness of fit, simple and multiple regression and correlation, confidence intervals and p values. A selection of more advanced statistical topics including Fisher's and Zaykin's exact tests, discriminant analysis, non-parametric statistics such as Kruskal-Wallis, introduction to multidimensional scaling and logistic regression. Other methods such as distance matrices, UPGMA, maximum likelihood methods, neighbour joining, concepts of bootstrapping and parsimony may be included depending on research interests of the group.

Required Reading

Recommended Reading

Class Contact
Three hours per week in lectures, tutorials or workshops for one semester.

Assessment
Exercises (20%); two assignments (problem-solving – hence cannot give word length), 20% each); final examination (3h, 40%).

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

Recommended Reading

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 endeavour to process credit transfer applications as soon as possible.

Recognition of Prior Learning (RPL) or Recognition of Current Competency (RCC)
Recognition of Prior Learning (RPL) or Recognition of Current Competency (RCC) is an assessment process whereby the learning that students have achieved through study and life/work experience is matched against the learning that would be covered in specific subjects/modules/competencies.

Applications
Students who believe that they are eligible for RPL/RCC are advised to begin the application as soon as they are enrolled. Students applying for RPL/RCC 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. Students are encouraged to discuss their application with their teacher/lecturer before it is submitted. Departments will provide information about the evidence that is required for the RPL/RCC application.

The University will endeavour to process RPL/RCC applications as soon as possible. Processing time depends on the complexity of the application but should take no more than four weeks.

Fees
An Assessment Fee may be charged where an external board/party is involved in the RPL/RCC assessment process.
A fee will apply to fee for service clients.
TAFE applicants will be notified of any applicable fees when they collect their application form.

Notification
Applications 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 Academic 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 Handbooks. Generally, selection is based on academic merit and by the selection authority’s assessment of the relative likelihood of applicants to successfully complete the course to which they have applied for admission. The main criterion for selection to Degree and Diploma courses is the applicant's performance in Year 12 studies unless other factors are relevant.

Such other factors may include:

- 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.

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) 9919 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) 9919 4110.
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 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) 9919 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) 9919 2193 or via email on disability@vu.edu.au.

Aborigines 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 Moondani Balluk (Indigenous Services) on (03) 9919 2891 or via email Moondani.Balluk@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 master; 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) 9919 4110, fax: (03) 9919 4813 or email ces@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 9919 2846
  Fax: 61 3 9919 2853
  Email: offshoreadmin@vu.edu.au
  Web site: 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) 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 web site: 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 readmission) should obtain 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 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 readmission 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 Office 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) 9919 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 lodging application forms at the earliest possible date, with the required accompanying documentation attached.
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 numeric exercise as part of the selection procedure and may be given the opportunity to attend an interview as part of the selection procedure.

Documentation
Direct applicants currently attempting Year 11 or Year 12 subjects should lodge their applications by the due date and then send a copy of their results when they become available. Other applicants who have attempted Year 11/12 should attach a certified copy of certificates.

All persons seeking admission to a course leading to one of the above awards who did not complete VCE must support their application with documentary evidence proving they have the educational qualifications referred to in their application. All documents should be in the form of certified copies and if documents are in a language other than English, officially certified translations together with certified copies of original documents are required. The University will retain all such evidence. Original documents should never be sent but must be available on request and may be required at a later stage of the selection process (e.g. during interview).

If a direct applicant has undertaken previous tertiary studies the applicant must attach a certified copy of the full transcript of his or her academic record(s) obtained at the previous institution(s). Please do not send original documents.

Subject Credits and Advanced Standing
Credit for Previous Tertiary Studies
Students who have completed subjects or units at another tertiary institution may be granted credit for equivalent subjects in Victoria University courses. A subject credit will allow a student an exemption from a course subject, while the value of that subject will still be counted towards their award.
Applications for credit for previous tertiary study must be accompanied by certified documentary evidence of the subjects passed, together with details of these subjects for comparison with the Victoria University course. Please note that the University may seek information from the other tertiary institutions about the applicant.
Partial Exemptions
In some cases where a student is ineligible for full credit from a particular subject, partial exemption may be granted whereby the student is allowed to undertake less than the full normal study or assessment requirements to be accredited with a pass.
Where partial credit has been approved, this will be taken into account in calculating the HECS liability which the student incurs for the subject.

Course Variation by Special Approval
In cases where credit for units/subjects of a student's course is not appropriate, the Dean of the Faculty or Head of the School or Department responsible for the student's course may grant a variation to course requirements by special approval. A course variation substitutes alternative subjects of similar content and duration for subjects normally required within a student's course.
The purpose of Course Variation by Special Approval is to avoid repeating curriculum material where it is deemed that a student will not gain substantial educational benefit from one or more of the normal requirements of the course, but where the student does not meet all the criteria for subject exemption.

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 credits 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 Monash University on the basis of a pass in Economics at Monash University in 2000, the applicant should attach a copy of the subject description of the unit from the 2000 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 may be directed to Student.Admin@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 payment within 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 toward 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**. 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. It is customary, though not obligatory, for the University to ask the student to sign and date a statement that specifies all of the following:

- the period of time, measured either in calendar time or in terms of course stages, for which the special conditions will apply;
- that the normal progression regulations of the course will not apply to the student for the time specified above; and
- full details of the special conditions and provisions that will apply to the student during the time specified.

Conditions applicable to a student's enrolment will normally be formulated at a meeting between the student and an authorised representative of the Faculty or School. A student may, if he or she wishes, take the proposed conditions away from the meeting to consider them further. However, where this occurs 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 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
Fees 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 liability after lodging an enrolment form. 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 2005 the General Services Fee (GSF) for students other than full fee paying students will be:

- 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).
- 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 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.

Reimbursement of Fees

Higher Education Students
Upon application, refunds (full or partial) will be granted on any of the following grounds:

• a student withdraws from a course of study at the University by the census date;
• a student changes from full-time status to part-time status within a given semester by the census date;
• a student withdraws from study in an approved course for one semester before the date of lodgement of the Enrolment Amendment Form at Enrolment Management or other authorised office within the University.

Refunds will be processed provided that the relevant enrolment amendment form or withdrawal form has been received and authorised by the census date.

Students should apply for a refund of fees on an Application for Refund form where they believe they are entitled to such a refund.

The amount of the refund payable will be determined according to the date of lodgement of the Enrolment Amendment Form at Enrolment Management or other authorised office within the University.

• 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 and receive a 25% discount on the amount paid.

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 Option 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.

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 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 Year Questions Answered 2005, 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 web site: 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 Year Questions Answered 2005, 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 web site: www.hecs.gov.au/pehs.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 web site: 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—Assessment). A copy can be obtained from the Head Legal and Policy Secretariat, telephone (03) 9919 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 web site 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, pager 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 2005 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>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

**Grade Definition**
- HD: High Distinction, 80–100%
- D: Distinction, 70–79%
- C: Credit, 60–69%
- P: Pass, 50–59%
- N1: Fail, 40–49%
- N2: Low Fail, 0–39%
- S: Ungraded Pass*
- U: Ungraded Fail

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.

C: Competency Based Grades (TAFE)

**Grade Definition**
- CC: Achieved Outstanding Competency
- CP: Achieved Competency – Highest Grade Awarded
- PP: Achieved Competency
- NN: Competency Not Achieved

D: Codes For Incomplete Assessment

**Code Definition**
- X: Continuing Subject
- L: Not yet Assessed – Special Cause**
- RO: Result Outstanding

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

**Code Definition**
- SC: Satisfactory Completion of Class Hours
- UC: Unsatisfactory Completion of Class Hours
- SE: Subject Exemption
- E1: Exempt Semester 1 (full year subject)
- 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.

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 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 web site and sent directly to:
Graduation ceremonies in 2005 are scheduled as follows:

- 16 February 2005  Hong Kong
- 20 February 2005  Malaysia
- 6 to 10 June 2005  Melbourne Convention Centre
- 2 to 4 November 2005  Melbourne Convention Centre
- 26 February 2005  Malaysia
- 16 February 2005  Hong Kong

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.

Certificates: A black gown and black cap together with a black stole faced in tangerine.

Diplomates and graduate certificates: 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.

Discipline colours:
- Ruby
- Ultramarine
- Cherry
- Silver Grey
- Old Rose
- Parchment
- Buff
- Spectrum Green
- Gold
- Adonis Blue
- Cherry
- Graphite
- Pearl White
- Ruby
- Sapphire
- Old Gold
- Spectrum Green
- Sky Blue

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 'Victoria University' embroidered in gold on the left end of the stole, and the sun 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 0.5, 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 – web site: www.vu.edu.au/careers;

Careers Counselling appointments are available for students from all campuses by phoning (03) 9919 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 on line 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. Its free, its easy, and the employers come to you. Some employers also arrange campus visits. Watch the web site 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 Support.

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) 9919 4098
For further information on finding suitable childcare, telephone the Manager, Children's Services, on 9919 8801.

Footscray Nicholson Campus
Telephone: (03) 9919 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 and offers a funded preschool program incorporated within the educational program.

Footscray Park Campus
Telephone: (03) 9919 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 and offers a funded preschool program incorporated within the educational program.

Jindi Woraback Children’s Centre
(St Albans Campus)
Telephone: (03) 9919 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 two weeks to six years on a full-time (weekly), daily, sessional (half day) basis. The Centre is open from 7:00am to 6:00pm, Monday to Friday and offers a funded preschool program.

Melton Campus
Telephone: (03) 9919 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) 9919 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) 9919 9568 or (03) 9919 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.
SERVICES AVAILABLE TO STUDENTS

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 form. 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 web site. 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 9919 2846
Fax: 61 3 9919 2853
Email: graduate@vu.edu.au
Web site: www.vu.edu.au
Located: Room 4C, 141, St Albans Campus

Optometry and Dentistry
Optometry and dental services through local agencies. All enquiries should be directed to the Victoria University Student Union

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) 9919 2625.

Independent Access:
Students with Disabilities
Students with disabilities have access to disabled parking, library resources and equipment including support staff, faculty and department contact officers, and educational assistance through the Student Learning Unit. Students requiring in-class supports, teaching accommodations and/or applications for alternative assessment arrangements for examinations need to register with Disability Services (DS) in the Equity & Social Justice Branch. Students must register with DS each year, and as early as possible, to ensure adequate supports and up to date information and resources are available. A Disability Resource Room is located at St. Albans campus providing access to adaptive technology as well as services such as the transcribing of text into electronic or Braille format.
Further information, registering and advice can be obtained by contacting Disability Services in the Equity and Social Justice Branch on (03) 9919 2193 or via email on disability@vu.edu.au.
Students with disabilities seeking services such as personal and vocational counselling, careers advice, accommodation, chaplaincy, financial advice and scholarship information need to contact Student Support (see section below).

Orientation
The Orientation Festival is an annual event held at the beginning of Semester 1 each year. During the festival, a wide range of events are organised to provide opportunities for students to meet each other and to gain an awareness of the activities and services provided by the University.

An Orientation Information satchel is provided for new students including the The Survival Guide which includes information about the services available to students and a range of other extracurricular activities. Further information can be obtained at www.vu.edu.au or www.vustudents.org.au

Moondani Balluk
(Indigenous Services)
Support for Aboriginal and Torres Strait Islander people is available through the Equity and 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.
Moondani Balluk staff can assist students with course advice, Abstudy, academic support, employment and careers advice, social support, housing, counselling and discrimination advice.
Further information is available from Moondani Balluk, telephone (03) 9919 2836, or email Moondani.Balluk@vu.edu.au

Student Support
Student Support provides services to students in a variety of ways. Staff provide academic support, personal and vocational counselling, financial counselling, housing and health services.
Student Support 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) 9919 8801, Footscray Park campus on (03) 9919 4418, St Albans campus on (03) 9919 2399 or visit our webpage: www.vu.edu.au/ss

Accommodation
The University Student Housing Service assists student with locating, securing and maintaining suitable accommodation. The Student Housing Database, including current accommodation listings, is on the Internet. The ‘Housing Web’ can be located at http://www.vu.edu.au/ss/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 and referral as well as assistance with general housing information. At other campuses, Student Support staff can assist with accommodation inquiries. For further information, contact the Housing Officer on telephone: (03) 9919 4420 or e-mail housing@vu.edu.au

Chaplaincy
Contact Student Support for information about spiritual support in the community.
Counselling – Personal
Counselling can help students optimise their emotional, social and academic well-being. Students are invited to discuss any personal, family or relationship matters 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) 9919 4418 or (03) 9919 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.

Claim 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 Support 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 Support on most campuses.

Prayer Rooms
Prayer rooms are available on most campuses. Visit our web site for room locations: www.vu.edu.au/ss

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) 9919 8517.

Services for AusAid sponsored students are available through Footscray Park Campus, telephone: (03) 9919 4780

Further information is available at Footscray Park Campus, telephone: (03) 9919 4777, St Albans Campus, telephone: (03) 9919 2399 or City Flinders Campus, telephone: (03) 9919 1159.

Further information relevant to International students is available from the International Branch at City Flinders Campus, telephone: +61 3 9919 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;
• Vaccinations (at Footscray Park Campus).

The health advisors can also be contacted through Student Support on (03) 9919 4418.

Medical Centre
A Medical Centre is located at Student Support 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.

The health advisors can also be contacted through Student Support on (03) 9919 4418.

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) 9919 8886.
First Aid
There are first aiders on all campuses of the University. Lists of first
aiders are on the 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.

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 on the grounds specified in Commonwealth and State anti-
discrimination legislation. The list is available from the Equity and
Social Justice Branch on ph (03) 9919 2193, on the internet at
www.vu.edu.au/equity or via email equity@vu.edu.au

General Classes
CEDS SLU staff also conduct some general classes such as Reading
and Writing for Engineering Students, and Summer and Winter
Schools which are open to all students.

Individual Appointments
Postgraduate students may make individual or small group
appointments to discuss their essay or thesis work. A very limited
number of individual or small group appointments is available for
undergraduate students who would like assistance with academic
skills in some particular subjects where there is no linked CEDS
SLU class.

Email Consultations
Students may consult a CEDS SLU lecturer about their work using
e-mail. 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) 9919 4744.

Sport and Recreation Facilities
and Services
A range of sport, recreation and fitness facilities and services are
provided by the University including:
• fitness centres at Footscray Park, St Albans, Sunbury and
Werribee campuses;
• twenty-five metre swimming pool at the Footscray Park campus;
• first-class athletics track and rugby field at the Werribee campus;
• multi-purpose sports halls at Melton, Footscray Park and
Footscray Nicholson campuses;
• tennis courts at Werribee, Footscray Park and St Albans
campuses.
Sporting equipment is available from the sport and recreation facility on
your campus.

Programs and services include:
• Orientation Festival including Host Day, the ‘O Party’ and a
range of campus events including free entertainment, food, stalls,
clubs and sport information;
• sporting opportunities including club sport, campus sport, cross
campus and representative competitions;
• major events including parties, club nights and balls;
• trips and tours including learn to surf, skiing trips, Great Ocean
Road tour, Phillip Island tour and a ten-day trip to Central
Australia;
• regular campus entertainment including performers, film
screenings, club events, information days, free food and stalls;
• clubs and societies including social interest, cultural, faculty and
course-based groups;
• student competitions such as the Diary Cover Competition,
National Campus Band Competition and Art Prize.
For further information go to www.vustudents.org or pick up a Sport
and Recreation Handbook.
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 and the Victoria University Postgraduate Association.

**City Flinders**
Student Union Office (03) 9919 1427

**City King**
Student Union Office (03) 9919 7831

**Footscray Nicholson**
Student Union Office (03) 9919 8534

**Footscray Park**
Union Reception/General Enquiries (03) 9919 4360
Resource Centre (03) 9919 4302

**Melton**
Resource Centre (03) 9919 7551

**Newport**
Resource Centre (03) 9919 8474

**St Albans**
Student Union Office (03) 9919 2706
Resource Centre (03) 9919 2638

**Sunbury**
Resource Centre (03) 9919 3206

**Sunshine**
Student Union Office (03) 9919 7126

**Werribee**
Resource Centre (03) 9919 8206

**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 2005

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 2004.

## 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 = Melbourne
- O = Off campus
- P = Singapore
- Q = Queen Street
- S = St Albans
- W = Werribee
- 3 = Bangladesh
- DB = CUFE, China
- D2 = Shenyang, People's Republic of China
- D8 = Tianjin, People's Republic of China
- D7 = Renmin University, Beijing, China
- DE = Harbin University, China
- 23 = Kasetsart University, Thailand
- 71 = Alpha Beta Colleges, Sydney

### Faculty of Science, Engineering and Technology

<table>
<thead>
<tr>
<th>Campus</th>
<th>Full-time</th>
<th>Part-time</th>
</tr>
</thead>
</table>

#### Faculty Courses

- **Bachelor**
  - Business/Science: F/S/W, Y, Y
  - Engineering/Business: F, Y, Y
  - Engineering/Science: F/S/W, Y, Y
  - Engineering/Laws: F, Y, Y
  - Engineering/Arts: F/S, Y, Y
  - Science/Laws: F/S/W, Y, Y
  - Science/Arts: F/S, Y, Y
  - Certificate
    - Foundation Studies: F/S, Y, Y

#### 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 Technology**
  - Building Surveying: F/S, Y, Y

#### School of Computer Science and Mathematics

- **Bachelor of Science**
  - Computer Science: F/H/D7, Y, Y
  - Computer & Mathematical Sciences: F, Y, Y
  - Computer Science & Aviation: F, Y, Y
  - Internet Technologies & Applications: F, Y, Y
  - Information Technology: F, Y, Y
  - Computational Financial Mathematics: F, Y, Y

- **Bachelor of Science (Honours)**
  - Computer Science: F, Y, Y
  - Computer & Mathematical Sciences: F, Y, Y

#### International Program (Offshore)

- Bachelor of Science in Computer Science: H/D/K, Y, Y

#### External Program

- Bachelor of Science in Computer Science: 71, Y, Y
## School of Electrical Engineering

<table>
<thead>
<tr>
<th>Bachelor of Engineering</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>– Electrical &amp; Electronic Engineering</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>– Computer Engineering</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>– Software Engineering</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>– Microelectronic Systems</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>– Telecommunication Engineering</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>– Photonics</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Engineering Science</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– Photonics</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Science</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– Computer Technology</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>– Applied Physics &amp; Computing</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>– Optoelectronics</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Science (Honours)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– Computer Technology</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>– Physics</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
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</tbody>
</table>

## School of Molecular Sciences

<table>
<thead>
<tr>
<th>Bachelor of Applied Science</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>– Chemistry</td>
<td>W</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Science</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– Biotechnology</td>
<td>W</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>– Medical, Forensic &amp; Analytical Chemistry</td>
<td>W</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>– Nutrition, Food &amp; Health Science</td>
<td>W</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Science (Honours)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– Biology (Biotechnology)</td>
<td>W</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>– Nutrition &amp; Food Science</td>
<td>W</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>– Chemical &amp; Environmental Sciences</td>
<td>W</td>
<td>Y</td>
<td>Y</td>
</tr>
</tbody>
</table>

## School of Biomedical Sciences

<table>
<thead>
<tr>
<th>Bachelor of Science</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>– Biomedical Sciences</td>
<td>S</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>– Occupational Health &amp; Safety</td>
<td>O</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>– Nutritional Therapy</td>
<td>S</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Science (Honours)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– Biomedical Sciences</td>
<td>S</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Double Degree</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– Science/Psychology</td>
<td>S</td>
<td>Y</td>
<td>Y</td>
</tr>
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</table>

## Sustainability Group

<table>
<thead>
<tr>
<th>Bachelor of Science</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>– Ecology &amp; Sustainability</td>
<td>S</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Science (Honours)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– Ecology &amp; Sustainability</td>
<td>S</td>
<td>Y</td>
<td>Y</td>
</tr>
</tbody>
</table>

**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 Science, Engineering and Technology courses is still accurate, contact the Faculty of Science, Engineering and Technology Executive Officer on (03) 9919 4191. For further information about Science, Engineering and Technology courses: Telephone: (03) 9919 4191– Facsimile: (03) 9919 4513 – Email: Bob.Ritchens@vu.edu.au Internet: www.vu.edu.au
Faculty of Arts

<table>
<thead>
<tr>
<th>Courses at Victoria University in 2005</th>
</tr>
</thead>
</table>

### Generalist Degree Programs

<table>
<thead>
<tr>
<th>Course</th>
<th>Campus</th>
<th>Full-time</th>
<th>Part-time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor of Arts – Footscray</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Arts – St Albans</td>
<td>S</td>
<td>Y</td>
<td>Y</td>
</tr>
</tbody>
</table>

### Specialist Degree Programs

<table>
<thead>
<tr>
<th>Course</th>
<th>Campus</th>
<th>Full-time</th>
<th>Part-time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor of Arts (Advocacy &amp; Mediation)</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Arts (International Community Development)</td>
<td>S</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Arts (Community Development)</td>
<td>S</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>– Australian Stream (3rd year only)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelor of Arts (Computer Mediated Art)</td>
<td>S</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Arts (Criminal Justice Studies)</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Arts (Human Services)</td>
<td>S</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Arts (International Studies)</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Arts (Legal Studies)</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Arts (Multimedia)</td>
<td>S</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Arts (Performance &amp; Multimedia)</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Arts (Professional Writing)</td>
<td>S</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Communication (Public Relations)</td>
<td>S</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Multimedia Systems</td>
<td>K</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Psychology (Arts stream)</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Psychology (Interpersonal &amp; Organisational)</td>
<td>S</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Social Work (Preliminary Year)</td>
<td>S</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Social Work</td>
<td>S</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Science (Psychology)</td>
<td>S</td>
<td>Y</td>
<td>Y</td>
</tr>
</tbody>
</table>

### Combined Degree Programs

<table>
<thead>
<tr>
<th>Course</th>
<th>Campus</th>
<th>Full-time</th>
<th>Part-time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor of Arts (Asian Studies)/Bachelor of Business (International Trade)</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Arts (Psychology)/Bachelor of Business (Human Resource Management)</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Arts/Bachelor of Science/Bachelor of Arts/Diploma of Liberal Arts</td>
<td>S</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Exercise Science &amp; Human Movement/Bachelor of Psychology</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Business (Electronic Commerce)/Bachelor of Arts (Multimedia)</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Business (Marketing)/Bachelor of Psychology</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Business (Tourism Management)/Bachelor of Engineering/Bachelor of Arts</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Laws/Bachelor of Arts</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Science / Bachelor of Psychology</td>
<td>S</td>
<td>Y</td>
<td>Y</td>
</tr>
</tbody>
</table>

### Honours Programs

<table>
<thead>
<tr>
<th>Course</th>
<th>Campus</th>
<th>Full-time</th>
<th>Part-time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor of Arts (Honours)</td>
<td>S,F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Arts (Honours) Computer Mediated Art &amp; Multimedia</td>
<td>S</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Arts (Honours – Psychology)</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Multimedia Systems (Honours)</td>
<td>F</td>
<td>Y</td>
<td>N</td>
</tr>
<tr>
<td>Bachelor of Psychology (Honours)</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Science (Honours – Psychology)</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
</tbody>
</table>

**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

### School of Accounting and Finance

**Bachelor of Business**
- Accounting: F,W,H1,D3,DB,K1 Y Y
- Banking & Finance: F,K1,H1 Y Y
- Accounting/Banking & Finance: F,K1 Y Y
- Accounting/Hospitality Management: F Y Y
- Banking & Finance/Information Systems: F Y Y
- Banking & Finance/International Trade: F Y Y

**Bachelor of Business Combined Degrees**
- Fasttrack BBus Accounting/TAFE Accounting: W Y N

### School of Applied Economics

**Bachelor of Business**
- Financial Risk Management: F, K1, H1, DB, D2 Y Y
- Global Logistics & Transport: W, H1 Y Y
- International Business: W Y Y
- International Commerce: D2 Y N
- International Trade: F,K1,D6,D3,22,H1 Y Y
- Music Industry: F Y Y
- Retail Management: F,K1 Y Y
- Applied Economics/International Trade: F Y Y
- Financial Risk Management/Accounting: H1,D2 Y N
- Financial Risk Management/Banking & Finance: H1,D2 Y N
- Financial Risk Management/Global Logistics & Transport: H1, DB Y N
- Financial Risk Management/International Trade: F, DB, H1, D2 Y Y
- Global Logistics & Transport/Accounting: H1 Y N
- Global Logistics & Transport/International Trade: H1 Y N
- International Trade/Retail Management: F Y Y
- Music Industry/Retail Management: F Y Y
- Retail Management/Marketing: F Y Y

**Bachelor of Business Honours Degrees**
- Bachelor of Business (Honours) Applied Economics: C Y Y
- Bachelor of Business (Honours) International Trade: C Y Y
- Bachelor of Business (Honours) Retail Management: C Y Y

**Bachelor of Business Combined Degrees**
- BBus Tourism Management/BA Asian Studies: F Y Y
- BBus Tourism Management/BA Recreation Management: F Y Y
- BBus Marketing/BA Psychology: F Y Y
- BA Sports Administration/BBus Event Management: B Y Y
- BA Sports Administration/BBus Marketing: B Y Y
### School of Information Systems

#### Bachelor of Business
- Computer Systems Management: W,H3
- Electronic Commerce: FW,K1, Y, Y
- Information Systems: F,K1, Y, Y
- Electronic Commerce/Music Industry: F, Y, Y
- Electronic Commerce/International Trade: F, Y, Y
- Electronic Commerce/Retail Management: F, Y, Y

#### Bachelor of Business Honours Degrees
- Bachelor of Business (Honours) Information Systems: C, Y, Y

#### Bachelor of Business Combined Degrees
- B.Bus Electronic Commerce/Bachelor of Science: W, Y, Y
- BA Multimedia/BBus Electronic Commerce: F, Y, Y
- Bachelor of Engineering/BBus Electronic Commerce: F, Y, Y

### School of Law

#### Bachelor of Laws
- Law: F,Q, Y, Y
- Graduate Entry: F,Q, Y, Y
- Legal Practice Management: F, Y, Y

#### Bachelor of Laws/Bachelor of Business
- Bachelor of Laws/BBus Accounting: F, Y, Y
- Bachelor of Laws/BBus Applied Economics: F, Y, Y
- Bachelor of Laws/BBus Banking & Finance: F, Y, Y
- Bachelor of Laws/BBus Electronic Commerce: F, Y, Y
- Bachelor of Laws/BBus Event Management: F, Y, Y
- Bachelor of Laws/BBus Human Resource Management: F, Y, Y
- Bachelor of Laws/BBus International Trade: F, Y, Y
- Bachelor of Law/BBusManagement: F, Y, Y
- Bachelor of Laws/BBus Marketing: F, Y, Y
- Bachelor of Laws/BBus Music Industry: F, Y, Y
- Bachelor of Laws/BBus Tourism Management: F, Y, Y

#### Bachelor of Laws Combined Degrees
- Bachelor of Laws/Bachelor of Arts: F, Y, Y
- Bachelor of Laws/Bachelor of Science: F, Y, Y
- Bachelor of Engineering/Bachelor of Laws: F, Y, Y

### School of Management

#### Bachelor of Business
- Management: FR,DA,K1, Y, Y
- Human Resource Management: FR,K1, Y, Y
- Service & Human Resource Management: B, Y, Y
- Strategic & Financial Management: F, Y, Y
- Management/Marketing: BP1, Y, Y

#### Bachelor of Business Honours Degrees
- 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

<table>
<thead>
<tr>
<th>Bachelor of Arts</th>
<th>Campus</th>
<th>Full-time</th>
<th>Part-time</th>
</tr>
</thead>
<tbody>
<tr>
<td>– Computer Mediated Art</td>
<td>S</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>– Computer Mediated Art &amp; Multimedia (Honours)</td>
<td>S</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>– Early Childhood Education</td>
<td>M</td>
<td>n/a</td>
<td>Y</td>
</tr>
<tr>
<td>– Youth Studies</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
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</table>

### Bachelor of Education

<table>
<thead>
<tr>
<th>Course</th>
<th>Campus</th>
<th>Full-time</th>
<th>Part-time</th>
</tr>
</thead>
<tbody>
<tr>
<td>– Pre-Service Program P-12</td>
<td>FM,B</td>
<td>Y</td>
<td>n/a</td>
</tr>
<tr>
<td>– Post-Registration (Year 4)</td>
<td>B</td>
<td>Y</td>
<td>Y</td>
</tr>
</tbody>
</table>

Bachelor of Education (Nyerna Studies) Program

Incorporating:

- Bachelor of Arts (Nyerna Studies) | E | Y | Y |
- Diploma of Community Services – Youth Work | E | Y | Y |
- Associate Diploma of Arts – Recreation/Fitness Leadership | E | Y | Y |
- Certificate in Occupational Studies – Social & Community Services | E | Y | Y |

### School of Health Sciences

<table>
<thead>
<tr>
<th>Course</th>
<th>Campus</th>
<th>Full-time</th>
<th>Part-time</th>
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</thead>
<tbody>
<tr>
<td>– Clinical Dermal Therapies</td>
<td>J</td>
<td>n/a</td>
<td>Y</td>
</tr>
<tr>
<td>– Natural Medicine</td>
<td>S,ZA</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>– Paramedic (3yr pre-service)</td>
<td>S,J</td>
<td>Y</td>
<td>n/a</td>
</tr>
<tr>
<td>– Paramedic (1yr conversion)</td>
<td>ZA,H</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>– Chinese Medicine</td>
<td>S</td>
<td>Y</td>
<td>n/a</td>
</tr>
<tr>
<td>– Naturopathy &amp; Homoeopathy</td>
<td>S</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Science – Clinical Sciences (Osteopathy)</td>
<td>C</td>
<td>Y</td>
<td>n/a</td>
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</table>

### School of Human Movement, Recreation and Performance

<table>
<thead>
<tr>
<th>Bachelor of Exercise Science</th>
<th>Campus</th>
<th>Full-time</th>
<th>Part-time</th>
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</thead>
<tbody>
<tr>
<td>– Human Movement</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>– Human Movement/Bachelor of Psychology</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>– Human Movement/Bachelor of Arts Sport Administration</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>Bachelor of Applied Science – Physical Education (Secondary)</td>
<td>F</td>
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### Bachelor of Arts

<table>
<thead>
<tr>
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<th>Part-time</th>
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<tr>
<td>– Performance Studies</td>
<td>F</td>
<td>Y</td>
<td>n/a</td>
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<tr>
<td>– Performance &amp; Multimedia</td>
<td>F</td>
<td>Y</td>
<td>n/a</td>
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<tr>
<td>– Recreation Management/Bachelor of Business – Sports Administration</td>
<td>B</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>– Sports Administration/Bachelor of Business – Management</td>
<td>B</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>– Sports Administration/Bachelor of Business – Marketing</td>
<td>B</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Recreation Management</td>
<td>F,M</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Applied Science (Honours) – Human Movement</td>
<td>F</td>
<td>Y</td>
<td>n/a</td>
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</tbody>
</table>

### Award Courses

- Bachelor of Nursing
  - (Pre-Registration) | S | Y | Y |
  - (Graduate Entry) | S | Y | Y |
  - (Division 2 Entry) | S | Y | Y |

- Bachelor of Health Science
  - Nursing (Post-Registration) | S | Y | Y |
  - Nursing (Honours) | S | Y | Y |
- Bachelor of Midwifery | S | Y | Y |

### Note:

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# Postgraduate Courses

## Faculty of Science, Engineering and Technology

### Faculty Courses

<table>
<thead>
<tr>
<th>Program Type</th>
<th>Course Details</th>
<th>Campus</th>
<th>Full-time</th>
<th>Part-time</th>
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<tbody>
<tr>
<td>Masters Qualifying Program</td>
<td>F</td>
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</table>

### Centre for Environmental Safety and Risk Engineering

<table>
<thead>
<tr>
<th>Program Type</th>
<th>Course Details</th>
<th>Campus</th>
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<th>Part-time</th>
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</thead>
<tbody>
<tr>
<td>Doctor of Philosophy</td>
<td>W</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Master of Engineering (Research)</td>
<td>W</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Master of Engineering (Coursework) – Building Fire Safety &amp; Risk Engineering</td>
<td>W</td>
<td>n/a</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Graduate Diploma – Building Fire Safety &amp; Risk Engineering</td>
<td>W</td>
<td>n/a</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Graduate Certificate – Performance-based Building &amp; Fire Codes</td>
<td>W</td>
<td>n/a</td>
<td>Y</td>
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</table>

### Integrated Freight Systems Research Unit

<table>
<thead>
<tr>
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<th>Course Details</th>
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<th>Full-time</th>
<th>Part-time</th>
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</thead>
<tbody>
<tr>
<td>Doctor of Philosophy</td>
<td>W</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>Master of Engineering (Research)</td>
<td>W</td>
<td>Y</td>
<td>Y</td>
<td></td>
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<tr>
<td>Master of Engineering Science (Intermodal)</td>
<td>W</td>
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<tr>
<td>Graduate Diploma – Intermodal Freight Systems Management</td>
<td>W</td>
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<tr>
<td>Graduate Certificate – Intermodal Freight Systems Management</td>
<td>W</td>
<td>n/a</td>
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<tr>
<td>– Bulk Freight Systems Management</td>
<td>W</td>
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### School of Architectural, Civil and Mechanical Engineering

<table>
<thead>
<tr>
<th>Program Type</th>
<th>Course Details</th>
<th>Campus</th>
<th>Full-time</th>
<th>Part-time</th>
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<tbody>
<tr>
<td>Doctor of Philosophy</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Master of Engineering (Research)</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
<td></td>
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<tr>
<td>Master of Engineering (Coursework) – Project Management</td>
<td>F</td>
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<tr>
<td>– Project Management (Block Mode)</td>
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<td>Y</td>
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<tr>
<td>– Mechanical Engineering</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>Graduate Diploma – Project Management</td>
<td>F</td>
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<tr>
<td>Graduate Certificate – Project Management</td>
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### School of Computer Science and Mathematics

<table>
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<th>Campus</th>
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<th>Part-time</th>
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</thead>
<tbody>
<tr>
<td>Doctor of Philosophy</td>
<td>F</td>
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<td>Y</td>
<td></td>
</tr>
<tr>
<td>Master of Science (Research)</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
<td></td>
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<tr>
<td>Master of Science (Coursework) – Computer Science</td>
<td>F</td>
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<td>Y</td>
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</tr>
<tr>
<td>– Computer &amp; Mathematical Sciences</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>– Software Engineering</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>Graduate Diploma – Computer Science</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>– Computer &amp; Mathematical Sciences</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>– Multimedia Information Networking</td>
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<td>Y</td>
<td>Y</td>
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<tr>
<td>– Software Engineering</td>
<td>F</td>
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</table>

### School of Electrical Engineering

<table>
<thead>
<tr>
<th>Program Type</th>
<th>Course Details</th>
<th>Campus</th>
<th>Full-time</th>
<th>Part-time</th>
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</thead>
<tbody>
<tr>
<td>Doctor of Philosophy</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Master of Engineering (Research)</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Master of Science (Research)</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>Master of Engineering (Coursework) – Microelectronic Engineering</td>
<td>F</td>
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<td>Y</td>
<td></td>
</tr>
<tr>
<td>– Electrical &amp; Electronic Engineering</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
<tr>
<td>– System &amp; Control Engineering</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
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</tr>
<tr>
<td>– Telecommunication Engineering</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
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</table>
### COURSES AT VICTORIA UNIVERSITY IN 2005

- **Master of Engineering Science (Coursework)**
  - Computer & Microelectronic Engineering
  - Graduate Diploma
    - Microelectronic Engineering
    - System & Control Engineering
    - Telecommunication Engineering
  - Graduate Certificate
    - Microelectronic Engineering
    - System & Control Engineering
    - Telecommunication Engineering
  - Double Degree (Coursework)
    - Master of Engineering in Microelectronic Engineering / Master of Engineering Science in Computer & Microelectronic Engineering

- **School of Biomedical Sciences**
  - Doctor of Philosophy
  - Master of Science (Research)

- **School of Molecular Sciences**
  - Doctor of Philosophy
  - Master of Science (Research)

- **Sustainability Group**
  - Master of Science (Coursework)
    - Environmental Management
  - Graduate Diploma
    - Environmental Management

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### Faculty of Arts

<table>
<thead>
<tr>
<th>Program</th>
<th>Full-time</th>
<th>Part-time</th>
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</thead>
<tbody>
<tr>
<td><strong>Higher Degrees by Research</strong></td>
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<td></td>
</tr>
<tr>
<td>Master of Arts by Research</td>
<td>S,F</td>
<td>Y</td>
</tr>
<tr>
<td>Doctor of Philosophy by Research</td>
<td>S,F</td>
<td>Y</td>
</tr>
<tr>
<td>Master of Social Work by Research</td>
<td>S</td>
<td>Y</td>
</tr>
<tr>
<td><strong>Postgraduate Programs by Coursework</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Graduate Certificate in Asian &amp; Pacific Studies (General Stream)</td>
<td>F</td>
<td>Y</td>
</tr>
<tr>
<td>Graduate Certificate in Asian &amp; Pacific Studies (Community Development Stream)</td>
<td>S</td>
<td>Y</td>
</tr>
<tr>
<td>Graduate Certificate in Communication &amp; Professional Writing</td>
<td>C</td>
<td>Y</td>
</tr>
<tr>
<td>Graduate Certificate in Arts (History)</td>
<td>F</td>
<td>Y</td>
</tr>
<tr>
<td>Graduate Certificate in Arts (Politics &amp; International Studies)</td>
<td>F</td>
<td>Y</td>
</tr>
<tr>
<td>Graduate Certificate in Public Advocacy &amp; Action</td>
<td>S</td>
<td>N</td>
</tr>
<tr>
<td>Graduate Certificate in Women's Studies</td>
<td>C</td>
<td>N</td>
</tr>
<tr>
<td>Graduate Diploma in Asian &amp; Pacific Studies (General Stream)</td>
<td>F</td>
<td>Y</td>
</tr>
<tr>
<td>Graduate Diploma in Asian &amp; Pacific Studies (Community Development Stream)</td>
<td>S</td>
<td>Y</td>
</tr>
<tr>
<td>Graduate Diploma in Communication &amp; Professional Writing</td>
<td>C</td>
<td>Y</td>
</tr>
<tr>
<td>Graduate Diploma in Counselling</td>
<td>S</td>
<td>N</td>
</tr>
<tr>
<td>Graduate Diploma in Counselling (Child &amp; Adolescent)</td>
<td>S</td>
<td>N</td>
</tr>
<tr>
<td>Graduate Diploma in Arts (History)</td>
<td>F</td>
<td>Y</td>
</tr>
<tr>
<td>Graduate Diploma in Arts (Politics &amp; International Studies)</td>
<td>F</td>
<td>Y</td>
</tr>
<tr>
<td>Graduate Diploma in Arts (Social Research Methods)</td>
<td>F</td>
<td>Y</td>
</tr>
<tr>
<td>Graduate Diploma in Modern Languages</td>
<td>S,F</td>
<td>N</td>
</tr>
<tr>
<td>Graduate Diploma in Psychological Studies</td>
<td>S</td>
<td>N</td>
</tr>
<tr>
<td>Graduate Diploma in Psychology</td>
<td>F</td>
<td>Y</td>
</tr>
</tbody>
</table>
COURSES AT VICTORIA UNIVERSITY IN 2005

Graduate Diploma of Public Advocacy & Action S Y N
Graduate Diploma in Women's Studies C N Y
Master in Counselling S N Y
Master of Arts in Asian & Pacific Studies (General Stream) F N Y
Master of Arts in Asian & Pacific Studies (Community Development Stream) S N Y
Master of Arts in Communication & Professional Writing C Y Y
Master of Arts in Women's Studies C N Y
Master of Applied Psychology
  – Community Psychology Stream F Y Y
  – Sport Psychology Stream F Y Y
Master of Psychoanalysis S N Y
Master of Psychology
  – Clinical Psychology Stream S Y Y
  – Clinical Neuropsychology Stream S Y Y
Master of Public Advocacy & Action S Y Y
Doctor of Philosophy
  – Clinical Psychology Stream S Y Y
  – Clinical Neuropsychology Stream S Y Y
Doctor of Applied Psychology
  – Community Psychology Stream F Y Y
  – Sport Psychology Stream F Y Y
  – Health Psychology Stream F Y Y

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Faculty of Business and Law

<table>
<thead>
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<th>Campus</th>
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<tbody>
<tr>
<td>Victoria Graduate School of Business</td>
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<tr>
<td>Master of Business Administration</td>
<td>C,P1,K1,31,D1</td>
<td>Y</td>
</tr>
<tr>
<td>Doctor of Business Administration</td>
<td>C,D1,K1,P1</td>
<td>Y</td>
</tr>
<tr>
<td>Master of Business by Research</td>
<td>C</td>
<td>Y</td>
</tr>
<tr>
<td>Doctor of Philosophy</td>
<td>C</td>
<td>Y</td>
</tr>
<tr>
<td>School of Accounting and Finance</td>
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<td></td>
</tr>
<tr>
<td>Graduate Certificate in Accounting</td>
<td>C,P1,D2</td>
<td>Y</td>
</tr>
<tr>
<td>Master of Business in Accounting</td>
<td>C</td>
<td>Y</td>
</tr>
<tr>
<td>Master of Business in Finance</td>
<td>C</td>
<td>Y</td>
</tr>
<tr>
<td>Master of Business in Professional Accounting</td>
<td>C,P1,D2</td>
<td>Y</td>
</tr>
<tr>
<td>Master of Business by Research</td>
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<td>Y</td>
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<tr>
<td>Doctor of Philosophy</td>
<td>C</td>
<td>Y</td>
</tr>
<tr>
<td>School of Applied Economics</td>
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<tr>
<td>Graduate Certificate in Statistics</td>
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<td>Y</td>
</tr>
<tr>
<td>Graduate Certificate in Retail Management</td>
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<tr>
<td>Graduate Diploma in Retail Management</td>
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</tr>
<tr>
<td>Master of Business in Business Economics</td>
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<tr>
<td>Master of Business in Financial Risk Management</td>
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</tr>
<tr>
<td>Master of Business in International Trade</td>
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</tr>
<tr>
<td>Master of Business in International Music &amp; Entertainment Business</td>
<td>C</td>
<td>Y</td>
</tr>
<tr>
<td>Master of Business Global Logistics &amp; Transport</td>
<td>C,H1</td>
<td>Y</td>
</tr>
<tr>
<td>Master of Business by Research</td>
<td>C</td>
<td>Y</td>
</tr>
<tr>
<td>Doctor of Philosophy</td>
<td>C</td>
<td>Y</td>
</tr>
<tr>
<td>School of Hospitality, Tourism and Marketing</td>
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<td></td>
</tr>
<tr>
<td>Master of Business in Hospitality Management</td>
<td>C</td>
<td>Y</td>
</tr>
<tr>
<td>Master of Business in Hospitality Management (Professional Practice)</td>
<td>C</td>
<td>Y</td>
</tr>
<tr>
<td>Master of Business in Hospitality &amp; Tourism Education</td>
<td>C</td>
<td>Y</td>
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<tr>
<td>Master of Business in Hospitality &amp; Tourism Management</td>
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<tr>
<td>Master of Business in Hospitality &amp; Tourism Marketing</td>
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<tr>
<td>Master of Business in Marketing</td>
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<tr>
<td>Master of Business in Sports Tourism</td>
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</table>
### Courses at Victoria University in 2005

| Master of Business in Tourism Management | C | 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 |
| Graduate Diploma in Business Computing                   | C | Y | Y |
| Graduate Diploma in Enterprise Resource Planning Systems | C,P1 | Y | Y |
| Master of Business in Enterprise Resource Planning Systems | C,P1,D1 | Y | Y |
| Master of Business E-Commerce/Marketing                  | C | Y | Y |
| Master of Business in Information Systems                | 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 |
| Masters in Comparative Commercial Law                     | C | Y | Y |
| Master of Regulatory & 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 Event Management                    | C | Y | Y |
| Master of Business in Industrial Relations/HRM            | C | Y | Y |
| Master of Business in Management Practice                  | C | Y | Y |
| Master of Business by Research                             | C | Y | Y |
| Doctor of Philosophy                                       | C | Y | Y |

#### Sir Zelman Cowan Centre

| Graduate Diploma in Commercial Arbitration                | Q | Y | Y |
| Graduate Diploma in Notarial Practice                     | Q | Y | Y |
| Graduate Diploma in Superannuation Law & Practice              | Q | Y | Y |

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### Faculty of Human Development

#### Faculty Courses

**Faculty Programs in Aged Services**

- Graduate Certificate in Aged Services: C, O, Y, Y
- Graduate Diploma in Aged Services Management: C, O, Y, Y
- Graduate Diploma in Dementia Care & Service: C, O, Y, Y
- Master of Health Science - Aged Services: C, O, Y, Y

**School of Education**

- Graduate Diploma in Secondary Education: F-B, 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 & Training
  - Graduate Certificate in Education & Training: F, n/a, Y
  - Graduate Diploma in Education & Training: F, Y, Y
  - Master of Education - Education & 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,Y Y Y
- Graduate Diploma in TESOL & Literacy: F,Y Y Y
- Master of TESOL: F,Y Y Y
- Master of TESOL & 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 Y Y
- Graduate Diploma in Experiential Learning & Development: F Y Y
- Master of Education – Experiential Learning & Development: F Y Y

Master of Education

- Master of Education (by Research): F,M,B Y Y
- Doctor of Education: F,Y Y Y
- Doctor of Philosophy: F,M,B Y Y

School of Health Sciences

- Graduate Diploma in Complementary Therapies: S Y Y
- Graduate Diploma in Western Herbal Medicine: C n/a Y

Master of Health Science

- Intensive Care Paramedicine: ZA Y Y
- Osteopathy: C Y n/a Y
- Osteopathy (for Medical Practitioners): C n/a Y
- by Coursework: I,Y Y Y
- by Minor Thesis: S Y Y
- by Research: S Y Y
- Doctor of Philosophy: S Y Y

School of Human Movement, Recreation and Performance

- Graduate Diploma in Athlete Career Education: ZA Y Y
- Graduate Diploma in Exercise & Sport Sciences: F Y Y

Graduate Program in Ageing, Disability & Recreation Management

- Graduate Certificate in Ageing, Disability & Leisure: F Y Y
- Graduate Certificate in Ageing, Disability & Recreation Management: F Y Y
- Graduate Diploma in Ageing, Disability & Recreation Management: F Y Y
- Master of Arts – Ageing, Disability & Recreation Management: F Y Y

Graduate Program in Exercise Rehabilitation

- Graduate Diploma in Exercise for Rehabilitation: F Y Y
- Master of Applied Science – Exercise Rehabilitation: F Y Y

Graduate Program in Loss & Grief incorporating:

- Graduate Certificate in Loss & Grief Education: C Y Y
- Graduate Certificate in Loss & Grief Counselling: C* Y Y
- Graduate Diploma in Loss & Grief Counselling: C* Y Y

Graduate Program in Sport & Recreation Management

- Graduate Certificate in Sport & Recreation Management: F,H Y Y
- Graduate Certificate in Sport & Recreation Management/Operations: F,H Y Y
- Graduate Diploma in Sport & Recreation Management: F,H Y Y
- Master of Arts – Sport & Recreation Management (by coursework): F,H Y Y

Graduate Program in Sport Business

- Graduate Diploma in Sport Business: C Y Y
- Master of Sport Business: C Y Y

Master of Applied Science

- Human Performance (by coursework): F Y Y
- Human Performance (by Research): C,Y Y Y

Doctor of Philosophy: C,Y Y Y
### School of Nursing and Midwifery

<table>
<thead>
<tr>
<th>Course</th>
<th>Start</th>
<th>Year 1</th>
<th>Year 2</th>
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<tr>
<td>Graduate Diploma in Substance Abuse Studies</td>
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<tr>
<td>Master of Nursing</td>
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<tr>
<td>Graduate Certificates in:</td>
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<td>– Cardiothoracic Nursing</td>
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<td>– Cancer Nursing</td>
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<td>– Emergency Nursing</td>
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<td>– Gerontic Nursing</td>
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<td>– Neuroscience Nursing</td>
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<tr>
<td>– Graduate Diploma in Midwifery</td>
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<tr>
<td>Master of Health Science – Mental Health</td>
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<tr>
<td>Master of Public Health Nursing</td>
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<td>– Graduate Certificate in Public Health Nursing</td>
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<td>– Graduate Diploma in Public Health Nursing</td>
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<tr>
<td>Master of Nursing (by Research)</td>
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## TAFE Courses at Victoria University in 2005

### Strategic Development

**Centre for Curriculum, Innovation and Development**

- Certificate IV in Assessment and Workplace Training BSZ40198
- Diploma in Training and Assessment Systems BSZ50198
- Certificate IV in Vocational Education and Training 15559VIC
- 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) 21434VIC
- Diploma of Financial Services (Conveyancing) FNB60301
- 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

#### Financial Services Department

- Advanced Diploma of Accounting FNB60202
- Diploma of Accounting FNB50202
- Diploma of Business (Banking and Finance) 90025NSW
- Course in Stock Market Investment 21081VIC
- Certificate IV in Stock Market Investment, Broking and Risk 21400VIC
- Course in Real Estate for Agents' Representatives 2004AA
- The Certificate IV in Business (Estate Agency Practice) 2404ADA
- Certificate IV in Assessment and Workplace Training BSZ40198

#### Hospitality and Tourism Department

- Certificate I in Hospitality Operations THH11002
- Certificate I in Hospitality (Kitchen Operations) THH11102
- Certificate II in Hospitality (Operations) THH21802
- Certificate II in Hospitality (Kitchen Operations) THH22202
- Certificate III in Hospitality (Commercial Cookery) THH31502
- Certificate III in Hospitality (Catering Operations) THH32902
- Certificate III in Hospitality (Operations) THH33002
- Certificate IV in Hospitality (Supervision) THH42602
- Diploma of Hospitality Management THH51202
- Advanced Diploma of Hospitality Management THH60202
- Certificate III in Meetings and Events THT30102
- Certificate III in Tourism (International Retail Travel Sales) THT30302
- Certificate III in Tourism (Guiding) THT30502
- Certificate III in Tourism (Operations) THT31002
- Certificate III in Tourism (Retail Travel Sales) THT30202
- Certificate IV in Tourism (Sales and Marketing) THT40102
- Diploma of Event Management THT50202
- Certificate IV in Tourism (Operations) THT40202
- Diploma of Tourism (Operations Management) THT50302
- 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 (Frontline Management) BSB41004
- Diploma of Business (Frontline Management) BSB51004
- 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
TAFE COURSES AT VICTORIA UNIVERSITY IN 2005

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) 20055VIC
Certificate IV in 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 21450VIC
Certificate II in Nail Technology WRB20199
Certificate III in Beauty WRB30199
Certificate IV in Beauty Therapy WRB50199
Diploma of Beauty Therapy WRB50199
Diploma of Entertainment (Make-Up) CUE50798
Certificate IV in Entertainment Make-Up CUE40898
Diploma of Remedial Massage HLT50302
Advanced Diploma of Naturopathy HLT60502
Certificate II in Hairdressing WRH20100 [Pre-Apprenticeship]
Certificate II in Hairdressing WRH30100
Certificate IV in Hairdressing WRH40100
Diploma of Hairdressing Salon Management WRH50100

Western Business Enterprise Centre
Certificate III in Security (Guarding) PRY30198
Certificate III in Small Business (Operations/Innovation) 21530VIC
Certificate IV in Business (Small Business Management) BSB40401
Diploma of Business Facilitation 21542VIC
Certificate II in Funeral Services (Funeral Operations) WFS20202
Certificate II in Funeral Services (Funeral Operations) WFS30202
Certificate IV in Funeral Services WPS40202
Certificate II in Wholesale Operations WWR20101
Certificate III in Wholesale Operations WWR30101
Certificate IV in Wholesale Management WWR40101
Diploma of Wholesale Management WWR50101
Diploma of Retail Management WRR50102
Certificate IV in Retail Management WRR40102
Certificate III in Retail Supervision WRR30102
Certificate III in Retail Operations WRR30202
Certificate II in Retail Operations WRR20101
Certificate II in Retail Cosmetic Assistant WRR20399

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 (Mechanical – Tyre Fitting and Repair Light) AUR21999
Certificate II in Automotive (Mechanical – Vehicle Servicing) AUR21799
Certificate III in Automotive (Vehicle Body – Panel Beating) AUR31699,
Certificate III in Automotive (Vehicle Body – Vehicle Painting) AUR31899
Certificate III in Automotive (Mechanical) AUR31099
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 II in Engineering – Production [Boatbuilding Pre-Apprenticeship] MEM20198
Certificate II in Marine Craft Construction MEM30603
Certificate II in Engineering – Production Technology [Traineeship]
Certificate III in Off-Site Construction (Joinery-Timber/Aluminium/Glass) BCF30200
Certificate II in Joinery/Shopfitting/Starbuilding – Pre-Apprenticeship 21533VIC
Certificate II in Building and Construction 21539VIC [Bricklaying – Pre-Apprenticeship]
Certificate III in General Construction (Bricklaying/Blocklaying) BCG30698 [Apprenticeship]
Certificate II in Building and Construction 21393VIC [Carpentry – Pre-Apprenticeship]
Certificate II in Carpentry and Joinery (Joinery/Starbuilding/shopfitting) 20083VIC
Certificate III in General Construction (Carpentry – Framework/Formwork/Finishing) BCG30798 [Apprenticeship]
Certificate II in Furniture Making LMF20302
Certificate III in Furniture Making LMF30302
Certificate III in Furniture Making (Cabinet Making) LMF30402
Certificate III in Furniture Making (Wood Machining) LMF30502
Certificate IV in Applied Design (Furniture) 21528VIC
Diploma of Building SA3475
Certificate IV in Building SA3477
Diploma of Building Design and Technology 403568A

284
Certificate IV in Residential Drafting 40357SA
Diploma of the Built Environment SA3472
Advanced Diploma of Building Surveying BCG60103
Diploma of Building Surveying BCG50103
Diploma of Building Surveying SA3473
Diploma of Building Design and Drafting SA3474
Advanced Diploma of Building Design and Project Administration 40355SA

Building Services and Special Trades Department
Certificate II in Building and Construction 21393VIC [Painting & Decorating Pre-Apprenticeship]
Certificate III in General Construction (Painting & Decorating) BCG30498
Certificate I in Building & Construction (Plumbing) 2102ABC
Certificate III in Plumbing and Gasfitting 20085VIC
Certificate II in Sign Industry 21398VIC
Certificate III in Off-Site Construction (Sign Writing/Computer Operations) BCF30700
Certificate IV in Sign Technology 21399VIC
Certificate I in Electrotechnology [Engineering][Pre-Apprenticeship] UTE10102
Certificate III in Electrotechnology Systems Electrician UTE31199
Certificate IV in Electrical 2406ANC [Motor Control]

Computer Systems and Electronics Department
Certificate II in Electrotechnology Servicing UTE20504 [Computer Servicing]
Certificate II in Electrotechnology Servicing UTE20504 [Security Systems]
Certificate III in Electrotechnology Communications UTE30402
Certificate III in Electrotechnology Communications Entertainment and Servicing UTE30702
Certificate III in Electrotechnology Computer Systems UTE30599
Advanced Diploma of Computer Systems Engineering UTE60199
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 I in Engineering MEM10198 [Fabrication]
Certificate II in Engineering (Production) MEM20198
Certificate II in Engineering (Production Technology) MEM20298
Certificate III in Engineering (Production Systems) MEM30198
Certificate III in Engineering (Mechanical Trade) (MEM30298)
Certificate III in Engineering (Technician) (MEM30598)
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 I in Engineering MEM10198F
Certificate II in Engineering–Production MEM20198F
Certificate II in Engineering–Production Technology MEM20298F
Certificate III in Engineering – Production Systems MEM30198F
Certificate III in Engineering–Fabrication Trade MEM30398 [Light & Heavy]
Certificate IV in Engineering Technology 20018VICF
Certificate IV in Engineering MEM40103
Diploma of Engineering Technology 20019VICF [Fabrication]
Advanced Diploma of Engineering Technology 20020VICF [Fabrication/Supervision, Inspection]

Industrial Skills Training Centre
Certificate III in Civil Construction (Plant) BCC30198
Certificate III in General Construction BCG31398
Certificate III in Civil Construction (Bridge/ Marine Construction) BCG30498
Certificate III in Civil Construction (Road Construction and Maintenance) BCG30298
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
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
Certificate III in Transport and Distribution (Mobile Cranes Operations) TDT30902
Certificate III Motor Vehicle Driver Trainer (Car) 21370VIC
Certificate III in Motor Vehicle Driver Trainer (Heavy Vehicles) 21381VIC
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 II in Transport and Distribution (Stevedoring) TDT20302
Certificate III in Transport and Distribution (Stevedoring) TDT30302
Certificate IV in Transport and Distribution (Stevedoring) TDT40302
Certificate II in Transport and Distribution (Administration) TDT21102
Certificate III in Transport and Distribution (Administration) TDT31102
Certificate IV in Transport and Distribution (Administration) TDT41102
Course in Rigging–Basic
Course in Rigging–Intermediate
Course in Rigging–Advanced
Course in Scaffolding–Basic

285
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; 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 B Double Truck (Multi-Combination)
Dangerous Goods Licence Training
School Driver Education Program
Defensive Driving (Car and Truck)
Driver Instruction Training

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 (Hospitality) 21261VIC
Certificate I in Vocational Studies (Media) 21263VIC
Diploma of Further Education 21015VIC
Certificate IV in Further Education 21014VIC
Certificate I in Work Education 21108VIC
Certificate II in Workplace Practices 39064QLD
Certificate I in Transition Education 15494VIC
Course in Concurrent Study 21204VIC

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 21497VIC
Certificate II in ESL Access 21498VIC
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
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 III in ESL (Further Study) 21501VIC
Certificate IV in ESL (Further Study) 21502VIC
Certificate IV in ESL (Further Study) 21505VIC [English for Health Service Professionals]
Certificate III in ESL (Employment) 21503VIC [Aged Care Work]
Certificate III in ESL (Employment) 21503VIC [Children’s Services]
Certificate IV in ESL (Employment) 21504VIC
Certificate I in ESL (Access) 21497VIC
Certificate II in ESL (Access) 21498VIC
Certificate III in ESL (Access) 21499VIC
Certificate IV in ESL (Access) 21500VIC
Course in Concurrent Study 21204VIC
Course in Preliminary Spoken and Written English 90998NSW
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 CUL50199
TAFE COURSES AT VICTORIA UNIVERSITY IN 2005

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) 12861VIC
Certificate IV in Arts (Applied Design) 15727VIC
Diploma of Arts (Visual Art) 12857VIC
Advanced Diploma of Multimedia CUF60501 [Streams in Interactive Media and Games Development]
Diploma of Multimedia CUF50701
Certificate IV in Multimedia CUF40801
Certificate III in Multimedia CUF30601
Certificate II in Multimedia CUF20601

School of Human Services, Science and Technology

Child Studies Department
Certificate III in Children's Services CHC30402
Certificate IV in Out of School Hours Care CHC40402
Diploma of Out of School Hours Care CHC50202
Diploma of Childcare Services
Advanced Diploma of Community Services (Children's Services) CHC60399
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

Health Services Department
Certificate IV in Health [Nursing] 21358VIC
Course in Medication Administration for Division 2 Registered Nurses in Victoria 21506VIC
Course in Cardiopulmonary Resuscitation 20003VIC
Course in Emergency First Aid 20004VIC
Course in Basic First Aid 20005VIC
Course in Paediatric Aid 20006VIC
Diploma of Paramedical Science (Ambulance) HLT50402
Certificate IV in Basic Emergency Care HLT41002
Certificate III in Non-Emergency Patient Transport

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 21488VIC
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
Diploma of Information Technology (Computer Science) 21378VIC
Diploma of Information Technology (Software Development) ICA50299
Diploma of Information Technology 21489VIC
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 21440VIC
Certificate IV in Animal Technology 2411ARC
Diploma of Applied Science (Animal Technology) QLD3522
Certificate II in Animal Studies RUV20198
Certificate III in Animal Technology RUV30104
Certificate III in Captive Animals RUV30204
Certificate III in Companion Animal Services RUV30304
Certificate IV in Veterinary Nursing RUV40404
Diploma of Animal Technology RUV50104
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 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
Certificate III in Occupational Health & Safety QLD1893
Certificate IV in Occupational Health & Safety QLD1892
Diploma of Occupational Health & Safety QLD1891
Certificate IV in Meat Processing (Quality Assurance) MTM40300
Diploma of Meat Processing MTM50100
Advanced Diploma of Meat Processing MTM60100
Certificate I in Food Processing FDF10103
Certificate II in Food Processing FDF20103
Certificate III in Food Processing FDF30103
Certificate IV in Food Processing FDF40103
Diploma of Food Processing FDF50103
Certificate III in Food Processing FDF30198
Certificate IV in Food Technology 11893VIC
Diploma of Food Technology 2506AKC
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 Work CHC30202
Certificate III in Home and Community Care CHC30202
Certificate III in Disability Work CHC30302
Certificate IV in Disability Work CHC40302
Advanced Diploma of Disability Work CHC30102
Certificate III in Community Services Work CHC30802
Certificate III in Aged Care Work CHC30102
Certificate IV in Aged Care Work CHC40102
Certificate IV in Community Services (Lifestyle and Leisure) CHC41602
Certificate IV in Service Co-ordination (Ageing and Disability) CHC40202
Certificate IV in Marriage Celebrancy CHC41502
Certificate III in Community Services (Aged Care Work) CHC30199
Diploma of Community Development CHC51402
Diploma of Community Welfare Work CHC50702
Diploma of Alcohol and Other Drugs CHC51102
Certificate IV in Youth Work CHC40602
Diploma of Youth Work CHC50502
Advanced Diploma of Justice 21214VIC
Diploma of Justice 21213VIC
Certificate IV in Justice 21212VIC

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 III in Sport (Career Oriented Participation) SRS30299
Certificate II in Sport and Recreation SRO20199
Certificate III in Sport and Recreation SRO30199
Certificate II in Sport and Recreation SRO20103
Certificate III in Sport and Recreation SRO30103
Certificate IV in Sport and Recreation SRO40103
Diploma of Sport and Recreation SRO50103
Certificate II in Community Recreation SRC20201
Certificate II in Community Recreation SRC30201
Certificate IV in Community Recreation SRC40201
Diploma of Community Recreation SRC50201
Certificate IV in Sport and Recreation SRO40199
Diploma of Sport and Recreation SRO50199
Certificate IV in Sports (Development) SRS40399
Diploma of Sport (Development) SRS50399
Certificate IV in Sports (Development) SRS40503
Diploma of Sports (Development) SRS50503
Graduate Certificate in Career Counselling for Elite Performers (Dance, Music, Sport) 21237VIC