Contents

How to use this book ................................................................. 5
Faculty of Science, Engineering and Technology .................... 7
    Research .................................................................................. 7
    The Facilities of the Faculty ..................................................... 9
    Bridging Program ..................................................................... 10
    Travelling Careers Troupe ...................................................... 10
    Faculty Tours and Workshops ................................................ 10
    Postgraduate Scholarships .................................................... 10
    Further Information .................................................................. 10
Staff .......................................................................................... 11
    University Officers .................................................................... 11
    Principal Officers of the University ......................................... 11
    Members of the Faculty of Science, Engineering and Technology .................................................. 11
Undergraduate Studies ................................................................ 17
    Faculty of Science, Engineering and Technology .................. 17
        Certificate in Foundation Studies ......................................... 17
        Bachelor of Business/Bachelor of Science ......................... 17
        Bachelor of Engineering/Bachelor of Business .................. 18
        Bachelor of Engineering/Bachelor of Science .................... 18
        Bachelor of Engineering/Bachelor of Laws ....................... 19
        Bachelor of Science/Bachelor of Laws ............................... 19
    School of the Built Environment ............................................. 21
        Bachelor of Engineering in Architectural Engineering .......... 25
        Bachelor of Engineering in Building Engineering .............. 27
        Bachelor of Engineering in Building Surveying ................. 29
        Bachelor of Engineering in Civil Engineering ................... 30
        Bachelor of Engineering in Computational Engineering ...... 32
        Bachelor of Engineering in Mechanical Engineering .......... 33
        Bachelor of Engineering in Robotic Engineering ............... 35
        Bachelor of Science in Engineering and Business ............. 36
        Bachelor of Science in Environmental Engineering .......... 37
    School of Communications and Informatics ......................... 39
        Bachelor of Engineering in Computer Engineering ............. 39
        Bachelor of Engineering in Electrical and Electronic Engineering ................................................. 41
        Bachelor of Engineering in Microelectronic Systems ......... 42
        Bachelor of Engineering in Telecommunication Engineering 43
        Bachelor of Engineering in Photonics ................................ 45
        Bachelor of Engineering in Photonics ............................... 45
        Bachelor of Science in Applied Physics and Computing ...... 47
        Bachelor of Science in Computer Science .......................... 48
        Bachelor of Science in Computer and Mathematical Sciences 48
        Bachelor of Science in Computer Science and Aviation ....... 50
        Bachelor of Science in Computer Technology .................... 51
        Bachelor of Science in Optoelectronics ............................. 52
        Bachelor of Science (Honours) in Computer Technology ...... 54
        Bachelor of Science (Honours) in Computer Science or Computer and Mathematical Sciences .................... 54
        Bachelor of Science (Honours) - Physics ............................ 54
        International Programs: Offshore Program Conducted in Hong Kong ................................................ 55
        Bachelor of Science in Computer Science .......................... 55
        Offshore Program Conducted in China ............................... 55
School of Life Sciences and Technology .................................. 56
    Bachelor of Applied Science in Chemistry ......................... 57
    Bachelor of Science in Biomedical Sciences ....................... 58
    Bachelor of Science in Conservation Biology and Environmental Management ............................................. 60
    Bachelor of Science in Biotechnology .................................. 62
    Bachelor of Science in Ecology and Sustainability ............... 62
    Bachelor of Science in Medical, Forensic and Analytical Chemistry ...................................................... 64
    Bachelor of Science in Nutrition, Food and Health Science .... 65
    Bachelor of Science in Occupational Health and Safety ........ 67
    Bachelor of Science (Honours) in Biomedical Sciences ....... 68
    Bachelor of Science (Honours) in Conservation Biology and Environmental Management .................. 68
    Bachelor of Science (Honours) in Nutrition and Food Science ................................................................. 68
    Bachelor of Science (Honours) in Chemical and Environmental Sciences .................................................. 68
    Diploma of Meat Management ............................................. 69
Undergraduate Subject Details ................................................. 71
Postgraduate Studies ............................................................. 191
    Food Safety, Authenticity and Quality Unit .......................... 191
    Australian Food Marketing Centre ...................................... 191
Centre for Environmental Safety and Risk Engineering ............ 191
    Graduate Certificate in Performance-Based Building and Fire Codes ......................................................... 193
    Graduates Diploma in Building Fire Safety and Risk Engineering ............................................................. 193
    Master of Engineering in Building Fire Safety and Risk Engineering (Coursework) ................................... 194
    Master of Science in Occupational Safety and Health, and Master of Science in Occupational Hygiene .......... 194
    Master of Science in Occupational Safety and Health .......... 194
    Master of Science in Occupational Hygiene ........................ 195
    Masters (by Research) ............................................................ 195
    Doctor of Philosophy .............................................................. 195
Centre for Packaging, Transportation and Storage .................. 195
    Graduate Certificate in Intermodal Freight Systems Management .............................................................. 196
    Graduate Diploma in Intermodal Freight Systems Management .............................................................. 196
Telecommunication and Electronic Technologies Centre (TET) .............................................................. 197
School of Communications and Informatics .......................... 197
    Postgraduate Programs by Research ................................. 197
    Master of Engineering (Research) ......................................... 198
    Master of Science (Research) ............................................... 198
    Doctor of Philosophy .............................................................. 198
How to use this book
Welcome to the Faculty of Science, Engineering and Technology Handbook 2003. The Handbook is designed to provide students with detailed information on course structure, subject content, on-Campus facilities and University regulations and procedures required for the successful completion of study.

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

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

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

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

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

The Faculty is divided into three Schools, namely: The Built Environment, Communications and Informatics, and Life Sciences and Technology. There are also four Research Centres; Bioprocessing and Food Technology, Environmental Safety and Risk Engineering and Packaging, Transportation and Storage, and the Australian Food Marketing Centre which operate at the forefront of knowledge.

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

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

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

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

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

Professor Albert E.J. McGill
Dean, Faculty of Science, Engineering and Technology

Research
Currently, research is being undertaken within the Faculty by academic staff, visiting researchers, post-doctoral fellows and postgraduate students, often working in teams. 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.

Bioprocessing and Food Technology
Research undertaken in this centre covers more disciplinary studies in the area of food bioprocessing, environmental control and human well being. Studies range from bioremediation and food technology incorporating new products and processes through animal and human studies looking at fertility, reproduction and cellular regulation, to improving human health at large, by incorporating nutritional, pharmacological and physiological intervention approaches. In order to measure desirable outcomes research studies incorporate molecular biology, microbiology, biochemistry and various physiological tools.

Food Science and Biotechnology
The Food Science and Biotechnology Research Unit (FSBRU) 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.

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.

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.

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.

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.
Specific Research Topics

By classifying its areas of research in the above manner the Faculty seeks to focus its activities and place them in perspective. With each of these areas the specific research topics currently being pursued by postgraduate students are however many and varied. Typical research topics are listed in the School sections of this 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 SYNOPSIS 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.

Labs

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.

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.

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.

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

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

The School of the Built Environment operates several specialist laboratories used for both teaching and research as follows:

- **Mechanics Laboratory**: Dynamics, Vibrations, Acoustics, Modal Analysis, Mechanics and Structural Engineering
- **Thermodynamics Laboratory**: Heat Transfer, Thermodynamics, Internal Combustion Engines, Air-Conditioning, Refrigeration
- **Fluid Dynamics and Environmental Engineering Laboratory**: Aerodynamics, Turbulence, Particle Image Velocimetry, Water Resources Management and Waste Management
- **Geomechanics Laboratory**: Soil Mechanics, Geomechanics and Soil Properties
- **Materials Engineering Laboratory**: Metallurgy, Composite Materials, Polymer Engineering, Material Properties, Building Materials and Properties of Concrete
- **Building & Surveying Laboratory**: Building Design, Building Services, Lighting Design and Surveying

Over the past five years, the School’s laboratories have been developed into state-of-the-art facilities comprising a large number of expensive and sophisticated research and teaching equipment. These laboratories accommodate a large number of experimental activities related to the School's teaching and research activities. Each laboratory is managed by a Technical Officer under the guidance of senior academic staff.

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

Testing Facilities

The Engineering Research and Consultancy Centre (www.vu.edu.au/foes/ercc) is the commercial arm of the School of the Built Environment at Victoria University. It was established in 1982 to make the School's wide range of experimental facilities and engineering expertise available to industry and the community.

Since then, the Centre has been involved in numerous projects and the School’s laboratories have continually been upgraded with state-of-the-art equipment. The Centre's research and consultancy activities are managed by academic and consultancy staff, and supported by a well-equipped workshop and proficient technical staff. Whenever possible, undergraduate and postgraduate students are invited to participate in these projects. The Engineering Research and Consultancy Centre can provide expert advice as well as specialist research and consultancy services in engineering-related fields such as Environmental & Structural Dynamics and Acoustics, Structural Mechanics, Fluid Dynamics and Aerodynamics, Water resources and Geomechanics, and Post-harvest technology. The Centre offers the additional advantage of a 125% tax concession for eligible research projects.

The Centre for Environmental Safety and Risk Engineering operates an Experimental Building Fire Facility. The three-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 $2,000,000 Systemic Infrastructure Initiative Grant from the Federal Government to build a large scale experimental building – fire facility over the top of the existing facility. It will
isolate the existing facility from external conditions. This is a step in a planned program of enhancement to build the facility into a greatly enhanced national and international focus for research on fire. In addition a major Fire Research Furnace has been installed at the Centre's laboratory and office complex located at the Werribee Campus. A second, larger furnace has recently been installed in a new building. The furnaces will be used to assess the performances of elements of construction under fire conditions. A cone calorimeter has also been installed at the Werribee Campus.

The Centre for Packaging, Transportation and Storage provides access to excellent research and experimental facilities across the University in many of the disciplinary areas. Examples are facilities for permeation and migration studies, Electronic-nose facilities for off-flavour studies and a variety of equipment for studying mechanical and physical properties of modern packaging materials. The Werribee based modern equipped packaging 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.

**Bridging Program**

The Faculty of Science, Engineering and Technology offers a bridging program over the January/February period of each year. The aim of this short, intensive program is to provide students with the confidence to undertake first year studies in various degree programs. It does not duplicate Year 12 studies but seeks to provide students with some of the underpinning knowledge and skills required to gain entry into degree courses. This program is specifically designed to meet individual needs as an identical curriculum is offered in two modes - evening, most appealing for part-time students and day time, catering mainly for exit-VCE students. Successful completion of the Summer Bridging Program will assist students in gaining entry into the various degree courses offered by the Faculty of Science, Engineering and Technology.

**Travelling Careers Troupe**

The Faculty of Science, Engineering and Technology seeks to raise all students’ and teachers’ awareness of our courses in engineering and science and why they should be considered as viable career options. The Faculty Liaison Officer, lecturers and current students visit interested schools to do activities or to talk with students, and to provide them each with an information kit.

**Faculty Tours and Workshops**

Schools are also invited to visit the University to participate in workshops and tours of the Faculty. Current students are encouraged to participate. Enquiries from interested students and teachers for both Travelling Careers Troupe or Faculty Tours and Workshops are welcome. For further information and advice please contact the Faculty Liaison Officer, through the Faculty Office on (03) 9688 4241.

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**Postgraduate Scholarships**

In addition to Australian Postgraduate Research Awards, Postgraduate Industry Research Awards and Victoria University Graduate Scholarships, the Schools of the Faculty are also able to offer scholarships for specialist research within their Schools. Enquiries for details of these latter scholarships should be directed to the Head of the School concerned.

**Further Information**

Further information about courses and research programs may be obtained from the Faculty of Science, Engineering and Technology Office, Victoria University, PO Box 14428 MC, Melbourne VIC 8001, telephone (03) 9688 4516 or by facsimile on (03) 9688 4513.
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David Greenwood BSc(Hons), PhD Adel

Colin Holling BSc(Hons)LaTrobe, DipEDMelb, PhD LaT
<table>
<thead>
<tr>
<th>Name</th>
<th>Degree/Qualification</th>
<th>Institution</th>
<th>Notes</th>
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<tbody>
<tr>
<td>Mary Millikan</td>
<td>DipAppChem RMelbourneT, BSc Monash, PhD Lat, MRACI, MSCA, ARSC, AAIFST</td>
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<td>Rohani Paimin</td>
<td>BSc(Hons), PhD LatT</td>
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<td>Wendy Probert</td>
<td>MScLat, BSc Hons, LatT, BAAppSc(MedLab) RMIT, MAIMS, MPH</td>
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<td>Russell Swann</td>
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<td>Kathy Tanganakis</td>
<td>BSc(Hons), PhD Med</td>
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<td>Beverly Crawford</td>
<td>BAAppScMedLab RMIT, Grad Dip Ed VicMedb</td>
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<td>Neville Critch</td>
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<td>Adrian Cross</td>
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<td>Alison Duncan</td>
<td>BSc(Hons) Aberdeen, PhD, CNA ARGIT</td>
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<td>Alan Hayes</td>
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<td>Catherine Kamphuis</td>
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<td>Philip Seymour</td>
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<td>Xiao-quo Su</td>
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<td>Ronny Blazev</td>
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<td>Tyson Lau</td>
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<td>Esra Ogru</td>
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<td>Long Thanh Nguyen</td>
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<td>Jill Vince</td>
<td>BSc Medb</td>
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**Administration Officers**
- Yildiz Djelal
- Janet Grady
- Judith Thomas
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
• Engineering and Science
• Engineering and Law
• Science and Business
• Science and Law

Certificate in Foundation Studies
Course Code: JCFY

Course Objectives
The Certificate in Foundation Studies program is a one-year, full-time (part-time equivalent) course of study. Its overall goal is to provide students with the underpinning knowledge and skills required in the Science disciplines, allowing them to ultimately pursue studies in these areas, at higher levels.
The course is ideally suited for students
• who have not studied science and mathematics at year 12 level,
• who have completed relevant year 12 studies but were unable to satisfy the entrance requirements for courses offered by the Faculty of Science, Engineering and Technology, or
• who are returning to formalised study after being absent from it for some time.
Offered exclusively at the centrally located Footscray Park Campus, subjects offered include:
• Biology
• Chemistry
• English Language and Communication Skills
• Information Technology
• Mathematics
• Physics.
To complete the program, students are required to complete, or gain exemption from, the English Language and Communication Skills and three other subjects.

Admission Requirements and Prerequisites
Students applying for the course will generally have attempted year 12 studies in VCE or equivalent. The course will require at least year 11 or its equivalent for applicants under 21 and relevant work/life experiences for applicants 21 and over.

Course Duration
Two semesters of full time study for one year.

Bachelor of Business/Bachelor of Science
Course Code: EEBEB
Subject to Approval

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 the appropriate fields of business and science. The double degree course will enable graduates to obtain employment in business and government, in major scientific organisations and elsewhere.

Course Duration
Four years of full time study.

Course Structure

Year 1
- BAO 1101 Accounting for Decision Making
- BCO 1101 Computer Applications
- BHO 1171 Introduction to Marketing
- BEO 1103 Microeconomic Principles
- SCS 1006 Chemistry 1
- SMA 1110 Mathematics 1
- SMA 1120 Mathematics 2

Year 2
- BMO 1102 Management and Organisation Behaviour
- BCO 1147 Introduction to Programming
- BEO 1104 Macroeconomic Principles
- BEO 1106 Business Statistics
- SBF 1310 Biology 1
- SBF 1320 Biology 2
- Plus 30 credit points from Science specialisation

It should be noted that all students initially enrol in the English Language and Communication Skills subject, after which, they sit for a brief skills test. Successful completion of the test grants the student full exemption from the subject.
The assessment regime of most subjects includes formal examinations, assignments, laboratory/field work, practical reports and class-based course work.
Successful completion of the Certificate in Foundation Studies, provides students with a guaranteed entry into courses offered by the Faculty of Science, Engineering and Technology.
Year 3
BLO 1105 Business Law
Plus Three Business specialisation subjects equal to 60 credit points in total.
Plus 60 credit points from the appropriate Year 2 or 3 of the Science specialisation.

Year 4
Four Business specialisation subjects of 60 credit points total
Plus 60 credit points from the appropriate Year 3 Science specialisation.

Bachelor of Engineering/Bachelor of Business

Course Code: Subject to Approval

Course Objectives
The combined Bachelor of Engineering/Bachelor of Business 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 business, government and in major engineering organisations, private industry and elsewhere.

Course Duration
Five years of full time study.

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

Year 1
ACE 1910 Communications for Science
EEC 1001 Programming Structures 1.1
EEC 1002 Programming Structures 1.2
SMA 1201 Mathematics IAP
SMA 1202 Mathematics IAQ
SPH 1601 Physics IAP
SPH 1602 Physics IAQ

Year 2
BAO 1101 Accounting for Decision Making
BCO 1101 Computer Applications
BEO 1103 Microeconomic Principles
BMO 1102 Management and Organisation Behaviour
Plus 60 credit points from the appropriate Year 2 of the Engineering course.

Year 3
BLO 1105 Business Law
BE 1104 Macroeconomics
BE 1106 Business Statistics
BHO 1171 Introduction to Marketing
Plus 60 credit points from the appropriate Years 2 and 3 of the Engineering course.

Year 4
60 credit points towards a specialisation in Business
Plus 60 credit points from the appropriate Years 3 and 4 of the Engineering course.

Year 5
60 credit points towards a specialisation in Business
Plus 60 credit points from the appropriate Year 4 of the Engineering course.

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 equip graduates to obtain employment in business and government, in major engineering organisations, private industry and elsewhere.

Course Duration
Five years of full time study.

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

Year 1
ACE 1910 Communications for Science
EE 1001 Programming Structures 1.1
EE 1002 Programming Structures 1.2
SMA 1201 Mathematics IAP
SMA 1202 Mathematics IAQ
SPH 1601 Physics IAP
SPH 1602 Physics IAQ

Year 2
EE 1001 Electrical Engineering 1.1
EE 1002 Electrical Engineering 1.2
EED 1012 Design Practices
EE 1001 Electronics 1.1
EE 1002 Electronics 1.2
EE 1611 Engineering in Society
EET 2002 Communication Systems 2.2
EYY 2001 Computer Systems 2.1
EYY 2002 Computer Systems 2.2
SCM 2111 Data Commn and Networks 1
SCM 2211 Database Systems 1
SMA 2201 Mathematics B
SMA 2212 Statistics for Engineers

Year 3
EE 2001 Electrical Engineering 1.1
EE 2002 Electrical Engineering 1.2
EED 2002 Design A 2.2
EEE 2001 Electronic Circuits 2.1
EEE 2002 Electronics 2.2
EEE 2001 Digital Electronics 2.1
EEE 2002 Digital Electronics 2.2
EET 3101 Communication Engineering 3.1
EET 3102 Communication Engineering 3.2
SCM 2112 Operating Systems
SCM 2218 Database Systems 2
SCM 2311 Object Oriented Programming 1
SCM 2313 Software Development

Year 4
EEC 3004 Computer Graphics
EED 3000 Design 3.0
EEE 3001 Electronic Circuits 3.1
EEE 3002 Electronic Circuits 3.2
### Bachelor of Engineering/Bachelor of Laws

**Course Code:** EBBL

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

**Course Duration**
Six years of full time study.

**Course Structure**

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

**Year 1**
- ACE1801 Engineering Communications
- EEA1001 Electrical Engineering 1.1
- EEA1002 Electrical Engineering 1.2
- EEC1001 Programming Structures 1.1
- EEC1002 Programming Structures 1.2
- EED1012 Design Practices
- EEE1001 Electronics 1.1
- EEE1002 Electronics 1.2
- EEE1611 Engineering in Society
- SMA1201 Mathematics IAP
- SMA1202 Mathematics IAQ
- SPH1601 Physics ISA
- SPH1602 Physics ISB

**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
- EED2002 Design A 2.2
- EEE2001 Electronics 2.1
- EEE3001 Electronic Circuits 3.1
- EEE3002 Electronic Circuits 3.2
- EEH3201 Computer & Digital Design 3.1
- EEH3202 Computer & Digital Design 3.2

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### 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
• Telecommunications Engineering

Science
• Biomedical Sciences
• Computer Science
• Computer Science and Aviation
• Computer and Mathematical Sciences
• Computer Technology
• Ecology and Sustainability
• Biotechnology
• Medical, Forensic and Analytical Chemistry
• Nutrition, Food and Health Science
• Photonics
School of the Built Environment

Courses Offered
The School of the Built Environment offers undergraduate courses leading to the award of:

- Bachelor of Engineering in:
  - Architectural Engineering
  - Building Engineering
  - Building Surveying
  - Civil Engineering
  - Computational Engineering
  - Mechanical Engineering
  - Robotic Engineering

- Bachelor of Science in:
  - Technology and Business

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

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

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

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

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

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

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

- the private sector (consulting, contracting, construction and project management firms specialising in the multi-billion dollar national and international building industry),
- the public sector including Federal, State and Local Government,
- diverse areas such as urban planning and design, risk assessment and management; energy efficient building design and development.

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

They require multi-disciplinary training which includes structural action, thermo-fluid and electro-magnetic systems, building construction technology, construction and project management as well as an understanding of legal and economic processes involved in building construction. Building Engineers are (thus) experts in at least one of the following disciplines:

- building structural systems,
- building services and life-safety systems, or
- planning and management of construction of building projects.

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

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

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

- the private sector (consulting, contracting, construction and project management firms specialising in the multi-billion dollar national and international building industry),
- the public sector including Federal, State and Local Government,
- diverse areas such as urban planning and design, risk assessment and management; energy efficient building design and development.

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

There is now a great demand for Building Surveyors to have skills in building engineering and law are provided in this new degree. This degree is the first engineering based Building Surveying qualification in Australia. The degree provides skills in the traditional building engineering areas of structures, building services, construction and project management. It also provides the skills for traditional and new performance building regulations, as well as for the new profession of fire engineering. Approximately 70% of all building regulations concern fire safety. Few building surveyors and engineers have these new skills. Recent graduates who have undertaken studies in these new areas have been eagerly sought by employers. The broad range of skills taught in the degree provides graduates with a great variety of career opportunities in engineering, as well as in Building Surveying. The breadth of the degree will maximise graduates'
opportunities to obtain rewarding careers in a rapidly changing world. The degree provides a good base for continuing career education and development in engineering, management and law. The new degree follows the internationally renowned fire research undertaken at the University, particularly in the development of Australia's new performance and fire regulations. The new degree will provide graduates competitive skills for work overseas.

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

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

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

The increasing need for infrastructure provision allied with substantial forms of development should ensure there will be a significant demand for graduates with a truly integrated set of skills in these areas, both on the local scene and overseas.

Employment opportunities exist with private consulting firms and contractors, government agencies and Local Government 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 distinct area of engineering practice in the early part of the last century has now developed into an extremely diverse and complex profession.

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

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

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

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

The Scope of Technology and Business
Success in the very competitive market of engineering design, development, manufacture and production requires a wide range of different skills. While it is essential that any product must live up to its technical specifications and requirements, it is equally important that its production is well-planned, there is a market, it can be competitively priced, it can be financed and its production can be sustained. If any one of these essentials is missing, then an otherwise outstanding idea for a product or process can flounder.

In the larger corporations, it is normal to find the above skills the responsibility of a number of individuals with product and manufacturing viability spread over a team of employees. However, with small to medium businesses, this team approach is not normally economically possible. It is not unusual to find that a small number of individuals and even sole practitioners are required each with a broad multi-disciplinary base to cover activities ranging from the purely technical to various aspects of business and management such as marketing, sales, tendering, costing, resource management, etc.

The Bachelor of Science in Engineering and Business degree course offered by the School provides suitably trained graduates who can have a general impact in the workplace, but particularly in small to medium businesses involved in innovative and entrepreneurial engineering for the expanding Australian and international marketplace. The course provides a solid grounding in the basic and applied areas of engineering, particularly with regard to industrial and project design and their integration with a range of essential business skills.

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

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

Environmental engineering covers the planning, design, development, maintenance and management of systems to:
safeguard air, water, land and habitat quality; provide infrastructure facilities for the protection and enhancement of human health and well-being; use energy and natural resources conservatively and with maximum efficiency; minimise, recycle, treat and safely dispose of solid, liquid and gaseous wastes; and, remedy existing environmental problems and allow sustainable development principles to be practically implemented.

Graduates working in the Environmental Engineering field should have strong technical and communication skills, and a good understanding and appreciation of the environmental, economic, social and political environment in which they must operate. The increasing need for infrastructure provision allied with substantial forms of development should ensure that there will be a significant demand for graduates with a truly integrated set of skills in these areas, both on the local scene and overseas. Exciting and flexible opportunities exist for course graduates to play an important role in improving our life and environmental quality through employment.

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

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

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

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

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

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

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

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

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

In order to satisfy the academic requirements for a course award, all course subjects must be completed. Such completion may be obtained by:
• being granted exemption in either individual subjects or in course years, and/or
• achieving a grade of P (or higher) in the assessment of each subject, and/or
• being granted compensation in course years.

A stage grading of 'Year Completed by Compensation' may be granted if a student:
• has been given final grades in all subjects in the course year; and
• has passed subjects equivalent to more than 80% of total required semester hours for that course year with no assessment at less than N1 grade; and
• has achieved an hour-weighted average mark of at least 50% for all subjects in the year.

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

Students who do not satisfy the requirements for a 'Year Completed by Compensation' must repeat all failed subjects of that year (or their equivalents) at the earliest opportunity. Normally, gradings of 'Year Completed by Compensation' will not be granted in consecutive years of a course. Normal progress through a course requires a student to complete any defined course year within one year of equivalent full-time enrolment.

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

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

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

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

**Study Load**

**Part-time Study**

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

**Full-time Study**

Full-time study of the degree courses is over a four-year period, and involves from 22 hours of Class Contact per week.

**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.

**Computers**

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

**Electronic Calculators**

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

**Borrowing of Equipment**

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

**Films and Excursions**

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

**Mentoring of Students by Staff**

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

**Official Notices**

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

**Suggestions for Improvement**

Student Liaison Committees are a normal forum for students to express their concerns through student representatives. Complaints and suggestions for improvement may also be made in writing at any time to the Head of School or may be placed in the suggestion box in the library.

**Professional Societies**

Students are encouraged to join the Institution of Engineers, Australia and, where appropriate, The Australian Institute of
Building for a nominal fee. Application forms are available at the School Office.

Student Associations
It is recommended that all students join and actively support the Civil Engineering Students’ Association or Building Engineering Students’ Association, where appropriate.

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 first year of the degree program involves engineering fundamentals to provide a solid foundation for the applied engineering subjects in the following three years of the course. Studies in architecture design practices and architectural history are developed in second 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 include an introduction to building structures, building environmental and life safety systems, and building project management. In the final two years of the program, students undertake advanced studies in computer simulation of selected building environmental systems.

An integrated 12 weeks industry placement period will be provided for all students in Architectural Engineering at the end of the third year of the course in a “summer semester” subject. Architectural Engineering graduates will have enhanced skills for careers in:

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

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

The degree will satisfy the requirements for accreditation by The Institution of Engineers, Australia and also will satisfy the requirements for accreditation by the Australian Institute of Building, except that a total of 16 weeks of professional experience during the course are required for Corporate Membership of the latter.

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

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

Prerequisites Units 3 and 4
Mathematical Methods or Specialist Mathematics, 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
This structure will operate from 2003 for years 1 and 2.

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<thead>
<tr>
<th>Year</th>
<th>Credit points</th>
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<tbody>
<tr>
<td></td>
<td>Semester One</td>
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<tr>
<td>ACE1801 Engineering Communication</td>
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<tr>
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<tr>
<td>END1832 Engineering Graphics</td>
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<td>Course Title</td>
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<tr>
<td>ENS1822</td>
<td>Solid Mechanics 1</td>
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<tr>
<td>ENW1861</td>
<td>Principles of Materials Science 1</td>
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<tr>
<td>ENW1862</td>
<td>Principles of Materials Science 2</td>
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<tr>
<td>ENX1631</td>
<td>Engineering Experimentation</td>
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<td>SMA1201</td>
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<tr>
<td>SMA1202</td>
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</tr>
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<td>Engineering Computations</td>
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<td>END2831</td>
<td>Introduction to Design</td>
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<td>Architectural History</td>
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<td>Industrial Placement (Summer Semester)</td>
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<td>Principles of Air Conditioning</td>
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<td>ECB3470</td>
<td>Lighting and Power Distribution</td>
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<td>Year 3</td>
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Assessment

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

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

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

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

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

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

Degree with Honours

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

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

Bachelor of Engineering in Building Engineering

Course Code: EBCB

Course Objectives

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

The basic objectives of the course are to produce graduates who:

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

Course Objectives

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

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

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

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

Professional Recognition

The degree satisfies the requirements for accreditation by The Institution of Engineers, Australia and also satisfies the requirements for accreditation by the Australian Institute of Building, except that a total of 16 weeks of professional experience during the course are required for Corporate Membership of the latter.

USA Exchange Program

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

Admission Requirements and Prerequisites

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

Prerequisites Units 3 and 4
Mathematical Methods or Specialist Mathematics, 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

This structure will operate from 2003 for years 1 and 2

<table>
<thead>
<tr>
<th>Year</th>
<th>Credit points</th>
<th>Semester</th>
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<tbody>
<tr>
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<tr>
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<td><strong>Total</strong></td>
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**Year 2**

| Credit points |
| One | Two |
| EAH2831 Architectural History & Design | 10 | - |
| ECF2842 Hydraulics | - | 10 |
| EEP2882 Electrical Engineering 1 | - | 10 |
| ENC2812 Engineering Computations 1 | - | 10 |
| END2831 Introduction to Design | 10 | - |
| END2832 Engineering Design | - | 10 |
| ENF2841 Fluid Mechanics 1 | 10 | - |
| ENM2852 Engineering Management | - | 10 |
| ENS2821 Solid Mechanics 2 | 10 | - |
| ENS2822 Solid Mechanics 3 | - | 10 |
| ENT2881 Thermodynamics 1 | 10 | - |
| SMA2801 Engineering Mathematics | 10 | - |
| **Total** | 60 | 60 |

**Year 3**

| Credit points |
| One | Two |
| BMO3851 Engineering Management 2 | 10 | - |
| EAB3841 Air Conditioning & Hydraulic Services 1 | - | 10 |
| EAB3842 Air Conditioning & Hydraulic Services 2 | 10 | - |
| EAB3871 Electrical Power Distribution 1 or 10* | - | - |
| ECG3961 Geomechanics or 10* | - | - |
| EAB3872 Electrical Power Distribution 2 or 10* | - | - |
| ECG3862 Geological Engineering 1 or 10* | - | - |
| ECS3822 Structural Analysis 2 or 10* | - | - |
| EAD3832 Architectural Engineering Design | 10 | - |
| EAB3892 Fire Services | - | 10 |
| ECD3892 Structural Engineering Design 1 | - | 10 |
| EBD3881 Building Construction & Legislation 1 | 10 | - |
| ECS3821 Structural Analysis 1 | 10 | - |
| ECT2871 Surveying | 10 | - |
| EAP3803 Industrial Placement (Summer Semester) | - | 10* |
| **Total** | 60 | 60 |

**Year 4**

| Credit points |
| One | Two |
| EAB4831 Services Engineering Design & Construction | 10 | - |
| EBK4881 Building Construction & Legislation 2 | - | 10 |
| EBM4851 Quantities and Costs | 10 | - |
| ECP5705 Project Management & Information Technology | 10 | - |
| ECP5725 Project Construction Management | 10 | - |
| ECP4810 Engineering Project | - | 10 |
| ECP5715 Property Development Analysis | - | 10 |
| ECP5735 Building Life Cycle Costing | - | 10 |
| ECS4422 Special Topics in Structures | 8 | - |
| ECT4872 Environmental Planning & Design | - | 10 |
| ENM4852 Engineering Project Management | - | 10 |
| **Total** | 60 | 60 |

**Structure Pre 2003**

**Year 3**

| Credit points |
| One | Two |
| BMO3522 Engineers as Managers | 8 | - |
| ECB3460 Principles of Air Conditioning | 6 | 6 |
| ECB3470 Lighting and Power Distribution | 5 | 5 |
| ECB3480 Hydraulic Services | 5 | 5 |
| ECG3260 Geomechanics A | 8 | 8 |
| ECK3430 Building Construction and Project | 8 | 11 |
| ECM3531 Construction Management | - | 11 |
| ECS3220 Structural Analysis B | 8 | 8 |
| ECS3320 Structural Design B | 9 | 9 |
| **Total** | 60 | 60 |

**Year 4**

| Credit points |
| One | Two |
| BMO4551 Human and Industrial Relations | 8 | - |
| ECB4350 Services Design and Construction | 9 | 9 |
| ECB4381 Fire Services Design | 8 | - |
| ECD4490 Building Engineering Project | 8 | 8 |
| ECK4430 Commercial Building Construction | 10 | 8 |
| ECM4532 Engineering Project Management | - | 11 |
| ECM4562 Building Quantities and Costs | - | 8 |
| ECS4321 Structural Engineering | 9 | - |
| **Total** | 60 | 60 |

**Assessment**

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

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

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

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

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

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

Industrial Experience

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

Bachelor of Engineering in Building Surveying

This course will not have an intake in 2003.

Course Code: EBBS

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

Course Objectives

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

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

Admission Requirements and Prerequisites

Prerequisites Units 3 and 4
Mathematical Methods or Specialist Mathematics, English

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

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

Course Duration

The course is offered over four years on a full-time basis of 22 contact hours per week.

Course Structure

<table>
<thead>
<tr>
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<th>Credit points</th>
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<tr>
<td>EBM4851</td>
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</table>
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

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

Professional Recognition

The Bachelor of Engineering in Building Surveying will be accredited by the Australian Institute of Building Surveyors and is recognised by the Building Practitioners Board and Building Control Commission in Victoria as meeting the minimum academic qualification for registration as a Building Surveyor. The degree satisfies the requirements for accreditation by The Institution of Engineers, Australia and by the Australian Institute of Building (AIB), except that a total of 16 weeks of professional experience is required for Corporate Membership of the AIB.

Bachelor of Engineering in Civil Engineering

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

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 examination papers. Electronic calculators and other electronic storage devices will not be permitted where the above provisions have not been made.
management issues are covered in specific subjects but also more broadly by integration into a range of other subjects throughout the course. Subject streams are generally sequential within a well-defined structure. It is envisaged that this structure may be modified somewhat in the future with a view to further motivating students by allowing them a greater degree of flexibility and specialisation, once a firm foundation has been established in the early years of the course. The incorporation of more flexibility should also allow students to remedy any perceived deficiencies in the more basic communication and technical skills.

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

**Course Objectives**

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

**Admission Requirements and Prerequisites**

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

**Prerequisites Units 3 and 4**

Mathematical Methods or Specialist Mathematics, 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**

This structure will operate from 2003 for years 1 and 2

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<tr>
<th>Semester</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit points</th>
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**Year 2**

- ECF2842 Hydraulics - 10
- ECT2871 Surveying - 10
- EEP2882 Electrical Engineering 1 - 10
- ENC2812 Engineering Computations 1 - 10
- END2831 Introduction to Design - 10
- END2832 Engineering Design - 10
- ENF2841 Fluid Mechanics 1 - 10
- ENM2852 Engineering Management 1 - 10
- ENS2821 Solid Mechanics 2 - 10
- ENS2822 Solid Mechanics 3 - 10
- ENT2881 Thermodynamics 1 - 10
- SMA2801 Engineering Mathematics - 10

**Year 3**

- BMO3851 Engineering Management 2 - 10
- ECD3831 Civil Engineering Design - 10
- ECD3892 Structural Engineering Design 1 - 10
- ECF3841 Engineering Hydrology - 10
- ECF3842 Water Resources Engineering - 10
- ECG3861 Geomechanics 1 - 10
- ECG3862 Geotechnical Engineering 1 - 10
- ECN3882 Introduction to Environmental Engineering - 10
- ECS3821 Structural Analysis 1 - 10
- ECS3822 Structural Analysis 2 - 10
- ECT3871 Highway Engineering - 10
- ECT3872 Transportation Engineering - 10

**Year 4**

- ECD4831 Civil Engineering Design 2 - 10
- ECD4832 Civil Engineering Design 3 - 10
- ECD4891 Structural Engineering Design 2 - 10
- ECF4841 Hydraulic Engineering - 10
- ECG4861 Geotechnical Engineering 2 - 10
- ECN4881 Environmental Engineering 1 - 10
- ECN4882 Environmental Engineering 2 - 10
- ECP4810 Engineering Project* - 10
- ENM4852 Engineering Project Management - 10
- Plus two electives from the following four subjects*
- ECD4892 Structural Engineering Design 3 - 10
- ECF4842 Geohydrological Engineering - 10
- ECS4822 Advanced Structural Analysis - 10
- ECT4872 Environmental Planning & Design - 10

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

**Course Structure prior to 2003.**

**Year 3**

- BMO3522 Engineers as Managers - 8
- ECD3300 Civil Design and Project - 8
- ECM3531 Construction Management - 11
- ECS3220 Structural Analysis B - 8
- ECS3320 Structural Design B - 9
- ECT3440 Transportation Engineering - 8

**Year 4**

- ECD4331 Civil Engineering Design 2 - 10
- ECD4382 Civil Engineering Design 3 - 10
- ECD4491 Structural Engineering Design 2 - 10
- ECF4441 Hydraulic Engineering - 10
- ECG4461 Geotechnical Engineering 2 - 10
- ECN4481 Environmental Engineering 1 - 10
- ECN4482 Environmental Engineering 2 - 10
- ECP4410 Engineering Project* - 10
- ENM4452 Engineering Project Management - 10
- Plus two electives from the following four subjects*
- ECD4492 Structural Engineering Design 3 - 10
- ECF4442 Geohydrological Engineering - 10
- ECS4422 Advanced Structural Analysis - 10
- ECT4472 Environmental Planning & Design - 10

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

Course Code:

Course Objectives

The course teaches students the necessary skills to perform a wide range of engineering functions, as well as enabling the student to enter the engineering profession through Institute of Engineers, Australia recognition.

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, 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 or part-time equivalent.

Course Structure

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<thead>
<tr>
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<th>Course Title</th>
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</table>

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 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.
be offered honours candidacy, if they have achieved a minimum of Engineering program (or its equivalent in part-time mode), will Normally, students entering the final year of a full-time Bachelor of Engineering program. They will have 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 Mechanical Engineering

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 Mechanical Engineering
Course Code: EBME

The Bachelor of Engineering degree is designed to provide the broad education required for the mechanical engineer's professional career. In addition to the challenging theoretical and practical engineering content, the course contains integrated studies in economics, administration and communication. The degree 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.

Mechanical engineers find employment in government institutions and private enterprise in such widespread areas as 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, 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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Credit points: 60

**Elective Subjects (one per semester)**

- EMW4861 Materials in Manufacturing
- EMT4881 Automotive Engine Technology
- EMT4782 Heating and Air Conditioning
- EMV4871 Vibration and Modal Analysis
- EMV4872 Transportation & Packaging Dynamics

**Structure Pre 2003**

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Credit points: 60

Year 4.

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Credit points: 60

Normally no more than two streams will be offered in any calendar year.

**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

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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

**Subject to Approval**

**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.

**Prerequisites Units 3 and 4**
Mathematical Methods or Specialist Mathematics, English

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

**Admission at Other Levels**
In addition to satisfying the entry requirements for Australian resident students or demonstrating equivalence, overseas students must provide evidence of proficiency in the English language - IELTS - an overall band score of 6-7, subject to individual profile, 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 or part-time equivalent

**Course Structure**

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The Bachelor of Science in Engineering and Business course aims to provide suitably trained graduates who can have a general qualification, the course will also allow graduates to complete their integration with a range of essential business engineering, particularly with regard to industrial and project to provide a solid grounding in the basic and applied areas of Engineering and Business degree complemented by subjects in commercial and Engineering Management. Whilst being a stand-alone specific areas such as Planning and Design, Resource Application and Management to achieve an educational standard which will enable graduates to undertake work involving variety and intellectual challenge requiring accuracy and adherence to prescribed methods of analysis, design and computation in the fields of Planning/Design and Business/Management.

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

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

Prerequisites Units 3 and 4
- English, Mathematics (any)

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

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

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

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

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

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

Course Structure

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<td>BLO1105 Business Law</td>
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<td>BMO1102 Management &amp; Organizational Behaviour</td>
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<td>ENC1812 Computing for Engineers</td>
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<td>END1832 Engineering Graphics</td>
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<td>ENM1851 Engineering in Society</td>
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<td>ENF2841 Fluid Mechanics 1</td>
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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 Department in exceptional circumstances.

Bachelor of Science in Environmental Engineering

Course Code: EBEV

Note: This course will not have an intake in 2003.

Course Description

This three-year degree program provides a basic qualification and employment opportunities in areas related to infrastructure provision and sustainable urban and rural development. Major subject areas covered include environmental and engineering sciences, mathematics and computing, environmental engineering and design, land and water management, energy studies, urban planning and development, and several aspects of management including human resources, legislation and economics. The first two years of the course largely focus on mathematics, basic sciences and the development of communication skills. Third year subjects are concerned with the application of all of these skills to the planning, design, maintenance and management of infrastructure and other development with the object of helping to achieve both local and global sustainability.

Course Objectives

The course is designed to produce graduates with:

Well developed technical, communication and teamwork skills.

The ability to work independently or with people from a wide variety of disciplines.

The ability to apply scientific and engineering principles in an integrated manner to the solution of a range of development and environmental problems in order to improve our total life quality and global sustainability.
Admission Requirements and Prerequisites

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

**Prerequisites Units 3 and 4**
- English and a study score of at least 20 in mathematics (any).

**Middle Band selection**
- Applicants in the middle band will be considered on the basis of the full range of their year 12 studies, with particular attention to results in prerequisites 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,
- TOEFL – a score of 550+, and a Test of Written English (TWE) score of 5+.

Course Duration

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

Course Structure

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<th>Credit points</th>
<th>Semester</th>
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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.

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.
School of Communications and Informatics

Undergraduate Studies

The School of Communications and Informatics offers undergraduate courses leading to the award of:

Bachelor of Engineering in:
• Computer Engineering
• Electrical and Electronic Engineering
• Microelectronic Systems
• Telecommunications Engineering
• Photonics

Bachelor of Engineering Science in:
• Photonics

Bachelor of Science in:
• Applied Physics and Computing
• Computer Science
• Computer Science and Aviation
• Computer and Mathematical Sciences
• Computer Technology
• Mathematical Sciences
• Optoelectronics

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

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

The School has a large enrolment of both local and international students. Some programs are offered offshore in Hong Kong and other parts of Asia. The Bachelor of Science awards have a large degree of commonality of subjects in first year which facilitates possible transfer between courses. The Engineering awards have a great deal of commonality of subjects in their first two years.

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

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 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.

Professional Recognition

The Institution of Engineers, Australia, recognises the Electrical and Electronic Engineering, Telecommunication engineering and Computer Engineering 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.

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

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

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

Bachelor of Engineering in Computer Engineering

Course Code: EBEH

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

The rapid advances in computer applications and technology, particularly in the communication, control and multimedia areas, mean that many commercial and industrial problems are of a multidisciplinary nature, requiring expertise in both computer systems and electrical and electronic engineering. The aim of this course is to combine the desirable features of electrical and
electronic engineering with computer systems. The computer systems 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.

**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 3 and 4**

Mathematical Methods or Specialist Mathematics, English

**Middle Band Selection**

Applicants in the middle band will be considered on the basis of the full range of their VCE studies and results with particular attention to results in prerequisite studies and other science based studies.

**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; 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 can be approved at any stage of the course although the entire course cannot be completed on a part-time basis.

**Course Structure**

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*Appropriate semester electives from other degree courses to be approved by the Year Co-ordinator
Students will be required to submit evidence of having completed a minimum of 12 weeks industrial experience relevant to the course to satisfy the Institution of Engineers (Australia) requirements.

**Assessment**
The assessment for each subject is detailed in the subject listings.

**Course Regulations**
Are given following the Bachelor of Engineering in Telecommunication engineering.

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

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

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

**Bachelor of Engineering in Electrical and Electronic Engineering**
*Course Code: EBE*E*

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, electrical and power engineering; develop attitudes of personal initiative and enquiry in students that may continue to further education and meet the technological changes in their profession; develop oral and written communications and an understanding of society and the engineer's role in society; provide for professional recognition by the Institution of Engineers, Australia and other professional bodies.

**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 or Specialist Mathematics, 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 - a 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 can be approved at any stage of the course although the entire course cannot be completed on a part-time basis.

**Course Structure**

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<thead>
<tr>
<th>Year 1</th>
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<th>Credit points</th>
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<th>Semester</th>
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<td>EEA2002</td>
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<tr>
<td>EED2002</td>
<td>Design A 2.2</td>
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<td>8</td>
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</tbody>
</table>

41
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 electrical and electronic engineering and computer engineering must ensure that they have submitted for approval evidence of having undertaken a minimum of 12 weeks industrial experience relevant to the course to satisfy the Institution of Engineers, Australia, requirements.

### Assessment

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

### Course Regulations

Are given following the Bachelor of Engineering in Telecommunication engineering.

### Bachelor of Engineering in Microelectronic Systems

**Course Code:** EBMI

Subject to approval.

### 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.

### 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 or Specialist Mathematics, 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.

### Degree with Honours

A Degree with Honour 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 electrical and electronic engineering and computer engineering must ensure that they have submitted for approval evidence of having undertaken a minimum of 12 weeks industrial experience relevant to the course to satisfy the Institution of Engineers, Australia, requirements.

### Assessment

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

### Course Regulations

Are given following the Bachelor of Engineering in Telecommunication engineering.

### Bachelor of Engineering in Microelectronic Systems

**Course Code:** EBMI

Subject to approval.

### 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.

### 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 or Specialist Mathematics, 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.

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*Appropriate semester electives from other degree courses to be approved by the Year Co-ordinator
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: score of 6+, subject to individual profile;
- TOEFL: a score of 550+, and a Test of Written English (TWE) score of 5+.

Course Duration

The course is offered over four years on a full-time basis. Part-time study can be approved at any stage of the course although the entire course cannot be completed on a part-time basis.

Course Structure

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### Year 1

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<td>EHY2002</td>
<td>Computer Systems 2.2</td>
<td>9</td>
</tr>
<tr>
<td>SMA2201</td>
<td>Mathematics B</td>
<td>10</td>
</tr>
<tr>
<td>SMA2212</td>
<td>Mathematics C1</td>
<td>5</td>
</tr>
<tr>
<td>SMA2242</td>
<td>Statistics for Engineers</td>
<td>5</td>
</tr>
<tr>
<td></td>
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<td>60</td>
</tr>
</tbody>
</table>

### Year 3

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course</th>
<th>Subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMO3522</td>
<td>Engineers as Managers</td>
<td>8</td>
</tr>
<tr>
<td>EEC5511</td>
<td>Software Engineering 3.1</td>
<td>8</td>
</tr>
<tr>
<td>EED3600</td>
<td>Design Project 3.0</td>
<td>12</td>
</tr>
<tr>
<td>EEE3001</td>
<td>Electronic Circuits 3.1</td>
<td>8</td>
</tr>
<tr>
<td>EHH3013</td>
<td>EDA Tools and Design Flow</td>
<td>8</td>
</tr>
<tr>
<td>EHH3014</td>
<td>EDA Tools &amp; Scripting Language</td>
<td>8</td>
</tr>
<tr>
<td>EHH3202</td>
<td>Computer &amp; Digital Design 3.2</td>
<td>8</td>
</tr>
<tr>
<td>EHH3204</td>
<td>Integrated Circuit Design 3.2</td>
<td>8</td>
</tr>
<tr>
<td></td>
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<td>60</td>
</tr>
</tbody>
</table>

### Electives

- Three in Semester 1 and three in Semester 2

### Year 4

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course</th>
<th>Subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>EHH3702</td>
<td>Introduction to Fabrication</td>
<td>8</td>
</tr>
<tr>
<td>EHH3704</td>
<td>Introduction to MEMs</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>60</td>
</tr>
</tbody>
</table>

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

Assessment

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

Course Regulations

Are given following the Bachelor of Engineering in Telecommunication engineering.

Bachelor of Engineering in Telecommunication Engineering

Course Code: EBTE

The Bachelor of Engineering in Telecommunication is an engineering degree course that provides an extensive core of studies in the major Multimedia Telecommunications fields of electronics, communications, satellite communications, fibre optic technology, audio/video production and multimedia techniques. Outstanding graduates may be awarded the degree of Bachelor of Engineering with Honours.
The degree course is designed to provide both the breadth and specialisation appropriate to multimedia communication careers in Australia and overseas.

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

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

The four year course leading to the award of a degree, will require full effort but the reward of success will be in the chosen career and salary prospects and the opportunity for achievements in an interesting and challenging profession.

Course Objectives

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

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 or Specialist Mathematics, 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. Part-time study can be approved at any stage of the course although the entire course cannot be completed on a part-time basis.

Course Structure

<table>
<thead>
<tr>
<th>Year</th>
<th>Semester</th>
<th>Units</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>One</td>
<td>ACE1541 Engineering Communication</td>
<td>12</td>
</tr>
<tr>
<td>Year 1</td>
<td>Two</td>
<td>EEH1101 Digital Electronics 1</td>
<td>12</td>
</tr>
<tr>
<td>Year 1</td>
<td>Two</td>
<td>ACE1542 Engineering Communication</td>
<td>12</td>
</tr>
<tr>
<td>Year 1</td>
<td>Two</td>
<td>EEH1101 Digital Electronics 1</td>
<td>12</td>
</tr>
</tbody>
</table>

### Year 2

<table>
<thead>
<tr>
<th>Units</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEA2001 Linear Systems 2.1</td>
<td>9</td>
</tr>
<tr>
<td>EEA2002 Linear Systems 2.2</td>
<td>9</td>
</tr>
<tr>
<td>EED2002 Design A 2.2</td>
<td>8</td>
</tr>
<tr>
<td>EEC2001 Electronics 2.1</td>
<td>8</td>
</tr>
<tr>
<td>EEC2002 Electronics 2.2</td>
<td>8</td>
</tr>
<tr>
<td>EEH2001 Digital Electronics 2.1</td>
<td>8</td>
</tr>
<tr>
<td>EEH2002 Digital Electronics 2.2</td>
<td>8</td>
</tr>
<tr>
<td>EET2001 Multimedia Prog Production 2.1</td>
<td>8</td>
</tr>
<tr>
<td>EET2002 Communication Systems 2.2</td>
<td>8</td>
</tr>
<tr>
<td>EET2101 Multimedia Techniques 2.1</td>
<td>8</td>
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<tr>
<td>EEF2001 Computer Systems 2.1</td>
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<tr>
<td>EEF2002 Computer Systems 2.2</td>
<td>9</td>
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<tr>
<td>SMA2201 Mathematics B</td>
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<td>SMA2212 Mathematics C1</td>
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<tr>
<td>SMA2242 Statistics for Engineers</td>
<td>5</td>
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### Year 3

<table>
<thead>
<tr>
<th>Units</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMO3522 Engineers as Managers</td>
<td>8</td>
</tr>
<tr>
<td>EEC3001 Software Systems 3.1</td>
<td>8</td>
</tr>
<tr>
<td>EED3000 Design 3.0</td>
<td>12</td>
</tr>
<tr>
<td>EEE3001 Electronic Circuits 3.1</td>
<td>8</td>
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<tr>
<td>EEE3002 Electronic Circuits 3.2</td>
<td>8</td>
</tr>
<tr>
<td>EEE3201 Computer &amp; Digital Design 3.1</td>
<td>8</td>
</tr>
<tr>
<td>EEE3202 Computer &amp; Digital Design 3.2</td>
<td>8</td>
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<tr>
<td>EET3101 Communication Engineering 3.1</td>
<td>8</td>
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<tr>
<td>EET3102 Communication Engineering 3.2</td>
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</table>

### Electives (any four of the following)

<table>
<thead>
<tr>
<th>Units</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEF3002 Multimedia Circuits and Systems 3.2</td>
<td>8</td>
</tr>
<tr>
<td>EEF3002 Multimedia Comm Network 3.2</td>
<td>8</td>
</tr>
<tr>
<td>EET3501 Computer Communication 3.1</td>
<td>8</td>
</tr>
<tr>
<td>EET3502 Computer Communication 3.2</td>
<td>8</td>
</tr>
<tr>
<td>EHA4301 Optic Technology Fundamentals</td>
<td>8</td>
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</tbody>
</table>

### Year 4

<table>
<thead>
<tr>
<th>Units</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMO4551 Human &amp; Industrial Relations</td>
<td>8</td>
</tr>
<tr>
<td>BMQ3422 Strategic Management</td>
<td>8</td>
</tr>
<tr>
<td>EED4000 Design &amp; Project Management 4.0</td>
<td>20</td>
</tr>
<tr>
<td>EET4001 Signal Processing 4.1</td>
<td>8</td>
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<tr>
<td>EET4002 Signal Processing 4.2</td>
<td>8</td>
</tr>
<tr>
<td>EET4701 Communication Systems 4.1</td>
<td>8</td>
</tr>
<tr>
<td>EET4702 Communication Systems 4.2</td>
<td>8</td>
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<tr>
<td>EEF4101 Computer Systems 4.1</td>
<td>8</td>
</tr>
<tr>
<td>EEF4102 Computer Systems 4.2</td>
<td>8</td>
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</table>

### Electives (any two electives)

<table>
<thead>
<tr>
<th>Units</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>EET4104 Satellite Communication 4.1</td>
<td>8</td>
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<tr>
<td>EEE4404 Microwave Electronics 4.2</td>
<td>8</td>
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<tr>
<td>EET4302 Multimedia Systems Design 4.2</td>
<td>8</td>
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<tr>
<td>EET4401 Mobile Communication Systems 4.1</td>
<td>8</td>
</tr>
<tr>
<td>EET4402 Telettraffic Engineering 4.2</td>
<td>8</td>
</tr>
</tbody>
</table>
Assessment

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

Course Regulations

(for EBEE, EBET, EBEH)

Progression and Exclusion

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

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

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

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

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

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

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

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

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

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

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

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

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

Bachelor of Engineering in Photonics

Subject to approval.

Course Code: EBPH

Course Objectives

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

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

Admission Requirements

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

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

Prerequisites Units 1 and 2

Physics

Prerequisites Units 3 and 4

Mathematical Methods or Specialist Mathematics, English

Middle Band Selection

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

Admission at Other Levels

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

IELTS – an overall band score of 6+, subject to individual profile; 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 can be approved at any stage of the course although the entire course cannot be completed on a part-time basis.

Course Structure

ACE1541 Engineering Communication or 12 -
EIE1001 Digital Electronics 1 12 -
ACE1542 Engineering Communication or 12 -
EIE1001 Digital Electronics 1 12 -
EEL1001 Circuit Theory & Application 1 12 -
EEL1002 Circuit Theory & Application 2 12 -
EES1001 Programming 1 12 -
EES1002 Programming 2 12 -
EPP1001 Physics 1.1 12 -
Bachelor of Engineering Science in Photonics

Subject to approval.

Course Code: SBPH

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

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

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.

<table>
<thead>
<tr>
<th>Prerequisites Units 1 and 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physics</td>
</tr>
<tr>
<td>Mathematical Methods or Specialist Mathematics, English</td>
</tr>
</tbody>
</table>

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

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

Course Duration
The course is offered over three years on a full-time basis. Part-time study can be approved at any stage of the course although the entire course cannot be completed on a part-time basis.

Course Structure
<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACE1541</td>
<td>Engineering Communication or</td>
<td>12</td>
</tr>
<tr>
<td>EEE1001</td>
<td>Digital Electronics 1</td>
<td>12</td>
</tr>
<tr>
<td>ACE1542</td>
<td>Engineering Communication or</td>
<td>-</td>
</tr>
<tr>
<td>EEE1001</td>
<td>Digital Electronics 1</td>
<td>-</td>
</tr>
<tr>
<td>EEL1001</td>
<td>Circuit Theory &amp; Application 1</td>
<td>12</td>
</tr>
<tr>
<td>EEL1002</td>
<td>Circuit Theory &amp; Application 2</td>
<td>-</td>
</tr>
<tr>
<td>EES1001</td>
<td>Programming 1</td>
<td>12</td>
</tr>
<tr>
<td>EES1002</td>
<td>Programming 2</td>
<td>-</td>
</tr>
<tr>
<td>EPP1001</td>
<td>Physics 1.1</td>
<td>12</td>
</tr>
<tr>
<td>EPP1002</td>
<td>Physics 1.2</td>
<td>-</td>
</tr>
</tbody>
</table>

Students will be required to submit evidence of having completed a minimum of 12 weeks industrial experience relevant to the course to satisfy the Institution of Engineers (Australia) requirements.

Assessment
The assessment for each subject is detailed in the subject listings.

Course Regulations
Are given following the Bachelor of Engineering in Telecommunication Engineering.

Professional Recognition
Graduates will be eligible for membership in the Australian Institute of Physics and The Institution of Engineers, Australia.
SMA1201  Mathematics 1AP       12  -  
SMA1202  Mathematics 1AQ       -  12  
           60  60

Year 2
EED2002  Design A 2.2       -  8
EEE2001  Electronics 2.1       8  -
EEE2002  Electronics 2.2       -  8
EEH2001  Digital Electronics 2.1       8  -
EEH2002  Digital Electronics 2.2       -  8
EPP2001  Quantum Mechanics 2
EPP2002  Optics 2
EPP2003  Electromagnetic Theory
EPP2004  Optics Laboratory 2
EPP2006  Data Acquisition 1
EET2002  Communication Systems 2.2
SMA2801  Engineering Mathematics       10  -
           60  60

Year 3
EEE3001  Electronic Circuits 3.1       8  -
EEE3002  Electronic Circuits 3.2       -  8
EPP3000  Project
EPP3001  Optics 3
EPP3002  Fibre Optics
EPP3003  Lasers
EPP3004  Optics Laboratory 3.1       8  -
EPP3005  Optics Laboratory 3.2       -  8
SMA3311  Mathematics 3P       8  -
Electives
           60  60

Students will be required to submit evidence of having completed a minimum of 12 weeks industrial experience relevant to the course to satisfy the Institution of Engineers (Australia) requirements.

Assessment
The assessment for each subject is detailed in the subject listings.

Course Regulations
Are given following the Bachelor of Engineering in Telecommunication engineering.

Professional Recognition
Graduates will be eligible for membership in the Australian Institute of Physics and The Institution of Engineers, Australia.

Bachelor of Science in Applied Physics and Computing
Course Code: SBPC
Note: There is no intake into this course in 2003.

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).

Credit points
Semester

<table>
<thead>
<tr>
<th>Year</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>Two</td>
</tr>
</tbody>
</table>

Year 2
SMA2311  Mathematics 2P       10  -
SMA2331  Mathematics 2Q       -  10
SPH2000  Physics 2       25  25
SPH2432  Data Acquisition and Interfacing       10  -
Subjects from List A       10or20 20or30

Year 3
SMA3311  Mathematics 3P       10  -
SPH3000  Physics 3       25  25
SPH3941  Computational Physics A       -  10
SPH3942  Computational Physics B       10  -
Subjects from List A       10 or 20 20 or 30

List A
The subjects listed here (total 80 credit points) are undertaken in Years 2 and 3.

SCM2111  Data Communications and Networks 1       10  -
SCM2211  Database Systems 1       10  -
SCM2312  Software Engineering 1       10  -
Computing Elective       10  -
Electives (See below)       40  -

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.
Business Options
It is possible for students to complete a minor in any of the areas of marketing, economics, business law, administrative studies or accounting by choosing a four-subject sequence in these areas. Students will be given guidance about subject selections. Suggested subject sequences in the various business areas are listed below. In some cases other options exist. Students intending to complete a minor should consult with the appropriate business department at an early stage to discuss their choice of subjects.
A description of these subjects (10 credit points each) is found in the Faculty of Business and Law Handbook.

Marketing
Two-subject sequence:
BHO2231  Marketing 1
BHA3432  Marketing 2
Additional two subjects to complete minor:
BEO1106  Business Statistics
BHA3434  Consumer Behaviour

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

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

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

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

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

Bachelor of Science in Computer Science
Course Code: SBCO

Bachelor of Science in Computer and Mathematical Sciences
Course Code: SBCM

Course Objectives
The two programs all aim to provide graduates with the analytical ability, factual knowledge and communication skills that will suit them for employment in business and industry in one or more of the following areas:
• Computing: programming, software development, systems design and analysis, applications development, technical support.
• Statistics: data analysis, quality improvement, market research, forecasting, econometrics.
• Operations Research: production planning and scheduling, simulation studies, transportation planning, resource allocation.
• Financial Modelling: investment analysis, project evaluation.
• Secondary Teaching: mathematics, computer science.

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

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

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

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

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

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

Course Structure

<table>
<thead>
<tr>
<th>Credit points</th>
<th>Semester One</th>
<th>Semester Two</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>*ACE1141</td>
<td>7</td>
<td>-</td>
</tr>
<tr>
<td>BAO1101</td>
<td>7</td>
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<td>BAO1107</td>
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<td>-</td>
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<tr>
<td>BAO2202</td>
<td>-</td>
<td>8</td>
</tr>
<tr>
<td>BAO2204</td>
<td></td>
<td>-</td>
</tr>
</tbody>
</table>
To qualify for the Bachelor of Science in Computer Science (SBCS), 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 points, at least pass grades in ACE3143, ACE3144, SCM3001, SCM3002 and in a total of 16 other electives where less than 10 points, at least pass grades in ACE3143, ACE3144, SCM3001, SCM3002 and in a total of 16 other electives where less than 10 points, at least pass grades in ACE3143, ACE3144, SCM3001, SCM3002 and in a total of 16 other electives where less than 10 points.

A choice between SCM1614 Applied Statistics 2 or

BAO9913 Accounting and Information Systems - 15
SCM1711 Mathematical Foundations 1 - 15
SCM1712 Mathematical Foundations 2 - 15

Year 2
Five Electives from lists A and B (5 x 3 hours) 60 -
Five Electives from lists A and B (5 x 3 hours) - 60 60

Year 3
ACE3143 English Language and Communication 3 12 -
ACE3144 English Language and Communication 4 - 12
SCM3001 Project 1 12 -
SCM3002 Project 2 - 12
Three Electives from lists A and B (3 x 3 hours) 36 -
Three Electives from lists A and B (3 x 3 hours) - 36 60

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

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**Assessment**

Assessment for each subject is detailed in the subject listings.

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**Course Regulations**

**Progress Regulations**

The Academic Progress Committee (Board of Examiners’ Meeting will, at the end of each semester consider the results and progress of all students enrolled in the courses.

Progression through each course is based on the following guidelines:

(i) Where any compulsory subject must be repeated, enrolment in that subject must be at the first opportunity following the initial failure;

(ii) Students will not normally be allowed to enrol in any subject for which at least a P grade has not been attained in any of the prerequisite subjects;

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

**Completion by Compensation**

No stage completions by compensation will be granted.

**Unsatisfactory Progress**

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

(a) The following shall constitute unsatisfactory progress:

- failure in at least 50% of the assessed subjects for which a student has enrolled in a semester of study;
- failure in any subject twice;
- transgression of a conditional enrolment stipulation and agreement.

(b) Where a student's progress is unsatisfactory, the section Academic Progress Committee may recommend the following:

- a restricted and conditional enrolment only be approved;
- exclusion from the course.

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

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

Bachelor of Science in
Computer Science and Aviation
Course Code: SBCA

Course Objectives
The Bachelor of Science in Computer Science and Aviation aims to provide participants with:
• a practical and applied approach to the concepts of computer science and aviation;
• a range of skills in computer science, the mathematical sciences and aeronautical theory subjects at a level sufficient to satisfy the requirements for the issue of a Commercial Pilot's Licence (CPL), and Instrument Rating.

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

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

Admission Requirements

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

Alternatively, entry is via TAFE articulation or under mature age provisions. In addition, students must pass the prescribed medical examination conducted by a Civil Aviation Safety Authority-Approved Aviation Medical Examiner in order to be permitted to commence flying training.

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

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

Course Structure

<table>
<thead>
<tr>
<th>Year</th>
<th>Semester</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>One</td>
<td>Two</td>
<td></td>
</tr>
<tr>
<td>Year 1</td>
<td>ACE1411</td>
<td>English Language and Communication</td>
</tr>
<tr>
<td></td>
<td>ACE1412</td>
<td>English Language and Communication</td>
</tr>
<tr>
<td></td>
<td>SCA1101</td>
<td>Introductory Aeronautics</td>
</tr>
<tr>
<td></td>
<td>SCA1102</td>
<td>Basic Aeronautics</td>
</tr>
<tr>
<td></td>
<td>SCM1114</td>
<td>Introduction to Computing and the Internet</td>
</tr>
<tr>
<td></td>
<td>SCM1115</td>
<td>Computer Systems and Architecture</td>
</tr>
<tr>
<td></td>
<td>SCM1311</td>
<td>Programming</td>
</tr>
<tr>
<td></td>
<td>SCM1312</td>
<td>Programming</td>
</tr>
<tr>
<td></td>
<td>SCA1711</td>
<td>Mathematical Foundations</td>
</tr>
<tr>
<td></td>
<td>SCA1712</td>
<td>Mathematical Foundations</td>
</tr>
<tr>
<td>For those not doing ACE1141 and ACE1142</td>
<td>SCM1613</td>
<td>Applied Statistics</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 2</td>
<td>SCA2013</td>
<td>Aeronautics and Navigation (PPL)</td>
</tr>
<tr>
<td></td>
<td>SCA2051</td>
<td>Performance and Loading For CPL</td>
</tr>
<tr>
<td></td>
<td>SCA2053</td>
<td>Aerodynamics and Systems for the CPL</td>
</tr>
<tr>
<td></td>
<td>SCA2055</td>
<td>Flight Planning for CPL</td>
</tr>
<tr>
<td></td>
<td>SCA2057</td>
<td>Meteorology for the CPL</td>
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<td></td>
<td>SCA2059</td>
<td>Air Law for the CPL</td>
</tr>
<tr>
<td></td>
<td>SCA2061</td>
<td>Navigation for the CPL</td>
</tr>
<tr>
<td></td>
<td>SCA2063</td>
<td>Human Factors for the CPL</td>
</tr>
<tr>
<td></td>
<td>SCM2211</td>
<td>Database Systems</td>
</tr>
<tr>
<td></td>
<td>SCM2218</td>
<td>Database Systems</td>
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<td></td>
<td>SCM2311</td>
<td>Object Oriented Programming</td>
</tr>
<tr>
<td></td>
<td>SCM2312</td>
<td>Software Engineering</td>
</tr>
<tr>
<td></td>
<td>SCM2313</td>
<td>Software Development</td>
</tr>
<tr>
<td></td>
<td>SCM3112</td>
<td>User Interface Design</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Year 3</td>
<td>ACE3143</td>
<td>English Language and Communication</td>
</tr>
<tr>
<td></td>
<td>ACE3144</td>
<td>English Language and Communication</td>
</tr>
<tr>
<td></td>
<td>SCA3011</td>
<td>IREX - The Civil Aviation Instrument Rating Theory Exam</td>
</tr>
<tr>
<td></td>
<td>SCA3104</td>
<td>Human Factors for the ATPL</td>
</tr>
<tr>
<td></td>
<td>SCA3110</td>
<td>Flight Planning for the ATPL</td>
</tr>
<tr>
<td></td>
<td>SCA3112</td>
<td>Navigation for the ATPL</td>
</tr>
<tr>
<td></td>
<td>SCA3114</td>
<td>Aerodynamics and Systems for the ATPL</td>
</tr>
<tr>
<td></td>
<td>SCA3116</td>
<td>Performance and Loading for the ATPL</td>
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<tr>
<td></td>
<td>SCA3118</td>
<td>Meteorology for the ATPL</td>
</tr>
<tr>
<td></td>
<td>SCA3120</td>
<td>Air Law for the ATPL</td>
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</tr>
</tbody>
</table>

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

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
Assessment
The assessment for each subject is detailed in the subject listing.

Course Regulations
Progression Regulations
The section’s Academic Progress Committee (Board of Examiners’ Meetings) will, at the end of each semester consider the results and progress of all students enrolled in the course. Progression through the course is based on the following guidelines:
Where any compulsory subject must be repeated, enrolment in that subject must be at the first opportunity following the initial failure.
For SCM coded subjects, students must not enrol in any subject for which at least an N1 grade hasn’t 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 (ii) must be obtained in at most two subjects.
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 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 Duration
The course is offered over three years on a full-time basis. Students must complete 360 credit points.

Course Structure

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Semester One</th>
<th>Semester Two</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACE1541 Engineering Communication or</td>
<td>15</td>
<td>-</td>
</tr>
<tr>
<td>EEE1001 Digital Electronics 1</td>
<td>15</td>
<td>-</td>
</tr>
<tr>
<td>ACE1542 Engineering Communication or</td>
<td>-</td>
<td>15</td>
</tr>
<tr>
<td>EEE1001 Digital Electronics 1</td>
<td>-</td>
<td>15</td>
</tr>
<tr>
<td>EEE1002 Electronics 1.2</td>
<td>15</td>
<td>-</td>
</tr>
<tr>
<td>EEL1001 Circuit Theory and Application 1</td>
<td>-</td>
<td>15</td>
</tr>
<tr>
<td>ETC1001 Programming for Technology 1</td>
<td>15</td>
<td>-</td>
</tr>
<tr>
<td>ETC1111 Computer Technology 1</td>
<td>15</td>
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<tr>
<td>SMA1201 Mathematics 1AP</td>
<td>15</td>
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<td>SMA1202 Mathematics 1AQ</td>
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<td>15</td>
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<tr>
<td></td>
<td>60</td>
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</table>

<table>
<thead>
<tr>
<th>Year 2</th>
<th>Semester One</th>
<th>Semester Two</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEA1002 Electrical Engineering 1.2 (or equivalent)</td>
<td>10</td>
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<tr>
<td>EEC2501 Software Engineering 2.1</td>
<td>10</td>
<td>-</td>
</tr>
<tr>
<td>EED2502 Design Project 2.2</td>
<td>-</td>
<td>10</td>
</tr>
<tr>
<td>EEE2601 Microprocessor Systems 2.1</td>
<td>10</td>
<td>-</td>
</tr>
</tbody>
</table>

51
Assessment

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

Course Regulations

Progress Regulations

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

(i) Where any compulsory subject must be repeated, enrolment in that subject must be at the first opportunity following the initial failure;

(ii) Students will not normally be allowed to enrol in any subject for which at least a P grade has not been attained in any of the prerequisite subjects;

(iii) Student enrolment will not normally be approved where those subjects carrying the N1 grade are deemed to have an N1 grade, that student may be granted the award.

Completion by Compensation

Completion by compensation will be granted under the following conditions:

(i) Completion by compensation applies only to the elective subjects with the exception that a maximum of one of the compulsory first year subjects other than English Language and Communication 1 or 2 may be completed by compensation;

(ii) If for a maximum of three subjects, at most one being a first year subject (other than English Language and Communication 1 or 2) and the other electives, a student has an N1 grade, that student may be granted the award where those subjects carrying the N1 grade are deemed completed by compensation;

(iii) The N1 grades in (ii) must be obtained in at most two sittings;

(iv) 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.

(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;

(b) Where a student's progress is unsatisfactory, the section Academic Progress Committee may recommend the following:

- a restricted and conditional enrolment only be approved;
- exclusion from the course.

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

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

Bachelor of Science in Optoelectronics

Course Code: SBPO

Note: There is no intake into this course in 2003.

Course Objectives

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

The optical technology components of the course emphasise, particularly in the third year, the technologically important areas of fibre optics, optoelectronics, laser physics and applied optics. Computer design and simulation of optical systems is included. The students are prepared for their professional working life by undertaking a major technical project. The physics, engineering and optical technology components of the course are complemented by the inclusion of relevant mathematics and computing subjects.

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

Course Duration

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

Course Structure

(Revised course introduced in 1997)

Subjects are taken over six semesters (three years).

<table>
<thead>
<tr>
<th>Credit points</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>One</td>
</tr>
<tr>
<td>Year 2</td>
<td></td>
</tr>
<tr>
<td>ACE2190</td>
<td>Professional Communication</td>
</tr>
<tr>
<td>EED2002</td>
<td>Design A 2.2</td>
</tr>
<tr>
<td>EMW2001</td>
<td>Materials</td>
</tr>
</tbody>
</table>

FACULTY OF SCIENCE, ENGINEERING AND TECHNOLOGY
SMA2311 Mathematics 2P 10 -
SMA2321 Mathematics 2Q - 10
SPH2000 Physics 2 25 25
SPH2432 Data Acquisition and Interfacing 10 -
Elective - 10
60 60

Year 3
SCM2111 Data Communications & Networks 1 10 -
SMA3311 Mathematics 3P 10 -
SPH3100 Physics 3O 25 20
SPH3200 Optoelectronics 3 10 5
SPH3472 Technical Project - 20
Elective 10 10
65 35

Electives (10 credit points each):
BMO3551 Human and Industrial Relations
BMO3522 Engineers as Managers
SPH1111 Astronomy
SPH3941 Computational Physics A
SPH3942 Computational Physics B

Other approved subjects

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.

Course Regulations

Progression Guidelines for SBPC and SBPO
1. Normally students must pass all subjects in a particular course year before being allowed to enrol in subjects in the subsequent course year.
2. Normally, students must complete any two consecutive years of the course within three calendar years of full-time equivalent enrolment.
3. Normally, students must complete the course in which they are enrolled within the following period:
   (a) Bachelors Degree Course – 10 years
   (b) Associate Diploma Course – 4 years
4. If the School allows a variation from the above the following guidelines shall apply:
   (a) Where any compulsory subject of a course year must be repeated, enrolment in that subject must be at the first opportunity following the initial failure.
   (b) Students may enrol in subjects in not more than two consecutive years, provided that priority is given to subjects in the earlier course year.
   (c) Students may not enrol in any subject for which the prerequisite has not been passed.
   (d) Student who are not granted a Stage Completion by Compensation are required to enrol in all failed subjects before any approved additional subjects can be included with the same enrolment.
   (e) Where enrolment includes a third attempt at any failed subject(s), enrolment in additional (first attempt) subjects will be permitted only with the approval of the Academic Committee of the section.

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

(g) Where a subject is being repeated, requests for exemption for part of the subject work (e.g. laboratory work) are at the discretion of the section offering the subject. Any exemptions granted will usually apply for one year only.

(h) Where the final assessment in a subject is based on the average mark obtained over two semesters, satisfactory performance will be required in each semester. A mark of less than 35% in any semester will normally be considered unsatisfactory even if the average mark exceeds 50%.

Exclusion Guidelines
Students in any of the following categories may be recommended for exclusion from the course:

(a) Those who fail a subject three times or obtain less than 40% on two occasions.
(b) Those who fail half or more of the subjects for which they enrol in any semester. For all-of-year subjects the half-year result will be included in the consideration for exclusion in that semester.
(c) Those who fail to comply with points 2 and 3 of the progression guidelines.

Those so identified by the Academic Committee of the Section may be recommended for exclusion from their course in accordance with the University Unsatisfactory Progress Regulations.

Stage Completion by Compensation
Stage completion by compensation is based on each of the full-time years of the course.

Students who fail in any subjects of any course year may, at the discretion of the Academic Committee of the Section be granted a compensatory stage completion to allow the student to go on to the next year of the course. This does not count as a pass in the subjects concerned by merely means that the student is not required to repeat them. The granting of a stage completion should be seen as an exceptional event rather than a formality. The stage completion is provided in order that the section may take account of a student's overall performance in allowing progression to the next stage of the course. Stage completion guidelines are as follows:

(a) Stage completion by compensation may be granted only for subjects where the student has gained an N1 result (40–49%).
(b) The maximum number of course hours for which Compensation may be granted in any one course year is 6 (averaged over the course year).
(c) The maximum number of course hours for which Compensation may be granted in the whole course is 10. Stage Completion may not be granted in any more than two course years.
(d) A Stage Completion will not normally be granted for a subject which has been attempted more than once.
(e) A Stage Completion will not normally be granted for a subject where a Stage Completion has previously been granted in a prerequisite.
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.

Assessment
Assessment for each subject is given in the subject listings.

Bachelor of Science (Honours) in Computer Science or Computer and Mathematical Sciences

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) - 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:
SPH4410 Physics 4 (Honours) 20 hours per week
120 credit points (60 per semester)

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.
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

<table>
<thead>
<tr>
<th>Level 1 Entrants</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACE1142</td>
<td>English Language and Communication 2</td>
</tr>
<tr>
<td>SCM1115</td>
<td>Computer Organisation and Architecture</td>
</tr>
<tr>
<td>SCM1311</td>
<td>Programming 1</td>
</tr>
<tr>
<td>SCM1614</td>
<td>Applied Statistics 2</td>
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<table>
<thead>
<tr>
<th>Level 2 Entrants</th>
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</tr>
</thead>
<tbody>
<tr>
<td>SCM3001</td>
<td>Computing Project</td>
</tr>
<tr>
<td>SCM1312</td>
<td>Programming 2</td>
</tr>
<tr>
<td>SCM2111</td>
<td>Data Communications and Networks 1</td>
</tr>
<tr>
<td>SCM2112</td>
<td>Operating Systems</td>
</tr>
<tr>
<td>SCM2211</td>
<td>Database Systems 1</td>
</tr>
<tr>
<td>SCM2218</td>
<td>Database Systems 2</td>
</tr>
<tr>
<td>SCM2311</td>
<td>Object Oriented Programming 1</td>
</tr>
<tr>
<td>SCM2312</td>
<td>Software Engineering 1</td>
</tr>
<tr>
<td>SCM2313</td>
<td>Software Development</td>
</tr>
<tr>
<td>SCM2612</td>
<td>Statistical Forecasting</td>
</tr>
<tr>
<td>SCM2711</td>
<td>Discrete Mathematics</td>
</tr>
<tr>
<td>SCM3311</td>
<td>Object Oriented Programming 2</td>
</tr>
<tr>
<td>SCM3312</td>
<td>Intelligent Systems</td>
</tr>
<tr>
<td>SCM3112</td>
<td>User Interface Design</td>
</tr>
<tr>
<td>SCM3113</td>
<td>Multimedia Systems Design</td>
</tr>
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<td>SCM3314</td>
<td>Object Oriented Analysis and Design</td>
</tr>
<tr>
<td>SCM3911</td>
<td>Simulation</td>
</tr>
</tbody>
</table>

Course Regulations
Students entering the program at level 1 are required to obtain a pass in at least sixteen subjects. Students entering the program at level 2 are required to obtain a pass in at least twelve 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.
The School of Life Sciences and Technology operates across the Footscray, Werribee and St Albans Campuses 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 NMR 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 Life Sciences and Technology offers undergraduate courses leading to the award of:

- **Bachelor of Science (Honours)**
- **Bachelor of Applied Science**
  - Chemistry
- **Bachelor of Science**
  - Biomedical Sciences
  - Conservation Biology and Environmental Management
  - Biotechnology
  - Ecology and Sustainability
  - Medical, Forensic and Analytical Chemistry
  - Nutrition, Food and Health Science
  - Occupational Health and Safety

**School Regulations**

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

**Awards**

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

**Assessment**

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

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

**Practical work**

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

**Late submission**

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

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

**Supplementary Assessment**

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

**Use of electronic calculators and storage devices**

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

**Unsatisfactory Progress**

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

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

**Duration of Exclusion**

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

**Progression**

Progression through the course is based on the following guidelines:

- Where any compulsory subject must be repeated, enrolment in that subject must be at the first opportunity following the initial failure.
- Students may not enrol in any subject for which the prerequisite has not been passed.
- Student enrolment will not normally be approved where the total proposed subject hours exceed 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 Life Sciences and Technology on (03) 9365-2691 or fax (03 9365 2465.

**Biology and General Science Teaching for Physical Education Graduates**
The School of Life Sciences and Technology has arranged elective programs designed for the entry of Bachelor of Applied Science – Physical Education graduates into a second teaching method in a Diploma of Education course and to subsequently gain registration with the Ministry of Education to teach either Biology or General Science, in addition to Physical Education.

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

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

To obtain registration in biology, it is necessary to take sufficient biology subjects to constitute a sub-major, i.e. at least 12 units of biology in first year and 23 units of biology in second year.

Details of the two streams of study are set out below; the code number is given for each subject.

**General Science Stream**
- SCS1006 Chemistry 1
- SBM1518 Human Physiology 1
- SBM1528 Human Physiology 2
- SBM2260 Diet and Nutrition

**Biology Stream**
- SBF2192 Applied Microbiology
- SBM1518 Human Physiology 1
- SBM1528 Human Physiology 2
- SBM2260 Diet and Nutrition
- SBM3264 Advanced Nerve and Muscle Physiology

**Bachelor of Applied Science in Chemistry**

*Course Code: SBCP*

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

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

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

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

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Points</th>
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<tbody>
<tr>
<td></td>
<td>SCS1006</td>
<td>Chemistry 1</td>
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<tr>
<td></td>
<td>SCS1008</td>
<td>Industrial Experience</td>
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<td></td>
<td>SMA1051</td>
<td>Medical, Forensic and Analytical Chemistry 1</td>
<td>10</td>
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<td>SMA1071</td>
<td>Mathematics Part1</td>
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<td>Mathematics Part 2</td>
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<tr>
<td></td>
<td>SPH1601</td>
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<tr>
<td></td>
<td>SPH1602</td>
<td>Physics 1SB</td>
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<tr>
<td>Year 2</td>
<td>SCS2510</td>
<td>Analytical Chemistry 2</td>
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</tr>
<tr>
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<td>SCS2000</td>
<td>Industrial Experience</td>
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<td>SMA2031</td>
<td>Mathematics 2 Part 1</td>
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<tr>
<td></td>
<td>SMA3071</td>
<td>Intro to Computer Utilization</td>
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</tr>
<tr>
<td></td>
<td>SCS1006</td>
<td>Chemistry 1</td>
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<tr>
<td>Year 3</td>
<td>ACE3020</td>
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<td>SCS3511</td>
<td>Applied Chemistry 3 (Analytical)</td>
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<td>SCS3000</td>
<td>Industrial Experience 3</td>
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<tr>
<td></td>
<td>SMA3071</td>
<td>Intro to Computer Utilization</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>SCS2000</td>
<td>Industrial Experience</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>SCS3511</td>
<td>Applied Chemistry 3 (Analytical)</td>
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<tr>
<td></td>
<td>SCS2510</td>
<td>Analytical Chemistry 2</td>
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</tr>
<tr>
<td></td>
<td>SCS1006</td>
<td>Chemistry 1</td>
<td>20</td>
</tr>
</tbody>
</table>

Progression and Exclusion Regulations

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

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

Year Completed

<table>
<thead>
<tr>
<th>Semester</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>One 20</td>
</tr>
<tr>
<td></td>
<td>Two 20</td>
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</tbody>
</table>

Bachelor of Science in Biomedical Sciences

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/c 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 produce 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 other 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 leads 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 13 week semesters or 26 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 Life Sciences and Technology. 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 comprises with the year of the student’s course.

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

<table>
<thead>
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<th>Semester</th>
<th>Credit points</th>
</tr>
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<tbody>
<tr>
<td>SBM1514</td>
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<td>20</td>
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<tr>
<td>SCS1110</td>
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<td>SCS1120</td>
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**First Year General Electives**

<table>
<thead>
<tr>
<th>Subject</th>
<th>Semester</th>
<th>Credit points</th>
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</thead>
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<td>ACC1042</td>
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<td>ACP1051</td>
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**Second Year Science Electives**

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**Second Year General Electives**

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<tr>
<td>BMO2300</td>
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<td>BMO2285</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>BMO3420</td>
<td></td>
<td>10</td>
</tr>
</tbody>
</table>

Any foreign language at second year level: Students in the Science, Media and Communication 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).

Students in the Science, Media and Communication stream are encouraged to take these electives (If students take ACC1042 Communications Studies they are exempt from ACE1910 Communications for Science).

Students in the Management and Marketing of Biomedical Products stream are encouraged to take these electives.

Students in the Medical Research and Clinical Sciences stream are encouraged to take these electives.
Students in the Medical Research and Clinical Sciences stream are encouraged to take these electives

**Third Year Subjects**

**Core Subjects**

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

<table>
<thead>
<tr>
<th>Credit points</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>One</td>
</tr>
<tr>
<td>SBF 3920</td>
<td>Biometrics and Experimental Design 3,4</td>
</tr>
<tr>
<td>SBF 3264</td>
<td>Advanced Nerve and Muscle Physiology4</td>
</tr>
<tr>
<td>SBF 3350</td>
<td>Advanced Bioscience 5A1</td>
</tr>
<tr>
<td>SBF 3356</td>
<td>Advanced Bioscience 6A1</td>
</tr>
<tr>
<td>SBF 3390</td>
<td>Advanced Histological Techniques4</td>
</tr>
<tr>
<td>SBF 3360</td>
<td>Developmental and Clinical Genetics4</td>
</tr>
<tr>
<td>SBF 3370</td>
<td>Immunology1,2,3,4</td>
</tr>
<tr>
<td>SBF 3380</td>
<td>Wellness 11</td>
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<td>SBF 3382</td>
<td>Wellness 21</td>
</tr>
<tr>
<td>SBF 3393</td>
<td>Project 2,3,4</td>
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<tr>
<td>Electives</td>
<td>20-25</td>
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<td>60</td>
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**Third Year Science Electives**

<table>
<thead>
<tr>
<th>Credit points</th>
<th>Semester</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>One</td>
</tr>
<tr>
<td>SBF 3210</td>
<td>Advanced Nutrition</td>
</tr>
<tr>
<td>SBF 3230</td>
<td>Nutrition and Health</td>
</tr>
<tr>
<td>SBF 3360</td>
<td>Science, Media &amp; Communication</td>
</tr>
<tr>
<td>SBF 3364</td>
<td>Advanced Neurosciences</td>
</tr>
<tr>
<td>SBF 3365</td>
<td>Advanced Reproduction and Development</td>
</tr>
<tr>
<td>SBF 3367</td>
<td>Molecular Psychology</td>
</tr>
<tr>
<td>SBF 3370</td>
<td>Recombinant DNA Technology</td>
</tr>
<tr>
<td>SCS 2373</td>
<td>Toxicology 1B</td>
</tr>
</tbody>
</table>

**Third Year General Electives**

<table>
<thead>
<tr>
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<th>Semester</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>One</td>
</tr>
<tr>
<td>ACC 3045</td>
<td>Video Production2</td>
</tr>
<tr>
<td>ACC 3046</td>
<td>Communicating with Radio</td>
</tr>
<tr>
<td>ACC 3047</td>
<td>Communicating in Organisations2</td>
</tr>
<tr>
<td>ACC 3050</td>
<td>Communication through Cinema Management</td>
</tr>
<tr>
<td>ACP 3051</td>
<td>Writing for Publications and Advertising2</td>
</tr>
<tr>
<td>ACP 3052</td>
<td>Scripting, Directing &amp; Producing the Documentary</td>
</tr>
<tr>
<td>ACP 3053</td>
<td>Advanced Fiction Writing</td>
</tr>
<tr>
<td>BE 1185</td>
<td>Retail Management Principles</td>
</tr>
<tr>
<td>BHO 2252</td>
<td>Selling and Sales Management3</td>
</tr>
<tr>
<td>BHO 3525</td>
<td>Advanced Marketing Research</td>
</tr>
<tr>
<td>BHO 3435</td>
<td>Marketing Planning Strategy3</td>
</tr>
<tr>
<td>BHO 3373</td>
<td>International Marketing</td>
</tr>
<tr>
<td>BMB 3325</td>
<td>Human Resource Management and Evaluation3</td>
</tr>
<tr>
<td>BMO 3322</td>
<td>Employee Relations Management3</td>
</tr>
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</table>

**Progression Regulations**

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 each course will be based on the following guidelines:

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

Students will normally be allowed to enrol in any subject for which at least a P grade has been attained in the prerequisite subjects.

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

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

**Completion by Compensation**

Completion by compensation will apply only to the elective subjects with the exception that a maximum of one of the compulsory first year subjects may be completed by compensation.

**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:

(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 two times.

(c) transgression of a conditional enrolment agreement.

(ii) Where a student’s progress is unsatisfactory, the School Academic Progress Committee may recommend as follows:

(a) a restricted and conditional enrolment only to be approved.

(b) exclusion from the course.

**Bachelor of Science in Conservation Biology and Environmental Management**

**Course Code:** SBBE

**Note:** There is no intake into this course in 2003.

**Course Objectives**

Students taking the conservation biology and environmental management specialisation gain in-depth training in the measurement, analysis and management of biological diversity and related environmental resources. The course structure is practically based and flexible, allowing a range of in-depth studies, including restoration ecology, marine and freshwater biology, pollution biology and ecotoxicology, environmental microbiology and sustainable resource use. Combined studies with molecular biology and analytical biochemistry are also possible. Students are trained for a wide range of government, industry and community based career opportunities, including council and shire conservation and planning positions, parks management, environmental consultancy, EPA, landcare and weed control managers, and other types of conservation and environmental management.
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>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>One</td>
<td>Two</td>
</tr>
</tbody>
</table>

**Year 2**
- SBF2311 Ecosystems 15 -
- SBF2364 Conservation Biology 15 -
- SBF2452 Environmental Biology 15 -
- SBF2460 Animal Biology 15 -
- SBF2470 Plant Biology 15 -
- at least one of SBF2331 Microbiology 1 15 -
or SBF2520 Biochemistry 1 15 -
- Electives 10 20
- 55 65

**Year 3**
At least one of the four streams listed below - prerequisites for subjects in each of these streams need to be checked when mapping out a course of study:

**Terrestrial Ecology & Restoration**
- SBF3920 Biometrics & Experimental Design 15 -
- SBF3321 Renewable Resource Management 15 -
- SBF3320 Rehabilitation and Restoration Ecology 30 45
- Electives 60 60

**Pollution Biology**
- SBF3920 Biometrics & Experimental Design 15 -
- SBF3455 Ecotoxicology & Pollution Biology 15 -
- SBF3321 Renewable Resource Management 15 -
- Electives 60 60

**Freshwater & Marine Ecology**
- SBF3920 Biometrics & Experimental Design 15 -
- SBF3343 Freshwater and Marine Ecology 15 -
- SBF3321 Renewable Resource Management 15 -
- Electives 60 60

**Conservation Biology with Molecular Biology Electives**
- SBF3920 Biometrics & Experimental Design 15 -
- SBF3760 Recombinant DNA Technology 15 -
- SBF3321 Renewable Resource Management 15 -
- And at least one of the following:
  - SBF3343 Freshwater and Marine Ecology 15 -
or SBF3455 Ecotoxicology and Pollution Biology 15 -
or SBF3320 Rehabilitation and Restoration Ecology 15 45
- 60 60

*Note: students undertaking this stream need to complete both SBF2331 Microbiology 1 and SBF2520 Biochemistry 1 in their year 2 of study. Studies in SBF3760 Recombinant DNA Technology take place at Werribee Campus only.

Students should note that the following subjects will not be offered in 2003 in the Conservation Biology and Environmental Management degree: SBF2331 Microbiology, SBF2420 Environmental Issues, SBF2432 Environmental Science, and SBF3455 Ecotoxicology and Pollution Biology. These subjects have been replaced by the following subjects in the new Ecology and Sustainability degree: SBFxxxx Australian Landscapes and Biota, SBFxxxxx Global Environmental Issues and SBFxxxx Pollution Biology.

**Electives**
At least five electives are required to be taken over the course of the degree. Electives in areas other than listed below 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 for prerequisites.

Science electives may be chosen from any of the degree subjects offered by the Faculty of Science, Engineering and Technology at St Albans, Werribee and Footscray Park 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 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 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.

The following subjects are available as electives within the structure of the degree program:
- BEO2164 Economics of Environmental Management
- SBF2372 Ethology
- SBF2330 Cell Biology
- SBF2750 Nutrition
- SBF2922 Science and Society
- SBF3530 Environmental Philosophy
- SBF3760 Recombinant DNA Technology
- SCS2250 Process Engineering 1
- SCS2562 Environmental Chemistry
- SCS311 Environmental Legislation
- SCS3432 Occupational and Public Health
- SCS3481 Liquid and Solid Wastes
- SCS3492 Air Quality Management
- SBF3540 Leadership and the Environment
- SCS3570 Indigenous Society & Environmental Management

**Year 3 Electives can include:**
- SBF3320 Rehabilitation and Restoration Ecology
- SBF3455 Ecotoxicology and Pollution Biology
- SBF3321 Renewable Resource Management
- SBF3343 Freshwater and Marine Ecology
- SBF3400 Microbial Ecology

**Field Trips**
Students may be required to participate in field trips of up to three days duration for certain subjects. Participation in these activities forms part of the assessment of these subjects and provides essential experience in field biology techniques. Exemption from these activities is only available by prior application where cultural or personal circumstances preclude participation.
Professional Recognition
Graduates of the Conservation Biology and Environmental Management degree are eligible to join professional bodies such as the Ecological Society of Australia and the Australian Institute of Biologists.

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 2003 is the satisfactory completion of a Year 12 course of study approved by the Victorian Curriculum and assessment Board (VCAB), or an equivalent program approved by Victoria University for entry. Prerequisites are Units 3 and 4 in the following subjects: English, and Mathematical Methods. 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>Year 1</th>
<th>Core Units</th>
<th>Credit points</th>
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<td></td>
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<td>Semester One</td>
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<td></td>
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<td>-20</td>
</tr>
<tr>
<td></td>
<td>SBF3910</td>
<td>-20</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Elective Units</th>
<th>Credit points</th>
</tr>
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<td>SBF3251</td>
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<td>SBF3750</td>
<td>-20</td>
</tr>
<tr>
<td>SBF3910</td>
<td>-20</td>
</tr>
</tbody>
</table>

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

Electives
A minimum of 90 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 Ecology and Sustainability
Subject to Approval.
Course Code: SBES

Course Objectives
This course provides the flexible combinations of professional education and technical training that are required to develop the practical solutions necessary to achieve sustainable management of the Australian environment. There is a strong emphasis on hands-on skills, including building links across scientific, social and business sectors, and including environmental analysis, effective communication, and project management.

The course structure is based on a limited number of core subjects which provide a solid foundation to the biology and ecology and sustainable management of the Australian landscape, supplemented by a wide range of electives drawn from the environmental engineering, business, tourism, community development, and human bioscience disciplines.

Students can chose from electives according to the four major streams in the course: a) ecology and natural resource management (with specializations in aquatic engineering and environmental engineering); b) ecology and community development; c) ecology and tourism/business; d) ecology and human bioscience/wellness. These are suggested streams only, and
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.

### Admission Requirements

The minimum entry requirement for persons under 21 years of age on 1 January 2003 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.

A minimum ENTER score of 60 will apply. Prerequisites are Units 3 and 4 at a grade D average in English and Mathematical Methods.

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 2003.

### Course Duration

The Bachelor of Science in Ecology and Sustainability program requires the equivalent of three years full-time study. A fourth year may be taken in the Honours program.

### Course Structure

<table>
<thead>
<tr>
<th>Year</th>
<th>Units</th>
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<th>Semester Two</th>
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<tr>
<td>Year 1</td>
<td></td>
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<tr>
<td>SBF1150</td>
<td>Global Environmental Issues</td>
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<td>SBF1160</td>
<td>Australian Landscapes &amp; Biota</td>
<td>-</td>
<td>15</td>
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<tr>
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<td>Biology 1</td>
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<td>SBF1320</td>
<td>Biology 2</td>
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<td>15</td>
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<td>SCS1110</td>
<td>Chemistry for Biol. Sci. A</td>
<td>15</td>
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<td>or elective²,³</td>
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<tr>
<td>SMA1110</td>
<td>Maths 1 or elective³,⁴</td>
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<td>SCS1120</td>
<td>Chemistry for Biol. Sci. B</td>
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<td>15</td>
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<td>or elective³,⁴</td>
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<tr>
<td>SMA1120</td>
<td>Maths 2 or elective³,⁴</td>
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<td>15</td>
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<tr>
<td>Year 2</td>
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<td>SBF2610</td>
<td>Fundamentals of Ecology</td>
<td>15</td>
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<td>SBF2620</td>
<td>Australian Animals</td>
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<td>15</td>
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<td>SBF2630</td>
<td>Community &amp; Environment</td>
<td>-</td>
<td>15</td>
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<tr>
<td>SBF2640</td>
<td>Australian Plants</td>
<td>-</td>
<td>15</td>
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<td>Prescribed and free electives</td>
<td>30</td>
<td>30</td>
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<tr>
<td>Year 3</td>
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<td>(minimum of 4 from list + 4 electives)</td>
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<tr>
<td>SBF3600</td>
<td>Aquatic Ecology</td>
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<tr>
<td>SBF3610</td>
<td>Biostatistics</td>
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</tr>
<tr>
<td>SBF3620</td>
<td>Conservation &amp; Sustainability</td>
<td>15</td>
<td>-</td>
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<tr>
<td>SBF3630</td>
<td>Environmental Impacts &amp; Monitoring</td>
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<td>15</td>
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<tr>
<td>SBF3640</td>
<td>Terrestrial Environments &amp; Rehabilitation</td>
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<td>SBF3650</td>
<td>Pollution Biology</td>
<td>-</td>
<td>15</td>
</tr>
<tr>
<td>SBF3660</td>
<td>Indigenous Society &amp; Environmental Management</td>
<td>15</td>
<td>-</td>
</tr>
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</table>

Electives for balance of credit points: 15-30 15-30

<table>
<thead>
<tr>
<th>Credit points</th>
<th>Semester One</th>
<th>Semester Two</th>
</tr>
</thead>
<tbody>
<tr>
<td>60</td>
<td>60</td>
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</tr>
</tbody>
</table>

1. Students taking the Ecology and Human Bioscience Wellness stream can take SBFxxxx Biology 1 or SBM1510 Human Bioscience 1A.
2. Students enrolled in the ‘natural resource management’ stream would be advised to take Chemistry for Biol. Sci. A & B, whereas other streams would not be so advised. Some level 2/3 subjects (e.g. Pollution Biology), will have Chemistry for Biol. Sci. A & B and other subjects as pre-requisites.
3. Students in the ‘natural resource management’ stream would be required to take Maths 1 & 2 if they lack VCE mathematics, but could take an elective if they have VCE mathematics.
4. Students without demonstrably sound communications skills will be directed to enrol in ACE1910 Communications for Science and/or SBM1500 Foundations in Biomedical Science, at the discretion of the course co-ordinator.

### Electives

At least 6 electives are required to be taken over the course of the degree. Electives other than those listed below may be taken at the discretion of the Head of School.

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**

- SCS110 Chemistry for Biological Sciences A
  - 15
- SMA1110 Maths 1 or Elective from list below
  - 15
- SCS1120 Chemistry for Biological Sciences B
  - 15
- SMA120 Maths 2 or Elective from list below
  - 15

**Aquatic engineering specialization**

- ENF2841 Fluid Mechanics 1
  - 15
- ECF2842 Hydraulics
  - 15
- ECF3841 Engineering Hydrology
  - 15
- ECF3842 Water Resources Engineering
  - 15
- ECG3861 Geomechanics
  - 15
- ECF4842 Geohydrological Engineering
  - 15

**Environmental engineering specialization**

- ECN3882 Introduction to Environmental Engineering
  - 15
- ECN4881 Environmental Engineering 1
  - 15
- ECN4882 Environmental Engineering 2
  - 15
- ECT4872 Environmental Planning & Design
  - 15

**Ecology and Community Development Stream**

- ASA1021 Community Development Theory and Practice 1
  - 15
- ASA1022 Community Development Theory and Practice 2
  - 15
Students taking this stream should choose two (2) electives from the following:

ASA2021 Community Development Theory and Practice 15
ASA2022 Community Development Theory and Practice 15
ASA3010 Sociology 3A 15
ASA3011 Sociology 3B 15
ASS3035 Sociology 2.3E (Environmental Policy) 15
ASC3095 Conflict Resolution in Groups and Communities 15

Ecology and Tourism/Business Stream

BHO1190 Introduction to Tourism 15
BHO2286 Nature-based Tourism 15

Students taking this stream should choose two (2) electives from the following:

BHO2255 Tourism Enterprise Management 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
BAO1101 Accounting for Decision Making 15

Ecology and Human Bioscience/Wellness Stream

SBM2530 Human Bioscience 3A (Pathophysiology 1) 15
SBM2540 Human Bioscience 4A, OR 2 15
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
SM1A1110 Maths 1 15
SCS1120 Chemistry for Biological Sciences B 15
SM1A1120 Maths 2 15
ENF2841 Fluid Mechanics 1 15
ECF2842 Hydraulics 15
ECF3841 Engineering Hydrology 15
ECF3842 Water Resources Engineering 15
ECG3861 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 15
ASA2022 Community Development Theory and Practice 15
ASA3010 Sociology 3A 15
ASA3011 Sociology 3B 15
ASS3035 Sociology 2.3E (Environmental Policy) 15
ASC3095 Conflict Resolution in Groups and Communities 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
BAO1101 Accounting for Decision Making 15
SBM2530 Human Bioscience 3A 15
SBM2540 Human Bioscience 4A, OR 15
SBM2260 Diet and Nutrition 20
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

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 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 which indicates that employers seek graduates with specific skills in analytical
chemistry as applied to industrial, medical and forensic issues. Concomitant studies in Molecular Sciences, Biosciences, Communication, Mathematics and Computer literacy give the graduate the employment skills that support the technical expertise. The course is designed to meet the professional membership requirements of The Royal Australian Chemical Institute (RACI). Course structure commences with a typical first year which exposes the student to a wide range of science disciplines. Second year has a core of subjects and a range of electives. In the final year chemical knowledge and applications are consolidated through a choice of appropriate electives.

**Admission Requirements**

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

**Course Structure**

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

**Year 1**

- **ACE1010** Written and Oral Communication 1 15 -
- **SBF1310** Biology 1 20 -
- **SBF1320** Biology 2 - 20
- **SCM1111** Introduction to Computer Systems - 10
- **SCS1000** Course Overview and Guidance 5 -
- **SCS1601** Chemistry A 20 -
- **SCS1602** Chemistry B - 20
- **SCS1603** Medical, Forensic and Analytical Chemistry 1A 5 -
- **SCS1604** Medical, Forensic and Analytical Chemistry 1B - 5
- **SMA1110** Mathematics 1 10 -

65 55

**Year 2**

- **ACE2010** Written & Oral Comm 2 - 5
- **SBF2520** Biochemistry 1 15 -
- **SCS2502** Forensic Chemistry 2 - 15
- **SCS2503** Medical Chemistry 2 15 -
- **SCS2601** Analytical Chemistry 2A 15 -
- **SCS2602** Analytical Chemistry 2B - 15
- **SMA1120** Mathematics 2 - 10

45+ 45+

**Electives**

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

- **SBF2330** Cell Biology 10 -
- **SBF2410** Food Components 10 -
- **SBM1518** Human Physiology 1 15 -
- **SBM2360** Intro to Microbiology 10 -
- **SBM2361** Epidemiology 5 -

- **SCS2521** Applied Chemistry 2 (Organic) 15 -
- **SBF2300** Microbiology 1 15 -
- **SBF2310** Microbiology 2 - 15
- **SBF2390** Molecular Genetics - 10
- **SBF2410** Food Interactions - 10
- **SBM1528** Human Physiology 2 - 15
- **SBM2260** Diet and Nutrition - 15
- **SBM2750** Nutrition - 10
- **SCS2521** Applied Chemistry 2 (Organic) - 15
- **SCS2371** Toxicology - 5

**Year 3**

- **ACE3010** Written & Oral Communication 3 5 5
- **SCS3601** Analytical Chemistry 3A - 15
- **SCS3602** Analytical Chemistry 3B 15 -
- **SCS3603** Medical Chemistry 3A 15 -
- **SCS3605** Forensic Methods 3A 15 -
- **SCS3606** Forensic Methods 3B - 15
- **SCS3604** Medical Chemistry 3B - 15
- **SMA3071** Introduction to Computer Utilization 10 -

45+ 35+

**Bachelor of Science in Nutrition, Food and Health Science**

**Course Code:** SBNF

**Course Objectives**

The Nutrition, Food and Health Science degree is designed to develop the knowledge and skills in the science and processing of food, its safety and quality as required by today's nutritionists and food scientists, while providing the opportunity to specialise in one of the following areas: Food Technology, Nutrition, Food Biotechnology or Food Business Studies. 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 food and allied industries. 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 and nutrition.
The **Food Science and Nutrition** stream has been specifically designed to meet the demand for such graduates. The stream in **Food Biotechnology** is designed to provide graduates with a sound knowledge of traditional food processing technologies together with the skills and knowledge in modern molecular biology that will be required by tomorrow’s food and fermentation industries. Such graduates are likely to find ready employment in the production, research and development and analytical services sectors of industry or government.

The **Food Technology** stream is designed to meet the needs of both students, who have an interest in the production or processing side of the industry, and industry, who demand well qualified graduates for production supervision and quality assurance roles within the manufacturing environment. Such graduates will play a key role in the hygienic and safe production of food products.

The marketing of ingredients and services to the food industry has been identified as a major focus of employment for appropriately trained food science and technology graduates. The **Food Science and Business Studies** stream has been designed to equip students in both science and relevant business areas to enable them to gain employment in the sales, service and management sectors of the food and allied industries.

**Admission Requirements**

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

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

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

**Course Duration**

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

**Course Structure**

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

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Semester</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>One</td>
<td>Two</td>
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<tr>
<td>ACE1910 Communications for Science</td>
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<td>5</td>
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<tr>
<td>SBF1130 Introductory Food Science and Technology</td>
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</tr>
<tr>
<td>SBF1310 Biology 1</td>
<td>15</td>
<td>-</td>
</tr>
<tr>
<td>SBF1320 Biology 2</td>
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<tr>
<td>SCS1601 Chemistry 1A</td>
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<td>SCS1602 Chemistry 1B</td>
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<td>SMA1120 Mathematics 2</td>
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<td>Prescribed and Free Electives</td>
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</tr>
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<td><strong>Total</strong></td>
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<table>
<thead>
<tr>
<th>Year 2</th>
<th>Credit points</th>
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<tbody>
<tr>
<td>SBF2410 Food Components</td>
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</tr>
<tr>
<td>SBF2210 Food Interactions</td>
<td>-</td>
</tr>
<tr>
<td>SBF2300 Microbiology 1</td>
<td>15</td>
</tr>
<tr>
<td>SBF2520 Biochemistry 1</td>
<td>15</td>
</tr>
<tr>
<td>SBF2740 Principles of Food Preservation</td>
<td>-</td>
</tr>
<tr>
<td>SBM2750 Nutrition</td>
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<tr>
<td>Prescribed and Free Electives</td>
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<tr>
<td><strong>Total</strong></td>
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</table>

<table>
<thead>
<tr>
<th>Year 3</th>
<th>Credit points</th>
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<tbody>
<tr>
<td>SBF3730 Food Microbiology</td>
<td>15</td>
</tr>
<tr>
<td>SBF3731 Animal Food Processing</td>
<td>10</td>
</tr>
<tr>
<td>SBF3732 Plant Food Processing</td>
<td>-</td>
</tr>
<tr>
<td>SBM6750 Food Safety and Quality Assurance</td>
<td>15</td>
</tr>
<tr>
<td>Prescribed and Free Electives</td>
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<tr>
<td><strong>Total</strong></td>
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**Prescribed Electives**

<table>
<thead>
<tr>
<th>Year</th>
<th>Credit points</th>
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</thead>
<tbody>
<tr>
<td>SMA1110 Mathematics 1</td>
<td>1</td>
</tr>
<tr>
<td>SBF2210 Principles of Instrumental Analysis</td>
<td>2</td>
</tr>
<tr>
<td>SBF2221 Instrumental Techniques</td>
<td>2</td>
</tr>
<tr>
<td>SBF5740 Food Technology Laboratory</td>
<td>2</td>
</tr>
<tr>
<td>SCS2250 Process Engineering 1</td>
<td>2</td>
</tr>
<tr>
<td>SCS2580 Chemistry 4F</td>
<td>2</td>
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<tr>
<td>SBF3260 Process Engineering 2</td>
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<tr>
<td>SBF3733 Animal Food Processing Laboratory</td>
<td>3</td>
</tr>
<tr>
<td>SBF3734 Plant Food Processing Laboratory</td>
<td>3</td>
</tr>
<tr>
<td>SBM6745 Product Development</td>
<td>3</td>
</tr>
<tr>
<td>Food Science and Nutrition Stream</td>
<td></td>
</tr>
<tr>
<td>SMA1110 Mathematics 1</td>
<td>1</td>
</tr>
<tr>
<td>SBF2330 Cell Biology</td>
<td>2</td>
</tr>
<tr>
<td>SBF2390 Molecular Genetics</td>
<td>2</td>
</tr>
<tr>
<td>SBF3510 Preparative and Analytical Biochemistry</td>
<td>3</td>
</tr>
<tr>
<td>SBF3760 Recombinant DNA Technology</td>
<td>3</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAO1101 Accounting for Decision Making</td>
<td>10</td>
</tr>
<tr>
<td>BHO1171 Introduction to Marketing</td>
<td>10</td>
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<tr>
<td>BHO2251 Product and Pricing Strategy</td>
<td>2</td>
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<tr>
<td>BHO2253 Business to Business Marketing</td>
<td>2</td>
</tr>
<tr>
<td>BHO2434 Consumer Behaviour</td>
<td>2</td>
</tr>
<tr>
<td>ACC3043 Interpersonal, Group and Organisational Communication</td>
<td>3</td>
</tr>
<tr>
<td>BHO3432 Services Marketing</td>
<td>3</td>
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<tr>
<td>SBM6745 Product Development</td>
<td>3</td>
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</tbody>
</table>
Staff when making their elective selection. Students are advised to seek the assistance and advice of academic membership.

### Suitable Free Electives

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAO1101</td>
<td>Accounting for Decision Making 1 or 2</td>
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<tr>
<td>BCP9110</td>
<td>Introductory Computing</td>
<td>10</td>
</tr>
<tr>
<td>BHO1171</td>
<td>Introduction to Marketing</td>
<td>10</td>
</tr>
<tr>
<td>SBF1140</td>
<td>Nutrition and Society</td>
<td>10</td>
</tr>
<tr>
<td>SMA1070</td>
<td>Data Assembly, Statistics and Epidemiology</td>
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<tr>
<td>SMA1110</td>
<td>Mathematics 1</td>
<td>10</td>
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<tr>
<td>SPH1210</td>
<td>Physics 1F</td>
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<tr>
<td>SPH1220</td>
<td>Physics 2F</td>
<td>10</td>
</tr>
<tr>
<td>BHO2251</td>
<td>Product and Pricing Strategy</td>
<td>20</td>
</tr>
<tr>
<td>BHO2253</td>
<td>Business to Business Marketing</td>
<td>20</td>
</tr>
<tr>
<td>BHO2434</td>
<td>Consumer Behaviour</td>
<td>20</td>
</tr>
<tr>
<td>SBF2220</td>
<td>Principles of Instrumental Analysis</td>
<td>20</td>
</tr>
<tr>
<td>SBF2221</td>
<td>Instrumental Techniques</td>
<td>20</td>
</tr>
<tr>
<td>SBF2310</td>
<td>Microbiology</td>
<td>20</td>
</tr>
<tr>
<td>SBF2330</td>
<td>Cell Biology</td>
<td>20</td>
</tr>
<tr>
<td>SBF2390</td>
<td>Molecular Genetics</td>
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<tr>
<td>SBF2530</td>
<td>Biochemistry</td>
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<td>SBF5740</td>
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<tr>
<td>SCS2250</td>
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<tr>
<td>SCS2500</td>
<td>Chemistry 4F</td>
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<tr>
<td>ACC3043</td>
<td>Interpersonal, Group and Organisational Communication</td>
<td>30</td>
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<tr>
<td>BHO3432</td>
<td>Services Marketing</td>
<td>30</td>
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<tr>
<td>BMO3421</td>
<td>Managing the Service Organisation</td>
<td>30</td>
</tr>
<tr>
<td>SBF3210</td>
<td>Advanced Nutrition</td>
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<tr>
<td>SBF3220</td>
<td>Indigenous Foods</td>
<td>30</td>
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<tr>
<td>SBF3230</td>
<td>Nutrition and Health</td>
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<tr>
<td>SBF3240</td>
<td>Functional Foods</td>
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<tr>
<td>SBF3251</td>
<td>Bioprocessing Technology 1</td>
<td>30</td>
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<tr>
<td>SBF3252</td>
<td>Bioprocessing Technology 2</td>
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<tr>
<td>SBF3260</td>
<td>Process Engineering 2</td>
<td>30</td>
</tr>
<tr>
<td>SBF3330</td>
<td>Food Science Ethics</td>
<td>30</td>
</tr>
<tr>
<td>SBF3510</td>
<td>Preparative and Analytical Biotechnology</td>
<td>30</td>
</tr>
<tr>
<td>SBF3733</td>
<td>Animal Food Processing Laboratory</td>
<td>5</td>
</tr>
<tr>
<td>SBF3734</td>
<td>Plant Food Processing Laboratory</td>
<td>5</td>
</tr>
<tr>
<td>SBF3750</td>
<td>Industrial and Environmental Microbiology</td>
<td>20</td>
</tr>
<tr>
<td>SBF3770</td>
<td>Business Environment Studies</td>
<td>15</td>
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<tr>
<td>SBF3900</td>
<td>Project</td>
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<td>SBF6745</td>
<td>Product Development</td>
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<td>SBM3630</td>
<td>Science Media &amp; Communication</td>
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<tr>
<td>SBM3750</td>
<td>Epidemiology</td>
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<tr>
<td>SBFM361</td>
<td>Toxicology 2</td>
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</tr>
</tbody>
</table>

Some may already be prescribed for certain streams.

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 OHS at a workplace.

### Admission Requirements

Normal entry requirements for articulation to the Bachelor of Science are the successful completion of an Associate Diploma, Certificate IV, or Diploma related to occupational health and safety or equivalent level. A significant number of such applicants are expected from occupational health and safety professionals seeking to upgrade from these qualifications to a degree in Occupational Health and Safety. Admission requirements may be varied by the Head of School particularly in the case of mature age applicants who possess appropriate TAFE or university qualifications related to occupational health and safety.

Diploma qualifications in occupational health and safety from TAFE or university are recognised as equivalent with the Diploma of Science in Occupational Health and Safety, allowing TAFE students to directly upgrade this qualification to a Degree. 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. All these units are delivered through the Faculty of Science, Engineering and Technology. Some students who enrolled with an Associate Diploma and then gained a Diploma of Science in Occupational Health and Safety may also need to undertake a mix of additional management units offered by the Faculty of Business if they wish to upgrade to a degree.

The course aims at maximising student access by providing flexibility and modulation in the delivery of subjects. Block mode teaching is available and lecture notes with exercises may be obtained to complete units by distance education mode if a student cannot attend timetabled classes.

### Course Duration

Students who articulate into the degree course with a Diploma of Health Occupational Health and Safety will complete the upgrade after two years of part-time study. Students who wish to enrol in the degree and have an Associate Diploma or Certificate IV will be required to complete the same units as for the Diploma to Degree upgrade, the project (Diploma Conversion) and may be required to complete some units from the Faculty of Business.

### Course Structure

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Credit Points</th>
<th>Semester One</th>
<th>Semester Two</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 2</td>
<td>SCS3500 Project</td>
<td>30</td>
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</table>

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

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Points</th>
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</thead>
<tbody>
<tr>
<td>SBFM361</td>
<td>Epidemiology</td>
<td>6</td>
</tr>
<tr>
<td>SBFM3750</td>
<td>Toxicology 2</td>
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</tbody>
</table>

67
Bachelor of Science (Honours) in Biology (Biotechnology)

Course Code: SHBT

Bachelor of Science (Honours) in Conservation Biology and Environmental Management

Course Code: SHAB

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 Biomedical Sciences

Course Code: SHBM

SBM4000 Science Honours will comprise the following:

- HPG6010 (or equivalent) Research Design
- SBM4100 Honours research project including two oral presentations, a literature review and the project thesis.
- SBM4200 Honours course work.

There will be two course work units comprising of 10 hours of lectures or the equivalent in prescribed reading. 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 written assignments or a written 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: HPG 6010 Research Design, SCS4201 Honours Coursework, SCS4600 Honours Project: Research Project, and SCS4600 Honours Project: Final Oral Presentation. 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>Course</th>
<th>Credit Points</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>HPG 6010 Research Design</td>
<td>9%</td>
<td>9%</td>
</tr>
<tr>
<td>SCS4201 Honours Coursework</td>
<td>27%</td>
<td>27%</td>
</tr>
<tr>
<td>SCS4600 Honours Project: Research Project</td>
<td>80%</td>
<td>80%</td>
</tr>
<tr>
<td>SCS4600 Honours Project: Final Oral Presentation</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>Project Thesis</td>
<td>54%*</td>
<td>54%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td></td>
</tr>
</tbody>
</table>

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

Diploma of Meat Management
(This course is offered on a fee-paying basis)

Course Objectives
This course is a fee-for-service course designed specifically for the Australian Meat Industry. The objective of the course is to provide meat industry personnel in management positions with the necessary managerial and technological knowledge and skills to successfully embrace future changes in managerial, technological and marketing aspects of the industry.

Admission Requirements
To qualify for admission to the course, an applicant must normally meet the following requirements:

- be currently employed in the meat processing industry and have at least three years of relevant experience;
- have completed a year 12 course of study or qualify for entry as a mature-age applicant with relevant industry experience;
- have the support of his/her employer to undertake the course;
- preferably be associated with the Australian Meat Industry.

Course Duration
The course is offered over three years of part-time study comprising six 5-week periods of formal coursework of approximately 30 hours per week, coupled with an industry-based project in each of the three years.

Course Structure
Year 2
SBF0213  Management of Employees  30
SBF2110  Meat Processing  15
SBF2120  Industry Project  15
SBF2121  Principles of Meat Science  20
SBF2130  Meatworks Plant Operations  20
SBF2230  Meat (Biological) Quality  20

Year 3
SBF3120  Product and Process Development  20
SBF3130  Industry Project  25
SBF3131  Plant and Process Design  25
SBF3140  Manufacturing Management  30
SBF3250  Quality Management  20

Assessment
Assessment will be based on written examinations and assignments, practical and project reports and oral presentations.
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.

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 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.

Assessment
- Final Examination 30%; Oral presentations, 20%; Research report, 15%; Synthesis, 10%; Aural Test, 10%; continuous class and homework exercises 10%.

Recommended Reading
Murphy, R., 1994, Learning Grammar in Context, Nelson, Australia

ACE1142 ENGLISH LANGUAGE AND COMMUNICATION 2

Campus Footscray Park
Prerequisite(s) ACE1141 English Language and Communication 1
Content This preliminary subject, which is designed to enable students who are not sufficiently competent in English to successfully undertake a mainstream ‘communication’ subject. In the second semester English language skills will be further extended and reinforced. The subject specifically aims to: increase student’s proficiency in communicating in Australia, both orally and in writing, at an academic/professional level, enable students to achieve acceptable pronunciation and fluency in English; make students aware of correct study skills: listening and note-taking; increase students’ understanding and use of Australian English vocabulary; develop students’ writing abilities by studying various kinds of writing; increase students’ understanding of Australian society by concentrating on specific social themes. Students will be required to attend seminars and complete the exercises prescribed, including weekly class exercises, completion of prescribed reading, summaries and critiques and oral presentation.

Assessment
- Final Examination 30%; Written Report 20%; Synthesis 15%; aural test 10%; oral presentation 15%; continuous class and homework exercises 10%.

Recommended Reading
McEvedy, R. 1994, Learning Grammar in Context, Nelson, Australia

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 focussed 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.

Assessment
- Exam, 30%; Oral presentations, 20%; Research report, 15%; Summary, 10%; Synthesis, 10%; Aural Test, 10%; Class exercises, 5%

Recommended 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.

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.

Assessment
- Exam, 40%; Oral presentations, 20%; Research report, 15%; Synthesis, 10%; Laboratory report, 15%

Recommended 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 2 hour workshops.

Class Contact Four hours per week for one semester based on two one hour lectures and a two hour workshop.
ACE 1001 ENGINEERING COMMUNICATION

Campus Footscray Park

Prerequisite(s) Nil

Content The skills of note-taking, summarising, synthesising, researching, referencing, report writing, manual and instruction writing, and a range of oral presentation techniques (demonstrations, debates, poster presentations, oral reports) will be taught within an engineering context.

Required Reading Handbook of Communication Skills for First Year Students in the Faculty of Science, Engineering and Technology, 2003, Faculty of Arts, Victoria University.

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

Assessment Synthesis, 10%; Oral presentations (from demonstrations, debates, poster presentations, oral reports), 20%; Research report, 15%; Laboratory report, 15%; Examination, 40%.

ACE 1910 COMMUNICATIONS FOR SCIENCE

Campus St Albans, Werribee

Prerequisite(s) Nil

Content Semester One This subject is designed to provide students with written and oral communication skills necessary for their academic studies in science and future employment. Skills include listening and note-taking, reading and summarising, researching and referencing information, writing reports and making oral presentations. These skills are applied in writing memos, memo reports and a major report. Students are required to complete class exercises and oral presentations. Use of clear, concise language in written and spoken contexts is emphasised. Semester Two This subject develops and builds upon language and research skills acquired in semester one and introduces students to further communication skills including letter writing, preparation of letters of application and resumes, interview techniques and use of libraries and other research tools. Students are required to research a topic in the science field and present a written and oral report.

Required Reading Handbook of Communication Skills for First Year Students in the Faculty of Science, Engineering and Technology.

Class Contact Two hours per week for two semesters, comprising lectures and tutorial/workshop.

Assessment Progressive assessment of written work comprising exercises and tests, Examinations and tests, 40%; Written exercises, 30%; Oral assessment, 30%. Students must demonstrate the ability to use correctly the conventions of the English language in class exercises, tests and the major written report. Students are expected to attend at least 80% of classes.

ACE 1142 English Language and Communications

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 have 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.

ACE 3020 WRITTEN AND ORAL COMMUNICATION 3 (PART-TIME)

Campus Footscray Park

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 of 5000 words on a topic approved by the School of Life Sciences and Technology. The report must be professionally presented and meet technical report writing requirements. A preliminary report must be submitted in first semester and the final report submitted at the end of the second semester. 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.

Recommended Reading Shyn Roberts, H., 1996, Writing for Science, Longman, NZ.

Class Contact Two hours per week for two semesters.

Assessment Preliminary written and oral report 30%; final report and oral presentation 70%. Students are expected to attend at least 80% of classes.

ACE 3143 ENGLISH LANGUAGE AND COMMUNICATION 3

Campus Footscray Park, Malaysia

Prerequisite(s) ACE1142 English Language and Communication 2 or Year 12 English or competence in English

Content This subject is designed to provide students with written and oral communication skills necessary for their academic studies and future employment. Skills include listening and note-taking, reading and summarising, locating and accessing information sources, writing reports and making oral presentations. Students apply these skills to a research project and learn how to plan, draft write and edit a research report. Students will present their research findings to an audience. Emphasis is given to the conventions of the English language - grammar, syntax and vocabulary - and to clear writing in a range of contexts. Preliminary preparation for employment is included.


Class Contact Three hours per week for one semester

Assessment Oral Presentation 20%, Employment Preparation 30%, Written Report (1500-2000 words) 20%, Class Exercises 30%.

72
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.
Recommended Reading Eunson, B., 1994, Writing Technical Documents, John Wiley, Queensland
Class Contact Three hours per week for one semester:
Assessment Test, 20%; O rals, 40%; Employment preparation, 20%; Project report (1500-2000 words), 20%.

BAO1101 ACCOUNTING FOR DECISION MAKING
Campus Footscray Park, Sunbury, Werritbee, Kuala Lumpur, Hong Kong.
Prerequisite(s) Nil.
Content The objectives of the subject are to provide a basis for further accounting studies, yet meet the needs of students from other areas of business studies; to introduce students to basic accounting concepts and selected accounting practices; and to introduce students to the role of, and the processes involved in planning and decision making within the business environment. Topics include: introduction to the roles of accounting; management planning and decision making; accounting concepts; cash and accrual accounting; preparation of financial statements; forms of business ownership, and effect on financial statements; budgeting - an introduction; budgets; control and performance reports; analysis and interpretation; evaluation of performance; the operating cycle; short term decision making and cost behaviour.
Class Contact Three hours per week. Normally to be delivered as two hours of lectures and one hour of tutorials, workshops or modules: or a delivery mode as approved by the Faculty of Business and Law. Subject equal to 15 credit points.
Assessment Final examination, 70%; internal assessment, 30%. Students are expected to satisfactorily complete each component of the assessment to gain a pass in the subject. Supplementary assessment will not be available.

BAO3501 ACCOUNTING FOR BUSINESS DECISIONS (ENGINEERING AND SCIENCE SERVICE SUBJECT)
Campus Footscray Park.
Prerequisite(s) Nil.
Content This subject explores the relationship between accounting and business decision making by management. Basic financial accounting, costing and management accounting.
Required Reading To be advised by lecturer.
Class Contact Three hours per week. Normally to be delivered as two hours of lectures and one hour of tutorials, workshops or modules: or a delivery mode as approved by the Faculty of Business and Law. Subject equal to 15 credit points.
Assessment Continuous assessment, 20%; final examination, 80%. Students are expected to satisfactorily complete each component of the assessment to gain a pass in the subject. Supplementary assessment will not be available.

BAO9913 ACCOUNTING INFORMATION SYSTEMS (ENGINEERING AND SCIENCE SERVICE SUBJECT)
Campus Footscray Park.
Prerequisite(s) Nil.
Content The subject aims to introduce students to the language and concepts of accounting and to the provision of financial information to meet user requirements. Topics include: introduction to the uses and users of accounting information; the presentation and interpretation of accounting reports; provision of information for business management; basic decision making and financial planning.
Required Reading To be advised by lecturer.
Class Contact Three hours per week. Normally to be delivered as two hours of lectures and one hour of tutorials, workshops or modules: or a delivery mode as approved by the Faculty of Business and Law.
Assessment Test and assignment, 30%; final examination, 70%. Students are expected to satisfactorily complete each component of the assessment to gain a pass in the subject. Supplementary assessment will not be available.

BBF3512 ENVIRONMENTAL LEGISLATION AND ECONOMICS (ENGINEERING AND SCIENCE SERVICE SUBJECT)
Campus Footscray Park.
Prerequisite(s) Nil.
Content Introduction to law, types of legislative enactments and the Australian court system. Applications of acts, regulations and other laws and policies to development proposals, managerial responsibilities and environmental protection. Overview of relevant provisions of a range of environment-related legislation. Cost/benefit, cost effectiveness and input-output analysis. Valuation techniques for externalities, assessment of social values, utility and elasticity considerations, economic instruments of environmental policy including taxes, charges and levies, environmental damage rights and credits, performance bonds, tradeable rights.
Required Reading To be advised by lecturer.
Class Contact Three hours per week. Normally to be delivered as two hours of lectures and one hour of tutorials, workshops or modules: or a delivery mode as approved by the Faculty of Business and Law.
Assessment Assignments, 30%; examination, 70%. Students must satisfactorily complete each component of the assessment to gain a pass in the subject. Supplementary assessment will not be available.

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.

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**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 communications, artificial intelligence, computers as a research tool, social implications of computing.

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

**Class Contact** Three hours per week. Normally to be delivered as two hours of lectures and one hour of tutorials, workshops or modules: or a delivery mode as approved by the Faculty of Business and Law.

**Assessment** Practical work, 50%; examination, 50%. Students must satisfactorily complete each component of the assessment to gain a pass in the subject. Supplementary assessment will not be available.

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**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 communications, artificial intelligence, computers as a research tool, social implications of computing.

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

**Class Contact** Three hours per week. Normally to be delivered as two hours of lectures and one hour of tutorials, workshops or modules: or a delivery mode as approved by the Faculty of Business and Law.

**Assessment** Practical work, 50%; examination, 50%. Students must satisfactorily complete each component of the assessment to pass the subject. Supplementary assessment will not be available.

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**BCO101 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.

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**BCO102 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.

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**BEO103 MICROECONOMIC PRINCIPLES**

**Campus** Footscray Park, Sunbury, Werribee, Kuala Lumpur, Hong Kong.

**Prerequisite(s)** Nil.

**Content** This is the first of two Economic Principles subjects. The subject aims to provide a study of basic economic principles, to develop an introduction to economic methods, and to apply these principles and methods to aspects of the Australian economy. Topics include: introduction to economics, nature, method and objectives of economics; the economising problem, relative scarcity, production possibilities, opportunity costs, nature of economic resources; the market economy; demand and supply; theory and applications, including pricing ceilings, price floors, tariffs, taxes, and the labour market; consumer theory; theory of the firm, production and costs; introduction to market
structure conduct and performance; price determination in perfect and imperfect competition; workable competition and competition policy in Australia; alternative theories of the firm; market imperfections.

Required Reading
To be advised by lecturer.

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, 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.

BE0104 MACROECONOMIC PRINCIPLES

Campus Footscray Park, Sunbury, Werribee, Kuala Lumpur, Hong Kong.

Prerequisite(s) BEO1103 Microeconomic Principles.

Content
This subject aims to develop the basic macroeconomic principles applicable to the Australian economy and familiarise students with the macroeconomic environment within which Australian business operates. Topics include: the measurement of macroeconomic performance with reference to national income accounting and trade cycle analysis; the classical economic model and the Keynesian revolution; Keynesian economics and the theory of income determination; monetary influences on aggregate economic activity; inflation, unemployment, traditional demand management; the Phillips Curve revisited; interflation; incomes policies; the foreign trade sector and policies for external balance.

Required Reading

Recommended Reading
To be advised by lecturer.

Class Contact
Three hours per week. Normally to be delivered as two hours of lectures and one hour of tutorials, workshops or modules; or a delivery mode as approved by the Faculty of Business and Law. Subject equal to 15 credit points.

Assessment
Continuous assessment, 40%; examination, 60%. Students are expected to satisfactorily complete each component of the assessment to gain a pass in the subject. Supplementary assessment will not be available. Note: Any hand-held calculator may be used in examinations.

BE0106 BUSINESS STATISTICS

Campus Footscray Park, Sunbury, Werribee, Kuala Lumpur, Hong Kong.

Prerequisite(s) Nil.

Content
This subject enables students to acquire the skills and techniques required to analyse data in a business environment. Topics include: introduction to statistics; descriptive statistics; introduction to probability and probability distributions; normal probability distribution; sampling distributions and parameter estimation; hypotheses testing; simple linear regression and correlation; time-series analysis and forecasting; index numbers. Use will be made of a statistical computer package.

Required Reading
To be advised by lecturer.

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
Case study/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.

BH0347 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.

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 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.

BLB227 LEGAL PRACTICE AND CONDUCT

Campus Footscray Park and/ or Queen Street

Prerequisite(s) BLB2120 Legal Writing and Drafting and BLB2122 Advocacy and Communication

Content The objective of this subject, is providing students to learn a range of legal skills and ethical responsibilities through clinical placement in a legal office under the supervision of a qualified legal practitioner. The content of the course will be constituted by (i) clinical placement and (ii) workshops dealing with aspects of drafting, interviewing and legal procedure.

Required Reading This subject is an experimental based subject rather than one based on reading. However students will be expected to acquire and read: Fitzroy Legal Service: Law Handbook (current edition).

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.

BLO105 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.

BLO2158 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, Jobs 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.


76
BMO1102 MANAGEMENT AND ORGANISATION BEHAVIOUR

Campus Footscray Park, Sunbury, Werribee, Kuala Lumpur, Hong Kong.

Prerequisite(s) Nil.

Content The aims of this subject are to provide students with an understanding of organisational behaviour and management theory; to assess critically the underlying values of these theories; to assess critically the utility and application of the management practices informed by these theories in the Australian context; and to analyse critically the values of Australian managers concerning behaviour in organisations and to evaluate the effectiveness of these assumptions. This subject includes the following topics: overview of the development of organisation/management theory; analysis of scientific management, human relations theory; individual behaviour/perception, personality, learning, motivation; group behaviour; group dynamics, conflict resolution, leadership, concentrating on Australian case studies and incorporating a consideration of issues of gender, ethnicity and age; applications of management/organisation theory in Australia; communication processes, and quality of work life.


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.


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.
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** Group case study and report, 15%; mid-semester test 15%; final examination 50%. Students are expected to satisfactorily complete each component of the assessment to gain a pass in the subject. Supplementary assessment will not be available.

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**BMO3220 HUMAN RESOURCE MANAGEMENT**

**Campus** Footscray Park, Sunbury.

**Prerequisite(s)** BMO1102 Management and Organisation Behaviour.

**Content** The aims of this subject are 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.

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**BMO3351 WORKPLACE INDUSTRIAL RELATIONS**

**Campus** Footscray Park, Sunbury.

**Prerequisite(s)** BMO1102 Management and Organisation Behaviour or equivalent.

**Content** The aims of this subject are 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 to suit the needs of the subject.

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 ISO 9000 and processes of management in an engineering industry, principles of basic management functions, understanding of resources management, resource levelling, history of Australian industrial relations and arbitration system role of unions and employers, and practical requirements of running a small engineering company.
Required Reading Current Available Textbook - To be advised.
Class Contact. Three hours per week. Normally to be delivered as two hours of lectures and one hour of tutorials/computer sessions. Subject equal to 15 credit points.
Assessment Assignments, 40%; end of semester examination, 60%. Supplementary assessment will not be available.

BMO4522 LABOUR RELATIONS (ENGINEERING AND SCIENCE SERVICE SUBJECT)
Campus Footscray Park.
Prerequisite(s) Nil.
Content The aim of this subject is to develop an awareness of employee relations at the macro and workplace level. This subject examines the role of the major institutions of industrial relations as well as the nature of workplace relations. Issues covered include the causes, functions and resolution processes of industrial conflict; changing management strategies in industrial relations; the role of equal employment opportunity and affirmative action policies; the nature of union involvement at the workplace; and current issues concerning labour relations.
Required Reading To be advised by lecturer.

Class Contact Equivalent to three hours per week comprising one two-hour lecture and one one-hour tutorial for one semester.
Assessment Written assignment, 30%; class presentations, 20%; final examination, 50%. Students are expected to complete each component of the assessment to gain a pass in the subject. Supplementary assessment will not be available.

BMO4522 INDUSTRY ECONOMICS (ENGINEERING AND SCIENCE SERVICE SUBJECT)
Campus Footscray Park.
Prerequisite(s) Nil.
Content This subject will examine how competitive and non-competitive market structures affect the pricing and output decisions of Australian firms. Topics include: market structure, conduct, and performance; market failure, and regulation.
Required Reading To be advised by lecturer.
Class Contact Three hours per week. Normally to be delivered as two hours of lectures and one hour of tutorials, workshops or modules; or a delivery mode as approved by the Faculty of Business and Law.
Assessment Semester assignments, 50%; final examination, 50%. Students must satisfactorily complete each component of the assessment to gain a pass in the subject. Supplementary assessment will not be available.

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.

EAB3841 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.

**Assessment** Class assignments and tests, 65%; end of semester examination, 35%.

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**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%; end of semester examination, 35%.

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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 practices. An introduction to the range of 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. Methods of achieving reliability in power supply including back-up generators and uninterruptible power supplies. Hazardous environments. Lighting protection of buildings. 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)** EKB3881


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


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

**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%.
EAB4841 AIR CONDITIONING SYSTEMS 1
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%.

EAB4842 AIR CONDITIONING SYSTEMS 2
Campus Footscray Park
Prerequisite(s) EAB4841
Class Contact Three hours per week for one semester comprising two hours of lectures and one hour of tutorial.
Assessment Class exercises and assignments, 65%; end of semester examination, 35%.

EAB4872 ARCHITECTURAL LIGHTING DESIGN
Campus Footscray Park
Prerequisite(s) EAB3872
Class Contact Three hours per week for one semester based on a one hour lecture and two hours of tutorials or seminars.
Assessment Based on a project, 20%; and a review of all assignments (which may include tests and other class exercises) set during the semester, 10%; and a final three hour examination, 70%.

EAB4892 COMMUNICATIONS SERVICES
Campus Footscray Park
Prerequisite(s) EAB3872
Class Contact Three hours per week for one semester based on a one hour lecture and two hours of tutorials.
Assessment Based on a project, 20%; and a review of all assignments (which may include tests and other class exercises) set during the semester, 15%; and a final three hour examination, 65%.

EAD3832 ARCHITECTURAL ENGINEERING DESIGN
1
Campus Footscray Park
Prerequisite(s) EAH2831
Content Eco-philosophy implied in architectural design and its direct consequences for the built environment including sustainability, environmental ethics and ecological 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. Bio-climatic architecture and its effect on urbanisation.
Class Contact Three hours per week for one semester based on one hour of lecture and two hours of tutorials or seminars.
Assessment Based on a major project, 60%; and a review of all assignments (which may include tests, class exercises and seminar presentations) set during the semester, 40%; to an equivalent of 5000 words.
EAD 4831 ARCHITECTURAL ENGINEERING
DESIGN 2

Campus Footscray Park
Prerequisite(s) EAD 3832

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%.

EAH 3831 ARCHITECTURAL HISTORY & DESIGN 1

Campus Footscray Park
Prerequisite(s) Nil.

Content Using a broad historical context, students will complete a series of readings, studio-based exercises and assignments to study the methods of analysis, abstraction, and synthesis in design that are employed in the architectural design of buildings; the basic composition and applied organisational techniques in use; the effects of planning; theories of spatial order and its conceptualisation; and the impact of building materials, technology and the environment on Architectural design, oral communication skills.


Class Contact Three hours per week for one semester based on one hour lecture and two hours of tutorials or seminars.

Assessment Based on a major project, 60%; and a review of all assignments (which may include tests, class exercises and seminar presentations) set during the semester, 40%; an equivalent of 5000 words.

EAH 3831 ARCHITECTURAL HISTORY & DESIGN 2

Campus Footscray Park
Prerequisite(s) EAH 2831

Content The history of architecture, modern building construction, urban planning and design, in the context of social, technical and environmental settings. The City: The integration of architectural, constructional, cultural, social and geographical factors in the development of the ‘city’ from ancient times to what we know it to be today. Periods will include antiquity, middle ages, renaissance, and baroque to the 19th century. Urban design principles and practices fundamental to western cultural traditions will be examined, 20th Century. Formative aspects of architectural design both pre and post world war II, and the architectural theories which predominated in western culture. Technology: A study of the materials and methodologies of construction that have evolved over time to support the architecture of buildings.


Class Contact Three hours per week for one semester based on one hour lecture and two hours of tutorials or seminars.

Assessment An essay, 30%; and a review of all assignments (which may include tests, class exercises and seminar presentations) set during the semester, 70%; to an equivalent of 6000 words.

EAP 3803 INDUSTRIAL PLACEMENT (SUMMER SEMESTER)

Campus Footscray Park
Prerequisite(s) EAD 3832

Content A monitored and managed (self directed) project relating to the role/activities undertaken within the specific environment in the building industry.


Class Contact Equivalent to three hours contact per week in industry, in Summer Semester 3.

Assessment An individual project from each student to an equivalent of 5000 words.

EBK 3881 BUILDING CONSTRUCTION AND LEGISLATION 1

Campus Footscray Park
Prerequisite(s) EAH 2831

sections, construction details, services drawings and specification writing.

**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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**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%.

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**EBM4851 QUANTITIES AND COSTS**

**Campus** Footscray Park

**Prerequisite(s)** EMM2852


**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%.
ECA3211 ARCHITECTURAL ENGINEERING

DESIGN 1

Campus: Footscray Park

Prerequisite(s): ECA2111 Architectural Design 1

Content: Eco-philosophy implied in architectural design and its direct consequences for the built environment including sustainability; environmental ethics and ecological impacts(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. Bio-climatic architecture and its effect on urbanisation.

Recommended Reading: To be advised by lecturer.

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

Assessment: Based on a major project and a review of all assignments (which may include tests, class exercises and seminar presentations) set during the semester, to an equivalent of 5000 words.

ECA343 INDUSTRIAL PLACEMENT

Campus: Footscray Park

Prerequisite(s): Nil

Content: An understanding of the role and duties of professionals in the specific area of the building industry where placement has been arranged. An understanding of professional practice in a specific area of the building industry. A deeper understanding of the building industry via a self directed, self completed project relating to the industry. A favourable exposure (re: skills, knowledge and attributes) to industry as a future graduate in Architectural Engineering.

Recommended Reading: To be advised by academic mentor and industry based professionals.

Class Contact: Equivalent to three hours per week.

Assessment: An individual project from each student to an equivalent of 4000 words.

ECA4211 ARCHITECTURAL ENGINEERING

DESIGN 2

Campus: Footscray Park

Prerequisite(s): ECA3211 Architectural Engineering Design 1

Content: Active/passive thermal environmental control of buildings. Simulation of building thermal performance and natural/artificial illuminated building environments will be employed to optimise total energy consumption level and create visually comfortable spaces. Energy auditing techniques for existing and proposed buildings.

Recommended Reading: To be advised by lecturer.

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

Assessment: Assignments (case studies, simulation exercises, class presentations) equivalent to 5000 words and a two hour examination at the end of the semester.

ECA3460 PRINCIPLES OF AIR CONDITIONING

Campus: Footscray Park

Prerequisite(s): ECB2230 Building Thermodynamics.


Class Contact: Two hours per week for two semesters based on one hour per week of lecture and one hour per week tutorial/laboratory experiments.

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

ECB3470 LIGHTING AND POWER DISTRIBUTION

Campus: Footscray Park

Prerequisite(s): EEF2241 Power System Fundamentals 2.1 and EEF2242 Power System Fundamentals 2.2.


ECB3450 SERVICES DESIGN AND CONSTRUCTION

Campus Footscray Park

Prerequisite(s) ECB3460 Principles of Air Conditioning.


Class Contact Three hours per week of lectures and one hour per week tutorial/laboratory session in Semester 1. Three hours of lectures in Semester 2. Three hours per week of lecture and one hour per week tutorial/laboratory session in Semester 2.

Assessment Assignments: 65%; examination: 35%. A pass in each component for each semester is required for a subject pass.

ECB3460 HYDRAULIC SERVICES

Campus Footscray Park

Prerequisite(s) EZF2250 Building Fluid Mechanics.


Required Reading AS3500 1990, National Plumbing and Drainage Code, Parts 0 to 4.


Class Contact Two hours per week for two semesters based on one hour per week of lecture and one hour per week tutorial session.

Assessment Assignments, project work, 30%; end-of-semester examinations, 70%.

ECB3470 AIR CONDITIONING SYSTEMS

Campus Footscray Park

Prerequisite(s) ECB3460 Principles of Air Conditioning.

Co-requisite(s) ECB3450 Services Design and Construction.


Class Contact Three hours per week based on two hours per week of lecture and one hour per week tutorial/laboratory session in Semester 1. Three hours of lectures in Semester 2.

Assessment Assignments and laboratory exercises: 65%; examination: 35%. A pass in each component for each semester is required for a subject pass.
**ECB4381 FIRE SERVICES DESIGN**

Campus Footscray Park

Prerequisite(s) ECB4380 Hydraulic Services.


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 design tutorial session.

Assessment Assignments, tests, project work, 40%; examination, 60%.

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**ECB4472 COMMUNICATIONS SERVICES**

Campus Footscray Park

Prerequisite(s) ECB4370 Lighting and Power Distribution.

Co-requisite(s) ECB4350 Services Design and Construction.


Required Reading To be advised by lecturer.


Class Contact Three hours per week for one semester based on two hours per week of lectures and one hour per week tutorial session.

Assessment Assignments, projects, 35%; examination, 65%.

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**ECD3300 CIVIL DESIGN AND PROJECT**

Campus Footscray Park

Prerequisite(s) Nil.

Co-requisite(s) ECD3340 Environmental Engineering Design.

Co-requisite(s) ECD3831 Civil Engineering Design 1

Co-requisite(s) ECF3450 Hydrologic Processes; ECT3871 Water Resources Engineering.

Content Students will perform several designs during the semester in areas drawn from hydraulics, road engineering, geomechanics and hydrologic studies. A design report will be prepared for each design and associated written report on a related issue will be made. Oral presentations will be made by all students on one of their design areas during the semester.


ECD3892 STRUCTURAL ENGINEERING DESIGN 1

Campus Footscray Park

Prerequisite(s) END3832, ECS3821


Required Reading AS1400, 2002, Steel Structure Code, Standards Association of Australia.


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

Assessment Design projects, 30%; and a final three hour examination, 70%.

ECD4332 CIVIL ENGINEERING DESIGN

Campus Footscray Park

Prerequisite(s) Nil.

Co-requisite(s) ECF4450 Hydraulic Engineering; EGC4460 Geomechanics B; ECN4410 Environmental Engineering.

Content A series of four design exercises of about nine hours each week contact time as follows: design elements of a town water supply system, design elements of a town wastewater management system, hydrologic and other design aspects of a reservoir, and design (or raising) of a small earth dam.

Required Reading To be advised by lecturer.

Recommended Reading As for the co-requisite subjects above.

Class Contact Three hours per week for one semester based on tutorial design format.

Assessment Design reports, 100%.

ECD4400 CIVIL ENGINEERING PROJECT

Campus Footscray Park

Prerequisite(s) Third year subjects relevant to the project chosen.

Co-requisite(s) Fourth year subjects relevant to the project chosen.

Content Students will work in small groups (usually two to four persons per group) to carry out a major project on investigation and design in one or more of the following areas: structures, building services, construction management, hydraulic engineering, environmental engineering, roads and transport, or geotechnical engineering. Design projects are normally chosen from recent, current or proposed real-world projects, while investigation projects are devised to assist industry to obtain solutions to defined problems. Close contact with relevant industry bodies and consulting engineers is sought for most projects. In semester one students are introduced to work related skills including job applications and interview techniques.

Required Reading To be advised by lecturer.

Recommended Reading To be advised by individual project supervisors.

Class Contact Semester one: Four hours per week based on a lecture/laboratory/tutorial format. Semester two: Three hours per week based on a laboratory/tutorial format.

Assessment Students will be assessed individually based on oral and written presentations and on initiative and work carried out through the year. Oral presentation, 15%; written report, 80%; poster presentation, 10%.

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 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 Design, 72%; writing tasks, 18%; oral presentation, 10%.

ECD4832 CIVIL ENGINEERING DESIGN 3

Campus Footscray Park

Prerequisite(s) ECF3842, ECG3862

Content Students will perform several designs during the semester in areas drawn from hydraulics, traffic 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 Design, 90%; oral presentation, 10%.

ECD4891 STRUCTURAL ENGINEERING DESIGN 2

Campus Footscray Park

Prerequisite(s) END3892


Required Reading AS3600, 2002, Concrete Structures Code, Standards Association of Australia.

ECD4892 STRUCTURAL ENGINEERING DESIGN 3
Campus: Footscray Park
Prerequisite(s): END4891


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

Assessment: Design projects, 30%; and a final three hour examination, 70%.

ECD4400 BUILDING ENGINEERING PROJECT
Campus: Footscray Park
Prerequisite(s): Third year subjects relevant to the project chosen.

Co-requisite(s): Fourth year subjects relevant to the project chosen.

Content: Students will work in small groups (2 to 4 persons per group) to carry out a major project on one or more of the following areas: Structures, building services, construction management, hydraulic engineering, environmental engineering, roads and transport, or geotechnical engineering. Each project will involve an element of research and is encouraged to be unique. Close contact with relevant industry bodies will be encouraged. The projects will be closely supervised by a lectures.

Required Reading: To be advised by lecturer.

Recommended Reading: To be advised by individual project supervisors.

Class Contact: Three hours per week for two semesters based on a laboratory/tutorial format.

Assessment: Students will be assessed individually based on oral and written presentations and on initiative and work carried out through the year. Oral presentation, 15%; written report, 80%; poster presentation 5%.

ECD2842 HYDRAULICS
Campus: Footscray Park
Prerequisite(s): ENF2210 Fluid Mechanics A


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, 30%; end of semester examination, 70%.

ECD3841 ENGINEERING HYDROLOGY
Campus: Footscray Park
Prerequisite(s): ENF2210 Fluid Mechanics A


**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%.

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**ECF3842 WATER RESOURCES ENGINEERING**

**Campus** Footscray Park

**Prerequisite(s)** ECF2842


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

**Assessment** Class tests and assignments, 35%; and one hour of tutorial.

**Assessment** Class tests and assignments, 65%.

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**ECF4450 HYDRAULIC ENGINEERING**

**Campus** Footscray Park

**Prerequisite(s)** ECF3450 Hydrologic Processes.


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**ECF4841 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 hydraulic, 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 comprising two hours of lectures and one hour of tutorial.

**Assessment** Class tests and assignments, 25%; end-of-semester examination, 75%.

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**ECF4842 HYDRAULIC ENGINEERING**

**Campus** Footscray Park

**Prerequisite(s)** ECF2842

**Content** Urban water supply schemes: Demand assessment and management, supply sources. Dam types. piping outlets, works, construction and safety issues, service storage, pumping stations, reticulation systems layout and manual/computer analysis, pipeline design and construction. Irrigation and drainage: Purpose and principles of irrigation, channel design and structures, flood, furrow, sprinkler and trickle irrigation layout and design principles, components and design of land drainage systems.


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

**Assessment** Class tests and assignments, 25%; end-of-semester examination, 75%.

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89
ECG3260 GEOMECHANICS A

Campus Footscray Park

Prerequisite(s) Nil

Co-requisite(s) ECG 2220 Structural Analysis A.

Content  Semester one: Origin of rocks; basic geological processes; stratigraphy; surficial geology maps; geology of Melbourne. Formation and transportation of soils; classification, description, and engineering properties of soil and rock. Phase relationships. Clay behaviour. Gravitational stresses in the ground; principle of effective stress. Permeability; seepage of water through soil; flow nets. Compaction of soils and crushed rock, including methods, specification and field evaluation. Site exploration, including desk study, pit and boring methods; logging and reporting: vane shear test and Standard Penetration Test. Introduction to shear strength; drained and undrained triaxial tests; direct shear; strength parameters. Semester two: Bearing capacity of shallow and deep foundations on fine and coarse-grained soils, under vertical and inclined loads and moments. Group effects in piled foundations. Contact stress distribution and stress change with depth beneath foundations. Immediate settlement of foundations on fine-grained soils. Consolidation theory; amount and rate of settlement. Pure pressure changes in soil under stress changes. Settlement estimation on course-grained soils using Cone Penetration Test, SPT and pressuremeter. Total, differential and settlement estimation on coarse-grained soils using Cone Penetration Test, SPT and pressuremeter. Pore pressure changes in soil under stress changes. Depth beneath foundations. Immediate settlement of foundations and inclined loads and moments. Group effects in piled deep foundations on fine and coarse-grained soils, under vertical and inclined loads and moments. Immediate settlement of foundations on fine-grained soils. Consolidation theory; amount and rate of settlement. Pure pressure changes in soil under stress changes. Settlement estimation on course-grained soils using Cone Penetration Test, SPT and pressuremeter. Total, differential and settlement estimation on coarse-grained soils using Cone Penetration Test, SPT and pressuremeter. Pore pressure changes in soil under stress changes.


Class Contact Three hours per week for two semesters, based on two hours per week of lectures and one hour per week tutorial/ laboratory sessions.

Assessment Tests, assignments/ laboratory reports: 25%; examination: 75%; in both semesters.

ECG3862 GEOTECHNICAL ENGINEERING 1

Campus Footscray Park

Prerequisite(s) ECG 3861


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%.

ECG4460 GEOMECHANICS B

Campus Footscray Park

Prerequisite(s) ECG 3260 Geomechanics A.

Content  Semester one: Geological structure of the earth; tectonic processes; folding and faulting; stratigraphy; problem soils; interpretation of geological maps and development of conceptual models from field data. Water seepage through soil and rock; two and three dimensional flow nets. Drained and undrained shear strength; pore pressures; stress paths; residual strength. Mechanisms of slope failure, slope stability analysis and slope remediation. Introduction to reinforced soil and geosynthetics. Semester two: Soil moisture suction; foundations for light structures on reactive clays. Computation of lateral active and passive stresses and thrusts. Stability of rigid and flexible retaining walls and braced cuts; ground anchors. Dewathering of excavations. Structural design of footings, rafts, piles, retaining structures and excavation support systems.
ECG4461 GEOENVIRONMENTAL ENGINEERING

Campus Footscray Park

Prerequisite(s) ECG3260 Geomechanics A.

Co-requisite(s) ECG4460 Geomechanics B.


Required Reading To be advised by lecturer.

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

Assessment Tests, assignments, laboratory reports, 25%; examination, 75%.

ECG4061 GEOTECHNICAL ENGINEERING 2

Campus Footscray Park

Prerequisite(s) ECG4861


ECK3430 BUILDING CONSTRUCTION AND PROJECT

Campus Footscray Park

Prerequisite(s) ECK2432 Domestic Construction.

Content Semester one: Planning and development of an industrial building. Alternative structural systems. Tilt-up construction, construction of masonry, portal frame structures. Industrial floor construction techniques. Use of fabric and space structures. Builders' plant and equipment. Use of explosives. Services requirements for industrial buildings. Damp proof courses and water proofing. Recycling, rehabilitation and renovation of buildings. Building maintenance. Concept of intelligent buildings. Materials management on building sites. Site visits to large major industrial construction sites. Semester two: An engineering problem is investigated in the form of a case study or optimisation study. The economic viability of various solutions is carefully considered, and local application of new techniques is carefully taken into account. The planned investigation must be approved and draft report submitted. The main finding is presented to the class as to a professional audience. Finally a technical report is submitted, as from a consultant to a client. Preparation of working drawings, including construction detailing, engineering services drawing. Outline specification for a single storey commercial or industrial building. Building Practice. Modelling of medium-sized building projects.

Required Reading To be advised by lecturer.


Class Contact Three hours per week in semester one based on two hours per week of lectures and one hour per week tutorial/design session.

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

ECK4430 COMMERCIAL BUILDING CONSTRUCTION

Campus Footscray Park

Prerequisite(s) ECK3430 Building Construction and Project; ECM3531 Construction Management.

Content Semester one: Construction and building technology aspects of commercial buildings including: concrete construction, precast and prestressed concrete construction, steel

Semester two: Construction and technological aspects of highrise buildings including: preliminary works relating to nature of site, structural and building systems, site establishment, health and safety regulations, cranes and equipment, use of modern formwork systems. Emphasis on buildability concept, and quality assurance and control. Simplification of details which aid both design and construction of reinforced concrete and steel buildings. Modelling of parts of large building projects.

Required Reading To be advised by lecturer.


Class Contact Four hours per week in semester one based on three hours per week of lectures and one hour per week tutorial session. Three hours per week in semester two based on two hours per week of lectures and one hour per week tutorial session.

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

ECM3531 CONSTRUCTION MANAGEMENT

Campus Footscray Park

Prerequisite(s) Nil


Required Reading To be advised by lecturer.


Class Contact Four hours per week for one semester based on two hours per week of lectures and two hours per week of tutorial/computer sessions.

Assessment Assignments and projects, 40%; examination, 60%.

ECM3532 ENGINEERING PROJECT MANAGEMENT

Campus Footscray Park

Prerequisite(s) BMO3522 Engineers as Managers, ECM3531 Construction Management.


Required Reading To be advised by lecturer.


Class Contact Four hours per week for one semester based on two hours per week of lectures and two hours per week of tutorial sessions.

Assessment Assignments and projects, 40%; examination, 60%.

ECM3562 BUILDING QUANTITIES AND COSTS

Campus Footscray Park

Prerequisite(s) ECM3531 Construction Management.


Required Reading To be advised by lecturer.


Class Contact Three hours per week for one semester based on two hours per week of lectures and one hour per week tutorial session.

Assessment Assignments, projects, 40%; examination, 60%.
ECN 3350 ENGINEERING FOR SUSTAINABILITY

Campus Footscray Park

Prerequisite(s) Nil.

Co-requisite(s) ECF3450 Hydrologic Processes.

Content Semester one: Desirable features for sustainable land development. Environmental, social and local planning and the Victoria Planning Provisions. Biophysical and socio-economic data collection and inventories, environmental sensitivity mapping, land capability rating systems, data storage and manipulation by GIS systems. Rural and urban land development and use, with an emphasis on dwelling arrangements/density, transportation systems, green city/urban forest/open space and landscape concepts, and energy and water conservation. Residential subdivision and street design, and the role and powers of Local Government. Site investigations and design exercises related to the issues above. Urban water supply systems. Semester two: Rural land and water management, clean production and life cycle analysis. Introduction to environmental audits, management plans and systems, and risk assessment. More detailed consideration of the impact of engineering technologies and development on society, and the ecological, social, economic and political criteria by which they might be assessed from a sustainability viewpoint. Material will consist mainly of case studies and design exercises. An individual major investigation and/or design project and technical report on a relevant and approved topic must also be completed.

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


Class Contact Four hours per week for two semesters based on two hours lectures and two hours tutorial, design and project sessions.

Assessment Assignments and design exercises, 40%; major project, 15%; end-of-semester examinations, 45%.

ECN 3822 INTRODUCTION TO ENVIRONMENTAL ENGINEERING

Campus Footscray Park

Prerequisite(s) Nil.

Content Brief review of the interrelationship of engineering with global, regional and local environmental issues/problems. Natural resource management and typical environmental engineering problems relating to aspects of geomorphology, climate, 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. Engineering case studies (eg. from the mining, land and water development industries) to illustrate concepts and principles covered above.


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

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

ECN 4410 ENVIRONMENTAL ENGINEERING

Campus Footscray Park

Prerequisite(s) Nil.


Class Contact Three hours per week for two semesters based on two hours of lectures and one hour of tutorial/laboratory session.

Assessment Assignments and tests, 25%; examination, 75%.

ECN 4411 ENVIRONMENTAL PLANNING AND DESIGN

Campus Footscray Park

Prerequisite(s) Nil.

Co-requisite(s) Nil.

Content Desirable features for sustainable land and urban development. Environmental, strategic, regional and local planning; environmental data collection and inventories, environmental sensitivity mapping, land capability rating and sustainable use. Landscaping, green cities and vegetation management. Residential subdivision and street design, including energy efficiency and water management aspects. The role of municipalities and councils. Design exercises related to topics above.

Required Reading Victoria Department of Infrastructure, 2001, Victoria Planning Provisions (CD), Department of Infrastructure, Victoria.
ECN4881 ENVIRONMENTAL ENGINEERING 1
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.
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 2
Campus Footscray Park
Prerequisite(s) ECN4881
Class Contact Three hours per week for one semester comprising two hours of lectures and one hour of tutorial.
Assessment Class Tests and assignments, 25%; end-of-semester examinations, 75%.

ECP4810 ENGINEERING PROJECT
Campus Footscray Park
Prerequisite(s) Third year subjects relevant to the project chosen.
Content Students will work in small groups (usually two to four per group) to carry out a major engineering project on one or more of the following areas: structures, building services, construction management, hydraulic engineering, environmental engineering, roads and transport or geotechnical engineering. The project can be of investigation and/or design type and will involve an element of research. The projects are normally chosen from recent, current or proposed real-world engineering problems. Close contact with relevant industry bodies and consulting engineers is sought for most projects. The project will be closely supervised by a lecturer. In semester one, students are introduced to work related skills including job applications and interview techniques.
Required Reading Current available text book - student to be advised.
Recommended Reading Current available text book - student to be advised.
Class Contact Three hours per week for two semesters, based on a tutorial/laboratory format.
Assessment Students will be assessed individually based on oral and written presentations and on initiative and work carried out throughout the year. Oral presentations, 15%; written reports, 80%; poster presentation, 5%.

ECS3220 STRUCTURAL ANALYSIS B
Campus Footscray Park
Prerequisite(s) ECS2220 Structural Analysis A.
Content Semester one: Solution of redundant beams and frames by the stiffness method: slope deflection equations and moment distribution; general concept of structure stiffness. Further qualitative analysis of frames (prediction of deflected shape, directions of reactions and shape of bending moment diagram). Analysis of redundant beams and frames on microcomputer using a commercial analysis program such as SPACEGASS; appraisal of computer results using both qualitative and quantitative checks. Plastic analysis of beams and frames: plastic moment, shape factor, partial plasticity, plastic hinge, moment redistribution, upper and lower bound collapse load calculations, design considerations. Semester two: Flexibility/Virtual Work analysis of redundant trusses, beams and frames. Approximate analysis of structures. Matrix stiffness analysis of beams and frames including three dimensional structures. (Matrix operations performed using Spreadsheet software.) Effect of high axial forces on member bending stiffness; stability analysis and buckling of frames.
Required Reading To be advised by lecturer.
Class Contact Three hours per week for two semesters comprising two hours of lecture and one hour of tutorial.
Assessment: Assignments and tests, 25%; end-of-semester examinations, 75%.

**ECS3320 STRUCTURAL DESIGN B**

**Campus** Footscray Park  
**Prerequisite(s)** ECS3220 Structural Design A.  
**Co-requisite(s)** ECS3220 Structural Analysis B.  
**Required Reading** To be advised by lecturer.  
**Class Contact** Three hours per week for two semesters, based on two hours per week of lectures and one hour per week tutorial session.  
**Assessment** Design projects, 30%; examinations, 70%.

**ECS3821 STRUCTURAL ANALYSIS 1**

**Campus** Footscray Park  
**Prerequisite(s)** ECS3220 Structural Design B.  
**Content** Further analysis of determinate plane trusses by method of joints; matrix stiffness analysis of determinate and indeterminate plane trusses (Matrix operations performed using Spreadsheet software); deflections and rotations for statically determinate beams using both Macauley integration and virtual work methods; solution of redundant beams and simple frames; qualitative analysis of beams and simple frames (prediction of deflected shape, direction of reaction and shape of bending moment diagram).  
**Required Reading** Current available text – students to be advised.  
**Class Contact** Three hours per week for one semester comprising two hours of lectures and one hour of tutorial.  
**Assessment** Class tests and assignments, 25%; 3 hour end of semester examination, 75%.

**ECS4221 ADVANCED STRUCTURAL ANALYSIS**

**Campus** Footscray Park  
**Prerequisite(s)** ECS3220 Structural Analysis B; ECS3320 Structural Design B.  
**Required Reading** To be advised by lecturer.  
**Class Contact** Three hours per week for one semester based on one hour of lecture and two hours tutorial session.  
**Assessment Tests, 45%. Assignments, projects, 55%.**
ECS4321 STRUCTURAL ENGINEERING

Campus Footscray Park
Prerequisite(s) ECS3220 Structural Analysis B; ECS3320 Structural Design B.


Class Contact Three hours per week for one semester based on two hours per week of lectures and one hour per week tutorial session.
Assessment Design projects, 30%; examinations, 70%.

ECS4342 CIVIL ENGINEERING STRUCTURES

Campus Footscray Park
Prerequisite(s) ECS3220 Structural Analysis B; ECS3320 Structural Design B.

Co-requisite(s) ECS4321 Structural Engineering.


Class Contact Three hours per week for one semester based on two hours per week of lectures and one hour per week tutorial session.
Assessment Design projects, 30%; examinations, 70%.

ECT2871 SURVEYING

Campus Footscray Park
Prerequisite(s) Nil.

Content Basic surveying computations; Horizontal distances and field note keeping; Vertical distances and field note keeping; Angular measurement and field note keeping; Circular curves; Contours and contouring. Area computations for polygons. Rectangular co-ordinates; Land title system used in Victoria. Software used to solve survey calculation problems.

Required Reading Current available text - students to be advised.


Class Contact Three hours per week for one semester comprising two hours of lectures and one hour of tutorial.
Assessment Class tests and assignments, 50%; end of semester examination, 50%.

ECS4422 ADVANCED STRUCTURAL ANALYSIS

Campus Footscray Park
Prerequisite(s) ECS3822

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.


Class Contact Three hours per week for one semester comprising two hours of lectures and one hour of tutorial.
Assessment Assignments, projects, 30%; end of semester examination, 70%.

ECT2871 SURVEYING

Campus Footscray Park
Prerequisite(s) Nil.

Content Basic surveying computations; Horizontal distances and field note keeping; Vertical distances and field note keeping; Angular measurement and field note keeping; Circular curves; Contours and contouring. Area computations for polygons. Rectangular co-ordinates; Land title system used in Victoria. Software used to solve survey calculation problems.

Required Reading Current available text - students to be advised.


Class Contact Three hours per week for one semester comprising two hours of lectures and one hour of tutorial.
Assessment Assignments, projects, 30%; end of semester examination, 70%.

ECT2871 SURVEYING

Campus Footscray Park
Prerequisite(s) Nil.

Content Basic surveying computations; Horizontal distances and field note keeping; Vertical distances and field note keeping; Angular measurement and field note keeping; Circular curves; Contours and contouring. Area computations for polygons. Rectangular co-ordinates; Land title system used in Victoria. Software used to solve survey calculation problems.

Required Reading Current available text - students to be advised.


Class Contact Three hours per week for one semester comprising two hours of lectures and one hour of tutorial.
Assessment Assignments, projects, 30%; end of semester examination, 70%.

ECT2871 SURVEYING

Campus Footscray Park
Prerequisite(s) Nil.

Content Basic surveying computations; Horizontal distances and field note keeping; Vertical distances and field note keeping; Angular measurement and field note keeping; Circular curves; Contours and contouring. Area computations for polygons. Rectangular co-ordinates; Land title system used in Victoria. Software used to solve survey calculation problems.

Required Reading Current available text - students to be advised.


Class Contact Three hours per week for one semester comprising two hours of lectures and one hour of tutorial.
Assessment Assignments, projects, 30%; end of semester examination, 70%.

ECT2871 SURVEYING

Campus Footscray Park
Prerequisite(s) Nil.

Content Basic surveying computations; Horizontal distances and field note keeping; Vertical distances and field note keeping; Angular measurement and field note keeping; Circular curves; Contours and contouring. Area computations for polygons. Rectangular co-ordinates; Land title system used in Victoria. Software used to solve survey calculation problems.

Required Reading Current available text - students to be advised.


Class Contact Three hours per week for one semester comprising two hours of lectures and one hour of tutorial.
Assessment Assignments, projects, 30%; end of semester examination, 70%.

ECT2871 SURVEYING

Campus Footscray Park
Prerequisite(s) Nil.

Content Basic surveying computations; Horizontal distances and field note keeping; Vertical distances and field note keeping; Angular measurement and field note keeping; Circular curves; Contours and contouring. Area computations for polygons. Rectangular co-ordinates; Land title system used in Victoria. Software used to solve survey calculation problems.

Required Reading Current available text - students to be advised.


Class Contact Three hours per week for one semester comprising two hours of lectures and one hour of tutorial.
Assessment Assignments, projects, 30%; end of semester examination, 70%.

ECT2871 SURVEYING

Campus Footscray Park
Prerequisite(s) Nil.

Content Basic surveying computations; Horizontal distances and field note keeping; Vertical distances and field note keeping; Angular measurement and field note keeping; Circular curves; Contours and contouring. Area computations for polygons. Rectangular co-ordinates; Land title system used in Victoria. Software used to solve survey calculation problems.

Required Reading Current available text - students to be advised.


Class Contact Three hours per week for one semester comprising two hours of lectures and one hour of tutorial.
Assessment Assignments, projects, 30%; end of semester examination, 70%.

ECT2871 SURVEYING

Campus Footscray Park
Prerequisite(s) Nil.

Content Basic surveying computations; Horizontal distances and field note keeping; Vertical distances and field note keeping; Angular measurement and field note keeping; Circular curves; Contours and contouring. Area computations for polygons. Rectangular co-ordinates; Land title system used in Victoria. Software used to solve survey calculation problems.

Required Reading Current available text - students to be advised.


Class Contact Three hours per week for one semester comprising two hours of lectures and one hour of tutorial.
Assessment Assignments, projects, 30%; end of semester examination, 70%.
ECT3440 TRANSPORTATION ENGINEERING
Campus Footscray Park
Prerequisite(s) Nil
Content Semester one: Road construction procedures and equipment; calculation of earthwork volumes; plans and drawings used in roadworks construction; road location; geometric design including horizontal and vertical alignment and development of superelevation; road materials; introduction to pavement design methods for flexible and rigid pavements; road drainage. Semester two: Historical development of transport modes; trip characteristics; land use planning and the transport planning process including trip generation and trip distribution models; mode choice factors and trip assignment procedures. Traffic engineering: capacity, volume, headway and speed analyses; traffic survey techniques; travel demand management and local area traffic management; signalised intersection analysis including use of SIDRA computer program.

Required Reading To be advised by lecturer.

Class Contact Three hours per week for two semesters, based on two hours of lectures and one hour of tutorial session.
Assessment Assignments, 20%; end-of-semester examinations, 80%.

ECT3871 HIGHWAY ENGINEERING
Campus Footscray Park
Prerequisite(s) Nil
Content Road construction procedure and equipment. Earthmoving methods and determination of earthwork quantities including use of mass haul diagrams. Types of pavements including bituminous products and concrete pavements. Route location with respect to main environmental considerations including horizontal and vertical alignments and sight distance requirements. Design of horizontal and vertical curves and the development of superelevation. Maintenance of roads and road drainage systems.


Class Contact Three hours per week for one semester comprising two hours of lectures and one hour of tutorial.
Assessment Class tests and assignments, 20%; end of semester examination, 80%.

ECT3872 TRANSPORTATION ENGINEERING
Campus Footscray Park
Prerequisite(s) Nil
Content The history of transport. Transport modes and trip characteristics. Land use planning and the transport planning process including modelling trip generation, distribution and assignment. Traffic engineering including flow theory, capacity, basic queuing theory, traffic survey techniques. Intersection analysis including capacities, signalisation and use of the SIDRA computer program. Travel demand management and local area traffic management strategies.

Required Reading Current available text book - student to be advised.

Class Contact Three hours per week for one semester comprising two hours of lectures and one hour of tutorial.
Assessment Class tests and assignments, 20%; end-of-semester examinations, 80%.

ECT4872 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%.

ECZ3490 ENERGY STUDIES B
Campus Footscray Park
Prerequisite(s) ECZ2290 Energy Studies A.
systems module: Introduction to electronic circuit components and applications including diodes, transistors, rectifiers and inverters. Power sources and their performance. Characteristics of transformers, generators, alternators and electric motors. General module: RAP’s systems energy conservation in the domestic, commercial and industrial sectors; site and building energy audits, energy storage and conversion systems

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


**Class Contact** Three hours per week for two semesters based on two hour lectures and one hour tutorial/laboratory session.

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

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**EEA2001 Linear Systems 2.1**

**Campus** Footscray Park

**Prerequisite(s)** EEA1002 Electrical Engineering 1.2, 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 s-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 Control Principles 2.2**

**Campus** Footscray Park

**Prerequisite(s)** EEA1002 Electrical Engineering 1.2; 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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**EFA3001 Control Systems 3.1**

**Campus** Footscray Park

**Prerequisite(s)** EEA2001 Circuits and Control 2.1.

**Content** Introduction to control problems and control systems. Block diagrams and signal flow graphs. Relationship between transfer function and frequency response. Significance of pole zero locations on system response. System stability and steady-state error. Root-locus analysis.


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

**Assessment** Test and laboratory exercises, 30%; examination, 70%. A pass in each component of assessment is required for a subject pass.

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**EFA3002 Control Systems 3.2**

**Campus** Footscray Park

**Prerequisite(s)** EEA3001 Control Systems 3.1

**Content** Introduction to the design and compensation of control systems. Simple cascade compensators. Compensation using root-locus techniques and using frequency domain methods. PID controllers. Compensator realisation. Introduction to state space analysis of systems.


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

**Assessment** Laboratory based project, 20%; examination, 80%. A pass in each component of assessment is required for a subject pass.

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**EFA3501 Digital Control Principles 3.1**

**Campus** Footscray Park

**Prerequisite(s)** EEA2502 Control Principles 2.2

**Content** Review of continuous and discrete signals, impulse sampling. Difference equations, time invariant systems. Properties
of the Z transform. Solution of difference equations by the Z transform method. Pulse transfer function of cascade elements and closed-loop systems. Mapping between S Z 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.

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**EEA3502 DIGITAL CONTROL PRINCIPLES 3.2**

Campus Footscray Park

Prerequisite(s) EEA3501 Control Principles 3.1

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

Assessment Project 30%, report 30%, oral presentation 40%. A pass in each component of assessment is required for a subject pass.

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**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.

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**EEA4002 COMPUTER CONTROL 4.2**

Campus Footscray Park

Prerequisite(s) EEA4001 Computer Control 4.1

Content This subject comprises one control system project, that is to design, develop and implement a digital controller applied to real time control of an item of equipment. Students are to start by determining a model of the plant. Any necessary filtering, transducer equipment, etc. is to be designed and manufactured before coupling the computer to the plant. It is required that some of the results for the project will be taken and presented using computer data acquisition techniques.


Class Contact Three hours per week for one semester predominantly of laboratory work.

Assessment Project 40%, report 30%, oral presentation 30%. A pass in each component of assessment is required for a subject pass.

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**EEA4004 ROBOTICS AND AUTOMATION 4.1**

Campus Footscray Park

Prerequisite(s) EYE2002 Computer Systems 2.2; SMA2201 Mathematics B; EEC2602 Data Structures and Algorithm Analysis 2.2 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. Homogenous transforms, configurations. Euler angles. 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 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.

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**EEA4104 FUZZY CONTROL AND APPLICATIONS 4.2**

Campus Footscray Park

Prerequisite(s) EEA3002 Control Systems 3.2

Content Introduction to fuzzy sets theory: vagueness and uncertainty formalisation problem, fuzzy sets theory and probability theory comparison and discussion, fuzzy set definitions, properties of fuzzy sets, operations on fuzzy sets. Fuzzy relations: classical relations, fuzzy relations, operation on fuzzy relations, the extension principal. Natural language 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. Neural-fuzzy control.

**Required Reading**

**Recommended Reading**

**Class Contact** 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.

**Assessment** To be advised by lecturer.

**EEC2501 SOFTWARE ENGINEERING 2.1**

**Campus** Footscray Park

**Prerequisite(s)** EEC1002 Programming Structures 1.2 or SCM1312 Programming 2 or equivalent

**Content** Introduction to the engineering of quality software. The software development lifecycle model. System analysis and the production of a software requirements definition and specification. Process specifications and data dictionary production. Software design process, principles and production. User interface design, information presentation and evaluation. The testing process, planning and strategies. A team project is undertaken to reinforce the principles taught in lectures. The use of a simple CASE tool is included.


**Class Contact** Three hours per week for one semester based on one hour of lectures, two hours of tutorial laboratory.

**Assessment** Test, assignment and laboratory exercises 35%,

**EEC2511 OPERATING SYSTEMS 2.1**

**Campus** Footscray Park

**Prerequisite(s)** EEC1002 Programming Structures 1.2.

**Content** Functions and characteristics of an operating system. Introduction to the UNIX operating system, commands and utilities. Memory management, objectives, virtual memory, allocation policies. Input and output procedures, device handlers, buffering, file devices and spooling. Filing system objectives, sharing, security and integrity. Resource allocation and scheduling, algorithms, control and accounting. Protection and reliability.


**Class Contact** Three hours per week for one semester based on one hour of lectures and two hours of tutorial/practical work.

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

**EEC2602 DATA STRUCTURES AND ALGORITHM ANALYSIS 2.2**

**Campus** Footscray Park

**Prerequisite(s)** SCM2311 Object Oriented Programming 1; EEC2501 Software Engineering 2.1

**Content** Data Abstraction; Storage Structures; Collection Classes; Arrays; Linked lists; Iterators; Stacks; Queues; Recursion; Priority Queues; Trees; Heaps; Sorting algorithms; Searching algorithms; Tables; Hashing; File processing; Indexing; Graphs.


**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)** EYE2002 Computer Systems 2.2.

**Content** Software Engineering: Principles of software engineering, software life cycle, requirements, analysis, data flow diagrams, design methodologies eg functional decomposition, object-oriented design. Testing, unit, integration, system. Quality assurance, standards and documentation. Operating systems services: system programs, system calls, process management, memory and storage management. Operating systems case study.

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


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

**Assessment** Test, assignment and laboratory exercises, 30%; examination, 70%. A pass in each component of assessment is required for a subject pass.

**EEC3504 COMPUTERS AND SOCIETY 3.2**

**Campus** Footscray Park

**Prerequisite(s)** Nil.

**Content** History of computing and its impact on society. The role of education in shaping society’s attitudes. The computer industry: hardware, software and applications. The computer profession: career paths, responsibilities and professional associations. Social and ethical issues, copyrights. The protection of data being stored and communicated for security and privacy. Legal aspects; security and computer crime. Trends in computing, forecasting the technological future.

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


**Class Contact** Three hours per week for one semester based on three hours per week of lecture/seminar.
**EEC3601 SOFTWARE ENGINEERING 3.1**

**Campus** Footscray Park  
**Prerequisite(s)** EEC2501 Software Engineering 2.1;  
**Content** Introduction to requirements elicitation, analysis and modelling. Development of a software system design from the requirements model. Comparison of analysis and design techniques. Software reliability and reuse. Verification and validation. CASE tools and software engineering environments. Software project planning and estimating.  
**Class Contact** Three hours per week for one semester comprising one hour per week of lecture, and two hours per week of tutorial/laboratory class.  
**Assessment** Test, assignment and laboratory exercises, 35%; examination, 65%. A pass in each component of assessment is required for a subject pass.

**EEC3602 DATABASE SYSTEMS 3.1**

**Campus** Footscray Park  
**Prerequisite(s)** EEY2001 Computer Systems 2.1  
**Class Contact** Three hours per week for one semester based on two hours of lecture and one hour of tutorial/laboratory.  
**Assessment** Test, assignments and laboratory exercises, 35%; examination, 65%. A pass in each component is required for a subject pass.

**EEC3801 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 EEY2001 Computer Systems 2.1  
**Content** Representing knowledge using various techniques such as predicate calculus, semantic networks and frames. Demonstrating the need for heuristics to search amongst alternatives to find a solution. Production systems and the development of expert systems and expert system shells. Organisation of knowledge and the management of uncertainty. Natural language processing, analysis and parsing. Introduction to neural networks. Practical application of real-world problems suitable for an expert system solution, using a suitable A1 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.

EEC3003 ADMINISTERING MICROSOFT WINDOWS 3.1
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.

EEC3004 COMPUTER GRAPHICS 3.2
Campus Footscray Park
Prerequisite(s) EEC2602 Data Structures and Algorithm Analysis. 2.2 or EEY2001 Computer Systems 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
Prerequisite(s) Completed Year 3.
Content The subject identifies the role of practical management in the acquisition and control of software based projects. It develops project management strategies suitable for software based systems, and demonstrates the efficiency of suitable management in a project environment. Students are introduced to the appropriate industry standards and their work will be expected to comply with these.

Class Contact Three hours per week for one semester comprising one one-hour lecture, one one-hour laboratory and one one-hour tutorial.
Assessment Examination, 50%; practical work, assignment/tutorial, 50%. A satisfactory level of assessment in each component of the subject is required for a subject pass.

EEC4131 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 and compression, 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.

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.
EED2002 DESIGN A 2.2

Campus Footscray Park

Prerequisite(s) EED1012, EEE2001, EEH2001

Content This subject gives the student a grounding in the planning, design, construction, and evaluation of electronics hardware, and leads on to more advanced project work in later years of the course. Two design and construction projects will be undertaken. The first a minor project, will be carried out on an individual basis and involve a PCB fabrication. The second a major project, will be a group project to specifications given. Design and construction of the major project is shared by the group, and a group report is prepared. Each student presents a seminar with emphasis on the student’s contribution to the project.

Required Reading To be advised by the lecturer.


Class Contact Three hours per week for one semester consisting of one hour per week of lecture and two hours per week of laboratory work.

Assessment Minor project, 30%; Major project, 40%; Individual seminar, 10%; Group project report, 20%.

EED2502 DESIGN PROJECT 2.2

Campus Footscray Park

Prerequisite(s) EHEH2701 Digital Systems 2.1

Co-requisite(s) EHEH2702 Digital Systems 2.2

Content Electronic circuit prototype and debugging methods. An introduction to project planning. Design journal maintenance, team working and technical reporting. To design, build and test an electronic system of the student’s choice based on either the Algorithmic State Machine design method and PLDs or a microcontroller interfaced to external sensors/actuators.


Class Contact Three hours per week for one semester based on design group workshop sessions.

Assessment Design journal (log book), 15%; attendance and presentation at weekly group meetings, 20%; written reports, 25%; technical merit and quality of final hardware software, 40%. A pass in each component of the assessment is required for an overall subject pass. Supplementary assessment is not available.

EED3000 DESIGN 3.0

Campus Footscray Park

Prerequisite(s) All second year subjects except EMW2001, SMA2301, SMA2212, SMA2242

Content The concepts developed in previous years are consolidated by project work of a more specialised nature allocated on an individual basis. The theory is more applications oriented, and covers the concepts of reliability, heat transfer, illumination design, and acoustic noise control and equipment and system reliability. Modelling and computer techniques are emphasised as a path to a working prototype which bypasses the cut and try breadboard stage.


Class Contact Four hours per week based on one hour per week of lecture, and three hours per week of tutorial/project work.

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

EED 3510 DESIGN PROJECT

Campus Footscray Park

Prerequisite(s) Completed 2nd year

Co-requisite(s) ACE3143 and ACE3144 English Language and Communications 3 and 4. EECS3511 Software Engineering 3.1

Content Application of systems analysis and design principles to develop an individual project with a substantial software and/or hardware component. Development of a system and the associated documentation is undertaken as a staged process, with deliverables and presentation at the end of each stage. The stages are: system requirements elicitation and analysis, including validation activities, system design, implementation, verification and testing. Computer aided design tools are used as appropriate.


Class Contact Three hours per week for two semesters comprising one hour per week tutorial and two hours per week of project work.

Assessment Project, 100%.

EED4000 DESIGN AND PROJECT MANAGEMENT 4.0

Campus Footscray Park

Prerequisite(s) Completed third year

Content The concepts developed in previous years are consolidated by an advanced project of specialised nature allocated on an individual basis. The theory covers system design, mass production design, and studies relating to grounding, shielding and electromagnetic compatibility. A humanities communication component of the subject is designed to improve written and oral communication skills, to assist in the planning and preparation of engineering reports, and in competing for contracts and employment.


Wiley, Queensland

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%.

EEE2001 ELECTRONICS 2.1
Campus Footscray Park
Prerequisite(s) EEE1001 Electronics 1.1
Content PSPICE; operational amplifier, non linear characteristics, switching applications of op. amps. BJT small signal models, BJT amplifiers. MOSFET and JFET amplifiers and their SPICE parameters. GaAs Devices, MESFET.


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

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

EEE2002 ELECTRONICS 2.2
Campus Footscray Park
Prerequisite(s) EEE2001 Electronics 2.2


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

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

EEE2501 ELECTRONICS 2.5
Campus Footscray Park
Prerequisite(s) EEE1002 Electronics 1.2
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.

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

EEE2503 ELECTRONICS 2.6
Campus Footscray Park
Prerequisite(s) EEE2501 Electronics 2.5


Recommended Reading Bogart, T.F. 1993, Electronic Devices and Circuit, 3rd edn, Merrill.

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

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

EEE3001 ELECTRONIC CIRCUITS 3.1
Campus Footscray Park
Prerequisite(s) EEE2002 Electronics 2.2.


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

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

EEE3002 ELECTRONIC CIRCUITS 3.2
Campus Footscray Park
Prerequisite(s) EEE3001 Electronic Circuits 3.1
Content Analog Integrated Circuit. 741 DC, AC analysis. Analog Multiplier Theory of operation and applications. Switched Capacitor Filters. Voltage Controlled Oscillators and IC waveform generators. Introduction to SCR devices and their
applications. Data Acquisition Systems, Analog signal processing/ Digital signal processing techniques.


**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.

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**EEH4004 RF ENGINEERING 4.2**

**Campus** Footscray Park

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

**Content** Review of basic transmission line theory. Microwave transmission structures with particular emphasis on microstrip. Lumped and distributed matching techniques. Small signal amplifier stability. Unilateral small signal amplifiers. Gain circles. Simultaneous conjugate matching. Low noise amplifier design. Noise circles. Bias circuits for microwave amplifiers. The course will be taught with the package Agilent ADS (Advanced Design System) forming the basis of tutorial examples and a semester assignment.

**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, one hour per week of tutorial and one hour per week of laboratory/practical work.

**Assessment** Practical work, 50%; examination, 50%. A pass in each component of assessment is required for a subject pass.

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**EEH1001 DIGITAL ELECTRONICS 1**

**Campus** Footscray Park

**Prerequisite(s)** Nil


**Class Contact** Four hours per week comprising two hours of lecture, one hour of tutorial and one hour of laboratory exercises.

**Assessment** Class test, 30%; Laboratory exercises, 10% and final examination, 60%.

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**EEH1002 DIGITAL ELECTRONICS 2.1**

**Campus** Footscray Park

**Prerequisite(s)** EEE1002 Electronics 1.2.

**Content** MSI devices: decoders, multiplexers, encoders and demultiplexers. Circuit design using these MSI devices. Arithmetic devices and ALUs. Error detection and correction. MSI sequential circuits. CMOS, BiCMOS, BiMOS devices, characteristics, interfacing between logic families. Clock circuits. ROM realisation of circuits.


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

**Assessment** Tests, assignment and laboratory exercises, 10%; examination, 90%. A pass in each component of assessment is required for a subject pass.

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**EEH2001 DIGITAL ELECTRONICS 2.2**

**Campus** Footscray Park

**Prerequisite(s)** EEH2001 Digital Electronics 2.1.

**Content** Programmable logic devices. Classification and structure of PLA, PAL, PLA, and special PLD features. Logic design using PLD’s with VHDL. Analysis of clocked sequential circuits. Synthesis of clocked sequential circuits. State table reduction and state assignment. Sequential circuit design using MSI/LSI devices.


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

EEH 2601 MICROPROCESSOR SYSTEMS 2.1
Campus Footscray Park
Prerequisite(s) EEE1002 Electronics 1.2
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. Microcomputer 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 Recommended Reading:
Miller, G.H., Microcomputer Engineering, Prentice Hall
Tocci, R.J., et.al., Microprocessors and Microcomputers, Prentice Hall
Class Contact Three hours per week for one semester based on one hour each of lecture, tutorial and laboratory.
Assessment Tests, assignments, tutorials, laboratories, etc., 35%; examination, 65%. Students must achieve satisfactory performance in each component of the assessment and attend a minimum of 80% of all labs and tutorials to obtain a pass in the subject.

EEH 2602 MICROPROCESSOR SYSTEMS 2.2
Campus Footscray Park
Prerequisite(s) EEH2601 Microprocessor Systems 2.1, EEH2701 Digital Systems 2.1, EEC2501 Software Engineering 2.1, SCM2311 Object Oriented Programming 1
Content Revision of assembly language programming using advanced addressing modes. Object codes and post bytes. Stack and stack instructions. Subroutines. Assembly language programming extended to cover engineering applications involving serial and parallel data input and output handling, interrupts, event counting, timing and analog to digital conversion. Microprocessor hardware design principles covering bus architectures, address decoding, digital to analog conversion and input/output techniques. Students will also construct and test their own 68HC11 microcomputer board.
Required Reading Students may select one of the following as an appropriate text book for this subject. The others may then be considered as appropriate Recommended Reading:
Miller, G.H., Microcomputer Engineering, Prentice Hall
Tocci, R.J., et.al., Microprocessors and Microcomputers, Prentice Hall
Class Contact Three hours per week for one semester based on one hour each of lecture, tutorial and laboratory.
Assessment Tests, 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.

EEH 2701 DIGITAL SYSTEMS 2.1
Campus Footscray Park
Prerequisite(s) EEE1002 Electronics 1.2
Content MSI devices including decoders, muxes, demuxes, comparators, counters, registers, ALUs, etc. Device function, cascading principles and data path applications. An introduction to the Algorithmic State machine design method. ASM charts, controller design and implementation.
Class Contact Three hours per week for one semester based on one hour of lecture and one hour of tutorial and one hour of laboratory exercises.
Assessment Laboratory 10%; final examination, 90%. A pass in each component of assessment is required for a subject pass. Supplementary assessment is not available.

EEH 2702 DIGITAL SYSTEMS 2.2
Campus Footscray Park
Prerequisite(s) EEH2701 Digital Systems 2.1, EEE1001 Electronics 1.1
Content PLD types and architectures. Fusemap interpretation. Implementation of data path elements and sequential controllers on PLDs using a programmable logic compiler (CUPL). The ASM technique implemented on PLDs. Digital to analog and analog to digital conversion. Device interfacing between logic families and to external sensors/actuators.
Class Contact Three hours per week for one semester based on one hour of lecture and one hour of tutorial and one hour of laboratory exercises.
Assessment Laboratory 10%; final examination, 90%. A pass in each component of assessment is required for a subject pass. Supplementary assessment is not available.

EEH 3002 MULTIMEDIA CIRCUITS AND SYSTEMS 3.2
Campus Footscray Park
Prerequisite(s) EEH2002 Digital Electronics 2.2 or equivalent subjects.
Content Analysis of multimedia functions and systems. Introduction to silicon fabrication process. Digital and analogue circuit design, static and dynamic design techniques. Circuit protection and scaling, CMOS latch up, CAD Tools, VLSI circuit simulation and testing, GaAs VLSI circuits for multimedia applications. Introduction to VHDL.
Class Contact Three hours per week for one semester based on one hour 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.
Class Contact Based on one hour per week lecture, one hour per week tutorial and one hour in 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) EEEY2002 Computer Systems 2.2, EEH2002 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.
Recommended Reading Bray, B., 1999, Programming the 80x86, 80386, 80486 and Pentium Based PCs, Prentice Hall.
Class Contact Three hours per week for one semester based on one hour per week of lecture, one hour per week tutorial and one hour per week of laboratory exercises. Assessment Tests, assignments and laboratory exercises, 40%; examination, 60%. A pass in each component of assessment is required for a subject pass.

EEH3204 INTEGRATED CIRCUIT DESIGN 3.2
Campus Footscray Park
Prerequisite(s) EEH2002 Digital Electronics 2.2 or equivalent
Content Introduction to silicon fabrication process. Digital and analogue circuit design, static and dynamic design techniques, random logic, PLA, domino, NOA, multi-clock phase circuits. Circuit protection and scaling CMOS latch up. CAD Tools, Summit, Mentor; HSPICE, VLSI circuit simulation and testing. Future fast VLSI circuits. (GaAs).
Class Contact Three hours per week for one semester based on one hour per week of lecture and two hours per week of tutorial/laboratory exercises. Assessment Laboratory exercises 20%: project 50%, examination, 30%. A pass in each component of assessment is required for a subject pass.

EEH3504 EMBEDDED SYSTEMS 3.1
Campus Footscray Park
Prerequisite(s) EEH2002 Digital Electronics 2.2 or EEH2602 Microprocessor Systems 2.2
Content Advanced microprocessor concepts using the Motorola 68XX 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 Antonakios, J.L., The 68000 Microprocessor, Prentice 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) EEH2701 Digital Systems 2.1, EEH2702 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** Skahilh, K., 1996, *VHDL for Programmable Logic*, Addison Wesley.


**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%. A pass in each component of assessment is required for a subject pass. Supplementary assessment is not available.

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**EEH3704 MULTIPROCESSOR SYSTEMS 3.2**

**Campus** Footscray Park

**Prerequisite(s)** EEC2501 Software Engineering 2.1; EEC2511 Operating Systems 2.1.

**Content** Introduction to multiprocessing and concurrent programming. Classification of computer architectures - Von Neumann, SIMD, MIMD, array, and data flow computers; shared memory and distributed memory interconnection network; performance measurement; parallel algorithms; Occam programming; communication channel operation; concepts of mutual exclusion; semaphore; monitor; typical concurrent programming problems.

**Required Reading** Notes on each topic are provided. These notes should be supplemented by using the texts mentioned in recommended reading.


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

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

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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 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 Marnoelectronic Circuits*, IRWIN


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

**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 MVHDL 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.


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

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**EEI1001 CIRCUIT THEORY AND APPLICATIONS 1**

**Campus** Footscray Park

**Prerequisite(s)** Nil

**Corequisite** SMA1201

**Content** Introduction of fundamental concepts of electricity. Statement and application of basic theory to DC Circuit Analysis e.g. KCL, KVL, Node Voltage Method, Thevenin's Theorem, Principle of Superposition. Introduction to the behaviour and characteristics of Real Devices e.g. voltage sources, resistors, and amplifiers. Introduction to applications of electrical and electronics circuits. Laboratory exercises in practical aspects of circuit construction and measurements.
Required Reading Current available textbook – student to be advised.
Recommended Reading To be advised.
Class Contact Two hours per week lecture, one hour per week tutorial and two hours per fortnight laboratory.

Assessment Examination, 90%; laboratory exercises, 10%. Satisfactory completion of each component of assessment is required for a subject pass.

EEE2001 POWER SYSTEMS 2.1
Campus Footscray Park
Prerequisite(s) EEE1001
Content An introduction to AC Circuit Theory, Diodes and their applications. Some analysis techniques for circuits containing non-linear circuit elements. Operational amplifiers, further characteristics and applications.

Required Reading Current available textbook – student to be advised.
Recommended Reading To be advised.
Class Contact Two hours per week lecture, one hour per week tutorial and two hours per fortnight laboratory.

Assessment Examination, 90%; laboratory exercises, 10%. Satisfactory completion of each component of assessment is required for a subject pass.

EEL1002 CIRCUIT THEORY AND APPLICATIONS 2
Campus Footscray Park
Prerequisite(s) EEL1001
Content An introduction to AC Circuit Theory, Diodes and their applications. Some analysis techniques for circuits containing non-linear circuit elements. Operational amplifiers, further characteristics and applications.

Required Reading Current available textbook – student to be advised.
Recommended Reading To be advised.
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%.

EEL1401 NEURAL NETWORKS AND FUZZY LOGIC 4.1
Campus Footscray Park
Prerequisite(s) EEE2503 Electronics 2.6, EEA2502 Control Principles 2.2

Content The subject will introduce the concept of neural networks, fuzzy logic and applications. Topics covered include: Neural network 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.

EEP2001 POWER SYSTEMS 2.1
Campus Footscray Park
Prerequisite(s) EEA1002 Electrical Engineering 1.2

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


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

Assessment Tests, 20%; laboratory exercises, 20%; examination, 60%. A pass in each component of assessment is required for a subject pass.

EEP2002 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%.

EEP3001 POWER SYSTEMS 3.1
Campus Footscray Park
Prerequisite(s) EEP2001 Power Systems 2.1


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

Assessment Test, 10%; laboratory exercises, 10%; examination, 80%. A pass in each component of assessment is required for a subject pass.

EEP3002 POWER SYSTEMS 3.2
Campus Footscray Park
Prerequisite(s) EEP2001 Power Systems 2.1

Content Basic concepts in power systems, energy transmission distribution and conversion, per unit and quantities, AC/DC, DC/DC and DC/AC 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.

EEP4001 POWER SYSTEMS 4.1
Campus Footscray Park
Prerequisite(s) EEP3002 Power Systems 3.2

Content Fault on Power System: causes, type, frequency, level, short circuit calculations. Basis of protection: elementa...


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.

EEP4002 POWER SYSTEMS 4.2

Campus Footscray Park

Prerequisite(s) EEP3002 Power Systems 3.2

Content Load flow analysis: techniques, interactive methods, Graus Siedel and Newton Raphson approach. System frequency dynamics and control: load characteristics and yearly variation, maintenance, planning and generation. Power frequency dynamics; automatic generation, interconnection. Economics of power supply: Kelvins law, p.f. correction, tariffs. Insulators: testing, voltage distribution, pollution flashover, HVDC systems: inverter and converter operation and analysis, equivalent circuits, interaction and control, comparison with AC transmission, HVDC, links.


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.

EET2002 COMMUNICATION SYSTEM 2.2

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

EET2101 MULTIMEDIA TECHNIQUES 2.1

Campus Footscray Park

Prerequisite(s) EEC1002 Programming Structures

Content Introduction to the methods processing and transmission of image and video data. The architecture of Digital Video Broadcasting (DVB) systems including terrestrial, cable and satellite methods. Digital image and video camera technology and standard data file formats. Basic steps in image and video compression as employed in the JPEG and MPEG standards including motion estimation and motion compensation in video compression. Techniques for internet and wireless transmission of images and video and problems of congestion and packet loss.

Required Reading Notes on each topic are provided.


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

Assessment Examination, 50%; test, assignment and laboratory exercises 50%.

EET2502 COMPUTER COMMUNICATIONS 2.2

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/tutorial, and one hour laboratory.

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

EET3002 MULTIMEDIA COMMUNICATION NETWORKS 3.2

Campus Footscray Park

Prerequisite(s) EET2002 Communication Systems A.


Required Reading To be advised.

Recommended Reading Stallings, W. 1992, ISDN and Broadband ISDN, 2nd 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) EET2002 Communication Systems 2.2.

Content Transmission line theory, wave equation, VSWR, Smith chart, characteristic impedance, coaxial cable, waveguide, microstrip line, stub matching techniques, Maxwell equations, TE, TM and TEM modes, antenna and free space propagations, microwave devices.

Required Reading To be advised by lecturer.


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

Assessment Test, assignments and laboratory exercises, 35%; examination, 65%. A pass in each component of assessment is required for a subject pass.
EET3102 COMMUNICATION ENGINEERING 3.2

Campus Footscray Park

Prerequisite(s) EET3101 Communication Engineering 3.1

Content Spectral analysis of random signals, auto-correlation and cross-correlation functions of non-deterministic communication signals, line coding techniques, pseudo-random sequences and their application, gaussian noise, noise temperature, performance of baseband data communication systems in noise, bit-error rate (BER) calculation, signal to noise analysis of DSB, SSB and FM modulations.

Required Reading To be advised by lecturer.


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

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

EET3501 COMPUTER COMMUNICATIONS 3.1

Campus Footscray Park

Prerequisite(s) EET2502 Computer Communications 2.2 or EET2002 Communication Systems 2.2

Content Computer communication protocols and standards. TCP/IP protocol suite. Underlying technologies. IP addressing. Subnetting and 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. Socket interface.


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

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

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.

Assessment Project, laboratory exercises and assignment, 50%; examination, 50%. A pass in each component of assessment is required for a subject pass.
EET240 COMMUNICATION SYSTEMS DESIGN 4.2
Campus Footscray Park
Prerequisite(s) EET3102 Communication Engineering 3.2
Content In this unit students are guided in the design of actual communication systems and management of telecommunications networks. The principles of communication systems design are introduced through a series of design assignments using modern communications systems and networks, including: optical fibre, ATM and broadband networks, mobile radio and data communications. The emphasis is placed on technical performance as well as economics and human engineering considerations. Students are also introduced to OSI network management and telecommunications management network standards.
Class Contact Three hours per week for one semester based on one hour per week of lecture and two hours per week of laboratory exercises and design practice.
Assessment Project, 50%; test and assignment, 50%. A pass in each component of assessment is required for a subject pass.

EET4302 MULTIMEDIA SYSTEMS DESIGN 4.2
Campus Footscray Park
Prerequisite(s) EET3102 Communication Engineering 3.2
Content 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
Content This subject will provide a theoretical and practical understanding of mobile and cellular communication systems. It provides an overview of existing mobile systems today. PMR, cellular, Propagation modelling at UHF. Path loss, slow fading, fast (Raleigh) fading. Okumura's model. Delay spread, coherence bandwidth, level crossing rate. Propagation models 1 path, 2 path and multipath (GSM) models. Antennas. Antenna gain, radiation resistance, phased array antennas. Base station antennas, low profile portable antennas. Modulation and coding for the mobile channel, FM, CPM, GMSK, (#4 shift QFSK. Bit error rate, error floor, modulation, demodulation, equalisation. The effect of diversity, space, frequency and time. Selection diversity, equal gain, maximal ratio. Capacity calculation and cell site engineering, reuse distance, cell splitting, sectorising. FDM and TDM and CDM systems. Handover. Signalling. Overview of some common system. AMPS, GSM, TIA 1S-54, cordless, DECT and CT2. Personal communications networks.
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
Required Reading To be advised by lecturer.
Class Contact Three hours per week for one semester based on two hours lecture and one hour of laboratory.
Assessment Examination 70%, laboratory/assignments 30%. A satisfactory level of assessment for each component is required for a subject pass.

EET4501 BROADBAND ISDN 4.1
Campus Footscray Park
Prerequisite(s) EET3102 Communication Engineering 3.2
EEY2001 COMPUTER SYSTEMS 2.1

Campus Footscray Park
Prerequisite(s) EEC1002 Programming Structures or ETC1112 Introduction to Computing 1.2
Content Problem solving and programming. Analysis, design and implementation of abstract data types and classes. Input and output streams. Introduction to numerical methods.

EEY2002 COMPUTER SYSTEMS 2.2

Campus Footscray Park
Prerequisite(s) EEY2001 Computer Systems 2.1
Content Introduction to 80x86 architectures and CPU register operations. Computer instruction types including arithmetic, logical, stack and jump instructions. Memory addressing modes including indirect addressing. Assembly-level and mixed language programming techniques. Use of the stack for passing parameters between assembly and C-language procedures. Source code and machine level debugging techniques. Use of software interrupts to access ROMBIOS functions.

EEY4002 MULTIMEDIA NETWORK MANAGEMENT 4.2

Campus Footscray Park
Prerequisite(s) EEY3102 Communication Engineering 3.2 and EEH3201 Computer and Digital Systems 3.1

EEY4101 COMPUTER SYSTEMS 4.1

Campus Footscray Park
Prerequisite(s) EET4701 Communication Systems 4.1

Required Reading: Bronson, G.J., 1999, C++ for Engineers and Scientists, PWS Publishing.

Recommended Reading: Dietel, H.M. and Dietel, P.J., 1998, C++ How to Program.

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

Assessment: Test, assignment and laboratory exercises 35%; examination, 65%. A pass in each component of assessment is required for a subject pass.
of operating systems, application software and I/O driver design. Database: Introduction to concept of databases and to a commercial database package. Real time software design: Requirements and functionality of real time software and real time operating systems.

**Required Reading** To be advised.


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

**Assessment** Tests, assignments and laboratory exercises, 50%; examination, 50%. A pass in each component of assessment is required for a subject pass.

**EMC2122 ENGINEERING COMPUTATIONS 2**

**Campus** Footscray Park

**Prerequisite(s)** Computer Programming, Engineering Computations 1.

**Content** Numerical solutions of engineering problems such as non-linear systems, temperature and pressure distribution using the following techniques: Non-linear equations - Bi-Section, Secant methods. Numerical integration and differentiation, finite differences, Interpolation. Solution of ordinary differential equations-Initial and boundary types. Solution of partial differential equations: Parabolic, Elliptical, Hyperbolic solutions, Finite Element and Boundary Elements methods.

**Required Reading** Current available textbook - Student to be advised.


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

**Assessment** Assignments and class tests, 40%, end of semester examination, 60%.

**COMPUTATIONAL FLUID DYNAMICS**

**Campus** Footscray Park

**Prerequisite(s)** Fluid Mechanics 2, 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 textbook - Student to be advised.


**Class Contact** Three hours per week for one semester based on two hours lectures, and one hour tutorial and laboratory work.

**Assessment** Assignments and class tests, 70%; end of semester examination, 30%.

**EMC3111 ENGINEERING COMPUTATIONS C**

**Campus** Footscray Park

**Prerequisite(s)** EMC2122 Engineering Computations B; SMA 2201 Mathematics B.


**Required Reading** Lecture notes and class notes. Online Help.


**Class Contact** Four hours per week for one semester based on two one hour lectures and one two hour tutorial/laboratory session.

**Assessment** Assignments, tests, 50%; Examination, 50%.

**EMC3712 ENGINEERING COMPUTATIONS 2**

**Campus** Footscray Park

**Prerequisite(s):** ENC2812 Engineering Computations 1

**Content** Numerical solutions of Engineering Problems such as non-linear systems, temperature and pressure distribution using the following techniques: Non-linear equations - Bi-Section, Secant methods. Numerical integration and differentiation, finite differences, Interpolation. Solution of ordinary differential equations-Initial and boundary types. Solution of partial differential equations: Parabolic, Elliptical, Hyperbolic solutions, Finite Element and Boundary Elements methods.

**Required Reading** Current available 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%
DESIGN OPTIMISATION

Campus: Footscray Park
Prerequisite(s): Mechanical Design 1

Content: Optimum design of mechanical elements and systems using both analytical and computational methods as follows: Graphical Optimisation, Linear Programming, Calculus Methods, Geometric Programming, Experimental Optimisation, Taguchi Method.


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%.

SOLID MODELLING

Campus: Footscray Park
Prerequisite(s): Computational Mechanics


Required Reading: Current available text book – Student to be advised.


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, 30%; end of semester examination, 70%.

PROCESS MODELLING AND SIMULATION

Campus: Footscray Park
Prerequisite(s): Computational Mechanics


Required Reading: Current available text book – Student to be advised.


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, 30%; end of semester examination, 70%.

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%.
EMD4320 MECHANICAL DESIGN C

Campus: Footscray Park

Prerequisite(s): EMD 3310 Mechanical Design B.


Recommended Reading: Australian Standards where required.

Class Contact: Three hours per week for one semester comprising of an hourly lecture and a two hour tutorial. Three hours per week for one semester.

Assessment: Assignments and class tests, 50%; End of Semester Examination 50%.

EMD4731 MECHANICAL DESIGN 3

Campus: Footscray Park

Prerequisite(s): EMD 3732 Mechanical Design 2.

Content: Optimum design of mechanical elements and systems using both analytical and computational methods as follows: Graphical Optimisation, Linear Programming, Calculus methods, Lagrange Multipliers, Geometric Programming, Experimental Optimisation, Taguchi Method.

Required Reading: Current available textbook - Student to be advised.


Class Contact: Three hours per week for one semester comprising of an hourly lecture and a two hour tutorial.

Assessment: Assignments and class tests, 50%; end of semester examination, 50%.

EMD4732 MECHANICAL DESIGN PROJECT

Campus: Footscray Park

Prerequisite(s): EMD 4731 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 design.

Required Reading: Current available textbook - student to be advised.


Class Contact: Three hours per week for one semester comprising of an hourly lecture and a two hour tutorial.

Assessment: Assignments 50%, Satisfactory semester progress 50%.

PROJECT

Campus: Footscray Park

Prerequisite(s): Completion of Year 3

Content: Not applicable.

Required Reading: Current available textbook - Student to be advised.


Class Contact: Three hours per week for two semesters.

Assessment: Major report, 80%; Progress Report, 10%; Oral Presentation, 10%.

EMF3212 FLUID MECHANICS B

Campus: Footscray Park

Prerequisite(s): EZF2210 Fluid Mechanics A.


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

Assessment: Assignments 5%, tests 35%; laboratory reports 10%; examination, 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. Detailed 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%.

EMF4411 FLUID MECHANICS C

Campus: Footscray Park

Prerequisite(s): EMF3212 Fluid Mechanics B.

Content: Gas dynamics: compressible flow, speed of sound, Mach number, laws of adiabatic flow, critical values; shock waves, normal, oblique, entropy change. Flow characteristics of nozzles: convergent, convergent-divergent, adiabatic nozzle flow with

Required Reading To be advised by lecturer.


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

Assessment Assignments, tests and laboratory work, 30%; examination, 70%.

EMF4710 FLUID MECHANICS 3

Campus Footscray Park

Prerequisite(s) Fluid Mechanics 2

Content Gas dynamics: compressible flow, speed of sound, 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 hours lectures and one hour tutorial/laboratory session.

Assessment Assignments, class tests and laboratory work, 30%; end of semester examination, 70%.

EMF4742 FLUID MECHANICS 4

Campus: Footscray Park

Prerequisite(s): EMF4741 Fluid Mechanics 3

Content Review of conservation laws in differential forms (continuity, momentum and energy) and physics of viscous flows. Review of various numerical schemes (Runge-Kutta, Crank Nicolson) and discretization methods. Introduction to the finite-volume finite difference technique. Solving engineering problems involving fluid flows using CFD packages and validation of the CFD results. Introduction to Direct Numerical Simulation (DNS) and Large Eddy Simulation (LES) techniques.

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, 70%; end of semester examination, 30%.

EMM3110 MECHATRONICS 1

Campus Footscray Park

Prerequisite(s) Electrical Engineering 1.2, Electronics 1.2, Dynamics 1

Content Coordinate and measurement systems, actuator and control systems, application of kinematics and dynamic concepts, trajectory planning and control, electronics and mechanical devices, sensors and instrumentation, application of power motors, actuators and transmission devices.


Recommended Reading To be advised by lecturer.

Class Contact Three hours per week for one semester comprising two hours of lectures and one hour or tutorial and laboratories as required.

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

EMS4780 PROJECT

Campus Footscray Park

Prerequisite(s) Completion of Year 3

Content Students will apply engineering knowledge and problem solving and project management skills learnt from the course. Each student is expected to work in collaboration with technical support staff and fellow students and may be required to work, construct and test prototypes of the proposed solution, and report and appraisal of the project.

Required Reading To be advised by lecturer.


Class Contact Three hours per week for two semesters.

Assessment Major report, 80%; Progress Report, 10%; Oral presentation, 10%.

EMR1110 ROBOTICS 1

Campus Footscray Park

Prerequisite(s) Nil

Content Classification, applications, industrial automated processes, design features and specifications. Programming of robotic and automated systems, safety, installation and maintenance requirements Special purpose. Social implications.

Required Reading To be advised by lecturer.

Recommended Reading To be advised by lecturer.

Class Contact Three hours per week for one semester comprising two hours of lectures and one hour of tutorial and laboratories as required.

Assessment Class tests and assignments.

EM2211 SOLID MECHANICS B

Campus Footscray Park

Prerequisite(s) EZS1210 Solid Mechanics A.


Required Reading Lecture notes and handouts.


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

Assessment Test, assignment and laboratory exercises, 30%; examination, 70%.

EMS3210 STRESS ANALYSIS

Campus Footscray Park

Prerequisite(s) EMS2211 Solid Mechanics B.

Content Semester one: Revise fundamental concepts of solid mechanics: Internal forces, stress, strain, Hookes law, Mohr's...


**Required Reading** Danh Tran, *Stress Analysis A and Stress Analysis B*, Lecture Notes.


**Class Contact** Three hours per week for two semesters based on two hours of lectures and one hour tutorial/laboratory session.

**Assessment** Assignments, 30%; examinations, 70%.

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**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%.

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**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

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**EMS4402 FRACTURE MECHANICS**

**Campus** Footscray Park

**Prerequisite(s)** EMS3210 Stress Analysis, EMY4411 Computational Mechanics


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


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

**Assessment** Assignments, tests and laboratory work, 40%; examination, 60%.

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**EMT3211 THERMODYNAMICS B**

**Campus** Footscray Park

**Prerequisite(s)** EMT2211 Thermodynamics A

**Content** Heat engine, expanders and positive displacement compressors, heat engine cycles, Carnot air standard cycles, internal combustion engines, vapour power cycles, Rankine cycle and its modifications, modern boiler plant, steam turbines, characteristics of performance of engine, compressors and turbine, gas turbine cycles, isentropic efficiency, modification to the basic cycle, combustion, basic chemistry, fuels, combustion equations, stoichiometric air/fuel ratio, exhaust and flue gas analysis. Heat pump and refrigeration cycles, psychrometry and basics of air conditioning, psychrometric mixtures, dew point, properties of moist air, specific and relative humidity, percentage saturation, measurement of relative humidity, psychrometric chart - A.I.R.A.H. chart, processes on psychrometric chart, air-conditioning systems, summer and winter air-conditioning, cooling towers.


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

**Assessment** Assignment, test, laboratory report, 30%; End of Semester Examination 70%.

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**EMT3781 THERMODYNAMICS 2**

**Campus** Footscray Park

**Prerequisite(s)** Thermodynamics 1.

**Content** Heat engine, vapour power cycles, expanders and positive displacement compressors. Heat engine cycles - Carnot cycle, air standard cycles, internal combustion engines, Rankine cycle and its modifications, modern boiler plant, steam turbines, refrigeration cycles. Characteristics of performance of engine, compressor and turbine. Gas turbine cycles, isentropic efficiency, modification to the basic cycle. Combustion, basic chemistry,
fuels, combustion equations, stoichiometric air/fuel ratio, exhaust and flue gas.

**Recommended Reading**

**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%.

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**EMT4412 HEATING AND AIR-CONDITIONING**

**Campus** Footscray Park

**Prerequisite(s)**

**Content**

**Recommended Reading**

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

**Assessment**
- Assignments, 65%; examination, 35%.

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**EMT4421 AUTOMOTIVE ENGINEERING**

**Campus** Footscray Park

**Prerequisite(s)**

**Content**

**Recommended Reading**

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

**Assessment**
- Assignments, 65%; examination, 35%.

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**EMT4782 HEATING AND AIR-CONDITIONING**

**Campus** Footscray Park

**Prerequisite(s)**

**Content**

**Recommended Reading**

**Class Contact** Three hours per week for one semester based on two hours of lecture and one hour 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%

EMU4401 TRANSPORTATION DYNAMICS

Campus: Footscray Park
Prerequisite(s): Nil


Required Reading To be advised by lecturer.


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

Assessment: Assignments and laboratory reports, 70%; Examination, 30%

EMU4402 DESIGN AND TESTING OF CONTAINERS

Campus: Footscray Park
Prerequisite(s): EMU4401 Transportation Dynamics


Required Reading To be advised by lecturer.


Class Contact: Three hours per week for one semester comprising two hours of lectures and one hour of tutorial plus one hour extra for laboratories as required.
EMV3120 DYNAMICS 3
Campus Footscray Park
Prerequisite(s) Dynamics 2
Content Systems with single degree-of-freedom, free vibration, harmonic vibration, systems with multi-degree-of-freedom, matrix methods, determination of natural frequencies and mode shapes of dynamic structures, vibration measurement, vibration of elastic bodies, vibration control.
Required Reading To be advised by lecturer.
Class Contact Three hours per week for one semester comprising two hours of lectures and one hour of tutorial plus one hour extra for laboratories as required.
Assessment Class tests and assignments, 40%; semester examination, 60%.

EMV3210 DYNAMICS B
Campus Footscray Park
Prerequisite(s) EMV2212 Dynamics A.
Required Reading To be advised by lecturer.
Class Contact Three hours per week for two semesters based on two hours lecture and one hour laboratory/tutorial session.
Assessment Tests and assignments, 40%; laboratory exercises, 40%; examination at the end of each semester, 60%.

EMV3771 DYNAMICS 2
Campus Footscray Park
Prerequisite(s) Dynamics 1
Content Plane motion of rigid bodies – Introduction, absolute motion, relative motion, instantaneous centre of zero velocity, relative acceleration, motion relative to rotating axes. Kinetics of plane motion of rigid bodies – General equations of motion. translation, fixed axis of rotation, work and energy, impulse and momentum. Introduction of three dimensional dynamics of rigid bodies; translation, fixed axis rotation, rotation about a fixed point, general motion, angular momentum, kinematic energy, momentum and energy equations, gyroscopes.
Required Reading Current available text book – Student to be advised.
Class Contact Three hours per week for one semester based on two hours lecture and one hour tutorial plus one hour extra for laboratories as required.
Assessment Assignments and class tests, 40%; end of semester examination, 60%.

EMV3772 DYNAMICS 3
Campus Footscray Park
Prerequisite(s) Dynamics 2
Content Systems with single degree of freedom, free vibration, harmonic vibration, systems with multi degree of freedom, matrix methods, determination of natural frequencies and mode shapes of dynamic structures, vibration measurement, vibration of elastic bodies, vibration control.
Required Reading Current available text book – Student to be advised.
Class Contact Three hours per week for one semester based on two hours lecture and one hour tutorial plus one hour extra for laboratories as required.
Assessment Assignments and class tests, 40%; end of semester examination, 60%.

EMV4410 DYNAMICS OF SYSTEMS
Campus Footscray Park
Prerequisite(s) EMV3210 Dynamics B. EMC3111, Engineering Computation.
Content Semester one: System equations and terminology; transfer functions; block diagrams and their applications to systems; time and frequency response of first and second order systems; Bode plots; root locus construction; Stability. Semester two: Open loop feedback and feedforward control; on-off control; closed loop compensation; PID control; Frequency compensation design; pole placement design.
Required Reading To be advised by lecturer.
Class Contact Three hours per week for two semesters based on two hours lecture and one hour tutorial/laboratory session.
Assessment Tests, assignments and laboratory exercises, 40%; examination at the end of semester, 60%.

EMV4441 VIBRATION AND MODAL ANALYSIS
Campus Footscray Park
Prerequisite(s) EMV3210 Dynamics B; EMY3712 Measurement and Signal Analysis.
Content Philosophy of modal analysis; fundamentals of modal analysis; modal analysis in modern industries; theoretical basis of modal analysis; frequency response function measurement; modal analysis identification methods; applications of modal analysis; use of modal analysis software packages.
Required Reading: He, J. et al, 1997, Theoretical and Experimental Modal Analysis, Research Studies Press, UK, and John Wiley and Sons Inc, USA


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

Assessment: Assignments, tests and laboratory work, 40%; examination at the end of semester, 60%.

EMV472 DYNAMICS OF SYSTEMS

Campus: Footscray Park

Prerequisite(s): EMV3772 Dynamics 3


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

Assessment: Assignments and class tests, 30%; end of semester examination, 70%.

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.


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

Assessment: Assignments and class tests, 50%; end of semester examination, 50%.

EMV4872 TRANSPORTATION AND PACKAGING DYNAMICS

Campus: Footscray Park

Prerequisite(s): Measurement and Signal Analysis EMY3712, Dynamics 3 EMV3772


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

Class Contact: Three hours per week for one semester comprising of an hourly lecture and a two hourly tutorial/laboratory
**EMW4402 COMPOSITE MATERIALS**

**Campus**: Footscray Park  
**Prerequisite(s)**: EMW3110 Engineering Materials; EMS3210 Stress Analysis  
**Required Reading**: To be advised by lecturer.  
**Class Contact**: Three hours per week for one semester based on two hours of lectures and one hour tutorial/laboratory session.  
**Assessment**: Assignments, tests, 40%; examination, 60%.

**EMW4861 MATERIALS IN MANUFACTURING**

**Campus**: Footscray Park  
**Prerequisite(s)**: Second and third year Materials and Thermodynamics  
**Content**: Review of solidification processes and their application to casting of metals and plastics. Diffusion in solid matter and its application in mathematical analysis in micro-alloying and surface treatments of metals. Thermo-mechanical processes in metals; introduction to mechanical shaping and thermo-mechanical heat treatments. Structure-property relationships in non-Ferrous alloys; and application of these alloys in product design and materials replacement. Introduction to glass and ceramic engineering and the role of powder metallurgy. Introduction to structure-property relationships of polymer and their selection as packaging materials. Discussion of manufacturing processes in polymer industry.  
**Recommended Reading**: Kraljakian, S., 1996, Manufacturing Engineering and Technology, Addison - Wesley. Trade Journal and Research Articles as prescribed in the lecture course  
**Class Contact**: Three hours per week for one semester comprising two hours of lectures and one hour of tutorial  
**Assessment**: Class tests and assignments, 40%; end of semester examination, 60%.

**EMY3410 COST ENGINEERING**

**Campus**: Footscray Park  
**Prerequisite(s)**: EMD2310 Mechanical Design A.  
**Content**: Semester one: Project engineering: plant layout, project planning, economic viability, cost evaluation, specification writing and tendering, estimating. Semester two: Time value of money and interest relationships. Methods of making economic studies; use of internal rate of return and present value concepts in making selection. Impact of inflation, taxation and depreciation on rate of return. The influence of the following factors on cost: purchasing, production, distribution, research and development, maintenance, control of personnel.  
**Required Reading**: To be advised by lecturer.  
**Class Contact**: Three hours per week for two semesters based on one hour lecture and two hours tutorial/laboratory session.  
**Assessment**: Tests, assignments and laboratory exercises, 50%; examination at end of second semester, 50%.

**EMY3712 MEASUREMENT AND SIGNAL ANALYSIS**

**Campus**: Footscray Park  
**Prerequisite(s)**: Engineering Computations 1.  
**Required Reading**: Printed course materials and class handouts.  
**Class Contact**: Four hours per week for one semester based on two hour lectures and two hour laboratory/tutorial sessions.  
**Assessment**: Assignments, tests and laboratory work, 40%; examination, 60%.

**EMY4410 PROJECT**

**Campus**: Footscray Park  
**Prerequisite(s)**: Completion of Year 3.  
**Content**: The subject content requires each student to carry out and report on a preliminary investigation of an engineering related problem incorporating a literature review, a critical analysis of the problem, and a proposed solution. The student is expected to work in collaboration with technical support staff and fellow students and may be required to work, construct and test prototypes of the proposed solution, and report and appraisal of the entire project.  
**Required Reading**: To be advised by supervisor.  
**Class Contact**: Three hours per week for two semesters.  
**Assessment**: Major report, 80%; Progress report, 10%; Oral presentation, 10%.
EMY441I COMPUTATIONAL MECHANICS
Campus: Footscray Park
Prerequisite(s): EMS3210 Stress Analysis.
Required Reading: Danh Tran, "Finite Element Analysis, lecture notes."
Class Contact: Three hours per week for one semester based on two hours of lecture and one hour tutorial/laboratory session.
Assessment: Assignments, 30%; three hour open book examination, solving engineering problem by Finite Element Software, 70%.

EMY 4412 ENERGY AND ENVIRONMENT
Campus: Footscray Park
Prerequisite(s): EMT3211 Thermodynamics B; EMF3212 Fluid Mechanics B; EMV3210 Dynamics B; EMY3712 Measurement and Signal Analysis.
Required Reading: To be advised by lecturer.
Class Contact: Three hours per week for one semester based on two hours of lecture and one hour tutorial/laboratory session.
Assessment: Assignments, tests, and laboratory work, 40%; examination, 60%.

EMY 471I SUSTAINABILITY
Campus: Footscray Park
Prerequisite(s): Measurement and Signal Analysis EMY3712, Thermodynamics 2, EMT3781.
Required Reading: "Component Design, John Wiley."
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, 30%; End of Semester Examination 70%.

ENC 2812 COMPUTING FOR ENGINEERS
Campus: Footscray Park
Prerequisite(s): Nil
Class Contact: Three hours per week for one semester based on one hour of lecture and two hours laboratory/tutorial.
Assessment: Class tests, 80%; Assignments and laboratory work, 20%.

ENC 2812 ENGINEERING COMPUTATIONS I
Campus: Footscray Park
Prerequisite(s): Engineering Mathematics
Content: Numerical solutions of engineering problems such as transient heat flow, dynamic systems, vibration and impacts using the following techniques: Newton-Raphson method of solving non-linear equations, Numerical differentiation and integration, Numerical solution of ODEs, Numerical solution of simple PDEs, Linear programming. Eigen value solutions. Use of relevant computer software.
Class Contact: Three hours per week for one semester comprising an hourly lecture and two hourly tutorial/laboratory.
Assessment: Assignments and tests, 40%; end of semester examination, 60%.

END 2832 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.

END 2831 INTRODUCTION TO DESIGN
Campus: Footscray Park
Prerequisite(s): END 1832
Content: The approach to engineering design. Understanding the problem. Strategies and methods in the design process. Working in design teams. Specifications. Static and fatigue failure. CAD and solid modelling. Consequences of the design outcome. Students will be given a number of engineering problems drawn from architectural, civil and mechanical engineering and will
prepare and document appropriate design solutions to each problem including impacts and costs.

**Required Reading** Current available text book – student to be advised.

**Recommended Reading**


**Class Contact** Three hours per week for one semester consisting of one lecture per week and two hours of tutorials and design sessions.

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

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### END2832 ENGINEERING DESIGN

**Campus** Footscray Park

**Prerequisite(s)** END2381

**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.

**Required Reading**


**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 I

**Campus** Footscray Park

**Prerequisite(s)** SPH1102, SMA1202

**Content**
Review of fundamentals of fluids. Fluid statics - Forces on submerged bodies; 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.

**Recommended Reading**

- *Longmans.

**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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### ENM1851 ENGINEERING IN SOCIETY

**Campus** Footscray Park

**Prerequisite(s)** Nil

**Content**
The changing role of engineering and science including the history of engineering and contributions of engineers and scientists to society. The need for creativity, leadership and the consideration of aesthetics. Role of professional societies and ethics. Influence of scientists and engineers on environmental issues. Politics, power and decision making and an introduction to the role of engineering in industry and business. The concept and significance of sustainability in engineering and business. Approaches to conservation and sustainable development. Consideration of the interrelationship between engineering, population and the environment, including case studies on a range of infrastructure development issues. The definition of ethics and its application to engineering. Analysis of case studies relating to engineering issues and design and development.

**Required Reading**


**Class Contact** Three hours per week for one semester based on lecture, tutorials, seminars and site visits.

**Assessment** Assignments, 45%; seminars, 15%, examination, 40%.

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### ENM2852 ENGINEERING MANAGEMENT 1

**Campus** Footscray Park

**Prerequisite(s)** Nil

**Content**

**Required Reading**


**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

**Content**
The role of engineering project management in the industry. Tendering process, strategies and practices. Forms of construction contracts. Contract administration phases. Cost management system for the progressive cost control of a project.
ENS2821 SOLID MECHANICS 1

Campus Footscray Park

Prerequisite(s) SPH1601 Physics IAP


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%.

ENS2822 SOLID MECHANICS 2

Campus Footscray Park

Prerequisite(s) ENS1822


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 examination, 75%.

ENT2881 THERMODYNAMICS 1

Campus Footscray Park

Prerequisite(s) SPH1602.


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

Assessment Class tests and assignments, 30%; and 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. Quantitative methods in chemistry used in processing, combustion, acid-base reactions. Introduction to electrochemistry and its significance to energy storage and corrosion of metals. Corrosion protection of metals. Manufacture processes of materials such as cements, aluminium, steel and polymers.


Class Contact
Three hours per week for one semester based on two hours of lectures and one hour tutorial.
Assessment
Class tests and assignments, 25%; end of semester examination, 75%.

ENW1862 PRINCIPLES OF MATERIALS SCIENCE 2
Campus Footscray Park
Prerequisite(s) Principles of Materials Science 1
Content
Required Reading
Recommended Reading
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.
Required Reading
Class Contact
Three hours per week for one semester.
Assessment
Class tests and assignments, 80%; laboratory report and oral presentation, 20%.

EPP1001 PHYSICS I.1
Campus Footscray Park
Prerequisite(s) Nil
Content
Required Reading
Recommended Reading
Class Contact
Six hours per week for one semester comprising of lectures, tutorials and laboratories.
Assessment
End of semester examination, 60%; tests, 20%; laboratories, 20%.

EPP1002 PHYSICS I.2
Campus Footscray Park
Prerequisite(s) EPP1001, SMA1201
Content
Required Reading
Recommended Reading
Class Contact
Six hours per week for one semester comprising of lectures, tutorials and laboratories.
Assessment
End of semester examination, 60%; tests, 20%; laboratories, 20%.

EPP2001 QUANTUM OPTICS
Campus Footscray Park
Prerequisite(s) EPP1002, SMA1201
Corequisite
SMA1202
Content
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.

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: Stimulation emission, population inversion, Einstein coefficients,
energy level diagrams, various types of lasers and their operation, mode structure, laser applications.


**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.


**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 basics 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 experiences.

**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 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** 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


**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


**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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**EPP3003 OPTICS & LASERS**

**Campus** Footscray Park

**Prerequisite(s)** EPP2001, EPP2002

broadening, gain saturation. Laser output versus input. Detailed
treatment of Ruby, Nd:glass and CW CO2 lasers. Laser
amplifiers. Optical resonators. Short pulse techniques. Tunable
applications. Laser safety and laser hazards. The interaction of
radiation with matter. Multiphoton effects. Electronic and
Nuclear Spectroscopy of crystals and molecules. Electron spin
resonance. Microwave spectroscopy. Lasers in modern
spectroscopic analysis and research.

Recommended Reading Verdeyen, J.T., 1995, Laser Electronics,
Engineering, Springer-Verlag.

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.

Recommended Reading Schiff, L.I., 1984, Quantum Mechanics,
Quantum Mechanics, Saunders.

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

Content Revision of the non-relativistic Schrödinger equation
for the hydrogen atom and its solutions. The mechanisms of
absorption and emission of light by atoms. Vector models of
atomic energy levels. Selection rules and the polarisation of light.
Spectroscopic notation. Spectra of single electron atoms. Spectra
of multi electron atoms. Effect of external fields on atomic
states: Stark and Zeeman splitting and the Hanle effect.
Spectroscopic techniques: fluorescence spectroscopy, laser
spectroscopy, saturated absorption, two photon absorption.
Introduction to applications such as the atomic clock, atomic
absorption spectrophotometry and laser cooling of atoms.

Recommended Reading Hertzberg, G., Atomic Spectra and
Spectroscopy, OUP, Oxford.

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; samples.
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.

Recommended Reading Born, M. and Wolf, E., 1989, Principles
of Laser Science and technology Vol IV, Optical Materials: Part 2, CRC
Marcel Dekker Inc. Melles Griot Catalogue, 1998, Optics Guide,
dbn, Springer-Verlag.

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

**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.
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.

ETC1112 PROGRAMMING FOR TECHNOLOGY 2

Campus: Footscray Park
Prerequisite(s): ETC1111


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.

JCB0000 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; Prokaryotic 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 content: 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%.
### JCM0110 CHEMISTRY

**Campus** Footscray Park  
**Prerequisite(s)** Nil  
**Content** The aim of this subject is to provide students with an adequate basis for degree level subjects. Areas of study include: Atomic theory; The periodic table; Properties of atoms and their ions; Chemical bonding; Chemical reactions and stoichiometry; energy; Organic chemistry; Equilibria; Kinetics; Solution chemistry; Forensic chemistry; A selection of industrial processes from thermal polymer, pharmaceutical / organic and food industries.  
**Class content** Five hours per week for two semesters, including two hours of laboratory time per week.  
**Assessment** Semester one examination, 30%; Class and practical work, 40%; Semester two examination, 30%.

### JCL0110 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%.

### 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; Telecommunications, local and wide area networks; Computer architecture – Basic computer model (e.g. CPU, memory, I/O); Basic data representation : number vs. characters, ascii, unix; Social, ethical and professional context – impact of technology on today's society; Ethics in an electronic community; Team solution of problems; Computer applications - computer-aided design / manufacture; computer speech, music synthesis and art; Database systems; Electronic mail and bulletin boards; Multimedia presentation graphics; software engineering (e.g. system development, software development cycle, modelling and diagramming).  
**Class content** Three hours per week for two semesters  
**Assessment** Semester one examination, 25%; Class and practical work, 50%; Semester two examination, 25%.

### JCM0110 MATHEMATICS

**Campus** Footscray Park  
**Prerequisite(s)** Year 11 Mathematics or equivalent  
**Content** Semester one - Algebra and graphic sketching; polynomial and other algebraic functions, expansion and factorisation; Factor theorem and algebraic division; Equation solving - linear quadratic and general polynomial; Simultaneous equations; Factorial notation; Binomial theorem for positive integer indices; Graphic sketching - general polynomial functions, straight lines, parabolas, circles, ellipses, hyperbolas and rational functions; Exponential and logarithmic functions; Revision of basic trigonometry; Trigonometric functions, identities and graphs; Solution of simple trigonometric equations.  
Semester two - Introductory calculus; Limits and continuity; Differentiation from first principles; Derivatives of algebraic, logarithmic, exponential and trigonometric functions; Product, quotient and chain rules; Applications of differentiation : tangents and normals, maxima and minima, rates of change; Basic rules of integration : algebraic, exponential and trigonometric functions. Integration as a process of summation; Statistics : mean, median and mode, histograms, cumulative frequency polygons, linear regression; Complex numbers : Cartesian form and operations; Vectors : two-dimensional Cartesian form, operations, graphical representation, dot product.  
**Class content** Three hours per week for two semesters  
**Assessment** Semester one examination, 20%; Class tests and assignments, 60%; Semester two examination, 20%.

### JPS0100 PHYSICS

**Campus** Footscray Park  
**Prerequisite(s)** Year 11 Mathematics or equivalent  
**Content** Sound - Wave nature of sound, intensity and sound level, standing waves, production, transmission, absorption and detection of sound; Electricity and magnetism - Electric and magnetic fields, forces on charges and currents in those fields, D.C. current, voltage and resistance, Electric power - Generation and transmission; Electronics - voltage dividers, amplifiers, logic gates; Kinematics and mechanics - displacement, velocity and acceleration in two dimensions, projectile motion, friction, momentum, energy and collisions, circular motion and gravity; Light - refraction, diffraction, interference; Modern physics - Quantum interpretation of light, wave-like nature of photons, electrons and matter in general, Relativity.  
**Class 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%.

### SBF0111 INTRODUCTORY MANAGEMENT SKILLS

**Campus** Werribee  
**Prerequisite(s)** Nil  
**Content** The aim of this subject is to develop or improve personal skills and individuals to assist them to operate as effective managers in the modern Australian meat industry. Personal aspects covered include self awareness and life plans; analysis and management of stress, personal health and fitness and time management. A communications skills program will cover communications theory, problem solving writing, report planning, organisational communication and giving presentation skills. Skills in computing will be developed to include an understanding of PC operations, software packages, with an emphasis on Microsoft Word and Excel, OH & S topics.  
**Required Reading** To be advised by lecturer.  
**Class Contact** Twelve hours per week for a five week period comprising workshops, seminars, lectures and practicals.  
**Assessment** There is no formal examination. Performance will be assessed on assignments, report presentations, demonstration of computing skills, class participation and examinations, 50%.
SBF022 THE AUSTRALIAN MEAT INDUSTRY

Campus Werribee

Prerequisite(s) Nil

Content The aim of this subject is to provide students with a working knowledge of the Australian Meat Industry in terms of an organisational structure, supply of raw material, processing capability and participation in various markets. Topics will cover three main areas. Firstly, the production of meat animals in Australia, farm management techniques, variations according to location, feed production, breed and species. Aspects of yield and quality of production is included. Secondly, the nature and structure of markets for various products locally and overseas will be examined and thirdly, the size, location, diversity and ownership of the processing sector will be covered with overseas competitors. This section also includes a coverage of the main organisations servicing the Australian Meat Industry.


Class Contact Twelve hours per week for a five week period comprising lectures, seminars and a field visit.

Assessment Assignments, case studies, 40%; reports, 20%; examination 40%.

SBF0213 MANAGEMENT OF EMPLOYEES

Campus Werribee

Prerequisite(s) SBF0111 Introductory Management Skills.

Content This subject is an introduction to the task of managing people on the job. It focuses on an understanding of the industrial environment and the best way of maximising performance in an acceptable and harmonious way. Topics covered include organisation, structure and development. Job analysis, position descriptions, recruitment, selection and induction of staff; performance planning and appraisal; leadership styles and interpersonal skills; participative management and conducting meetings; awards, unions and industrial relations. Advanced Computing covering the use of Powerpoint, databases, the internet and introduction to processing related software.

Required Reading To be advised by the lecturer.

Class Contact Eight to ten hours per week of lectures, case studies, workshops and laboratory work over a five week period.

Assessment Assignments, 30%; presentations, 20%; competency tests, 20%; final examination, 30%.

SBF1100 INDUSTRY PROJECT

Campus Werribee

Prerequisite(s) Year 1 of the Diploma of Meat Management.

Content The aim of this project is to provide an opportunity for students to apply some of the knowledge and skills learnt in the first year of the course to work-based situations. This is the first in a series of three projects which will be done in between years of the course. The first project will cover the organisation and structure of the company and its business interest; personnel and job profiles; meat supply and processing operations; products and markets etc.

Required Reading Not applicable.

Class Contact Fifteen hours on introduction, consultation and presentation of 1500-word report.

Assessment Report, 75%; oral presentation, 25%.

SBF1111 INTRODUCTORY MEAT TECHNOLOGY

Campus Werribee

Prerequisite(s) Nil.

Content The aim of this subject is to provide an understanding of the basic sciences which explain the nature of meat and meat products and changes which take place during the production, processing and storage phases. Topics covered will be drawn from three main areas Basic Science: The nature and structure of chemical substances; chemical reactions of solids, liquids, gases; acids bases (alkalis), salts; proteins; carbohydrates (sugars) fats and alcohols; water supplies and chlorination; chemical nature of odours, smells. Laboratory exercises on the above including analyses on meat, meat products and chemicals used in meatworks. Microbiology: Nature and structure of bacteria, yeasts/moulds, and viruses; growth, reproduction and counting of micro-organisms, nutritional requirements and control of micro-organisms; groups of micro-organisms important to the meat industry; introduction to food and water-borne pathogens. Animal Biology: Classification of animals, structure of meat animals; components of animal foodstuffs; intake of food and factors affecting quantity and growth rate; the structure and functioning of the digestive system, muscles and bones; the nature and significance of fat and skin tissue; reproductive system; coordination of body functions; respiratory and cardiovascular (blood) system; metabolic processes in meat animals.


Class Contact For Microbiology and Animal Biology four hours of lectures plus six hours practical for each section weekly for a five week period. Basic Science will be four hours of lectures plus six hours of practical per week for the same period.

Assessment Assignments, 40%; practical reports, 20%; final examination, 40%.

SBF1120 MEATWORKS ENGINEERING SERVICES

Campus Werribee

Prerequisite(s) Nil.

Content Services and operations which relate to the engineering department of a meat processing works have a major influence either directly or indirectly on unit costs of production. This subject provides an introduction to basic engineering principles to help students interface better with professional engineers. It will also form the basis for further studies in meat processing unit operations and plant design and construction. The importance of knowing the extent and limitations of the engineering function so as to make use of it in the field. Topics covered will include physical properties, practical applications of steam, electricity and water supply, pumping and flow measurements, machines, electrical motors, power supply, heat transfer, process flow diagrams, mass balances.

Required Reading To be advised by lecturer.

Class Contact Six hours of lectures and three hours of practicals, demonstrations, and plant visits per week for five weeks.

Assessment Assignments, 30%; practical reports, 30%; final examination, 40%.
SBF1110 INTRODUCTORY FOOD SCIENCE AND TECHNOLOGY

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 oilsseeds, dairy products, meat, poultry, fish and beverages.


Class Contact Two 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 renewables and fossil fuels/nuclear; water and soil resources - appropriate agriculture and permaculture; chemistry and sources of indoor and outdoor air pollution - the enhanced greenhouse effect and depletion of stratospheric ozone; the role of traditional economics in environmental degradation.


Class Contact Four hours per week for one semester.

Assessment Case study and assignments: 60 %; Examination: 40 %.

SBF1160 AUSTRALIAN LANDSCAPES AND BIOTA

Campus St Albans

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 of knowledge about the Australian environment even for students not continuing in the biological sciences.

Required Reading To be advised


Class Contact Four hours per week for one semester, but comprising two hours of lectures each week and a series of all-day field trips.

Assessment Field work reports: 40%; Assignments: 20%; Examination: 20%.

SBF1310 BIOLOGY 1

Campus St Albans, Werribee.

Prerequisite(s) Nil.

Content Biology of the cell. Mammalian biology with particular reference to the structure and function of various human physiological systems.

Required Reading To be advised by lecturer.

Recommended Reading To be advised by lecturer.

Class Contact Six hours per week for one semester comprising three hours of lectures and three hours of practical work.

Assessment Assignments, 10%; practical work, 40%; final examination, 50%.

SBF1320 BIOLOGY 2

Campus St Albans, Werribee.

Prerequisite(s) Nil.


Required Reading To be advised by lecturer.

Recommended Reading To be advised by lecturer.

Class Contact Six hours per week for one semester comprising three hours of lectures and three hours of practical work.

Assessment Assignments, 10%; practical work, 40%; final examination, 50%.
SBF1719 BIOCHEMISTRY 1 (OSTEOPATHY)

Campus City, St Albans

Prerequisite(s) Normal entry requirements into the Osteopathy course.

Content Revision of basic concepts in biology and chemistry (body tissues, cells and organelles; molecules and chemical bonds; pH, redox chemistry; functional groups). Introduction to biochemistry; structure and function of molecules of life (carbohydrates, proteins, lipids, nucleic acids); vitamins - dietary requirements and their role in metabolism; effects of vitamin deficiencies; energy and nutritional requirements of the body; biochemistry of the skeleton-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, glycogen metabolism, lipid metabolism. Cholesterol transport through lipoproteins, its metabolism and role in atherosclerosis will also be discussed.

Required Reading To be advised by lecturer.


Class Contact Two semesters comprising 26 hours of lectures/tutorials plus 39 hours of practicals/workshops.

Assessment Examinations (theory and practical), 50%; tutorial participation, 10%; assignments and practical reports, 40%.

SBF2110 MEAT PROCESSING

Campus Werribee

Prerequisite(s) SBF1120 Meatworks Engineering Services. Relevant Australian Meat Courses - highly desirable.

Content This subject examines the basis for good processing practices and considers current options available for this purpose. Topics covered include: general comparison of meat processing systems locally and overseas; pre-slaughter handling and operations; animal welfare, slaughter techniques, electrical stimulation; dressing operations; carcass and offal quality assessment procedures; boning room operations; packaging, chilling (carcass and cartoned meat products). An introduction to the recognition and pathogenesis of relevant diseases and parasites in livestock. Common problems in quality of output from a works standards, specifications and legislative requirements (AQIS, Aus Meat etc.).


Class Contact Eight hours per week for a five week period comprising lectures, plant visits and workshops.

Assessment Project, 40%; assignments and reports, 30%; final examination, 30%.

SBF2120 INDUSTRY PROJECT

Campus Werribee

Prerequisite(s) Year 2 of the Diploma of Meat Management.

Content The project undertaken by the student will cover a detailed study of an existing situation or aspect of the company's operations; development and conduct of a new program; waste management project.

Required Reading Not applicable.

Class Contact Fifteen hours on introduction, consultation and presentation of a 1500-2500 word report.

Assessment Report, 75%; oral presentation, 25%.

SBF2121 PRINCIPLES OF MEAT SCIENCE

Campus Werribee

Prerequisite(s) SBF1111 Introductory Meat Technology.

Content Meat science is a study of the physical and chemical changes occurring in meat resulting from slaughter and post mortem conditions. Topics covered are elementary chemistry and structure of protein, fats, collagen, enzymes etc. found in meat; structure of meat relative to contraction, rigor mortis, condition and tenderness; effects of pre-slaughter stress, chilling and freezing; chemistry of cured meats; biochemical by-products (gelatine, cholic acid, enzymes, hormones etc.), preservation techniques; meat colour; packaging of meat in different atmospheres; nutritional aspects of meat.


Class Contact Nine hours per week of lectures, practical and plant visits over a five week period.

Assessment Assignments, 30%; reports, 20%; final examination, 50%.

SBF2130 MEATWORKS PLANT OPERATIONS

Campus Werribee

Prerequisite(s) SBF1120 Meatworks Engineering Services.

Content A comprehensive study of the efficient use and operating principles of different types of equipment used in meatworks, including monitoring services and energy conservation strategies. Refrigeration and freezing principles and plant; criteria for system selection: capacity, prediction of practical cooling rates and costs; product-plant interactions related to quality and efficiency. Mechanically aided meat operations. Rendering plant unit operations; waste control and effluent treatment systems, felmongery, legislative requirements. Equipment selection and safety considerations.

Required Reading To be advised by lecturer.

Class Contact Ten hours per week for five weeks comprising lectures, practicals, demonstrations and plant visits.

Assessment Assignments, 30%; practicals and reports, 30%; final examination, 40%.

SBF2182 APPLIED MICROBIOLOGY

Campus Footscray Park

Prerequisite(s) SBM1570 Biology 1.

Content The aim of this subject is to provide an overview of the structure and characteristics of microorganisms. To study growth of microorganisms in culture, metabolism and function. To investigate application of microorganisms in industry and biological waste treatment. Mutagens, genetic and strain improvement.


Class Contact Two hours of lecture and three hours of practical work per week for one semester.

Assessment Based upon short tests, practical reports and an end-of-semester examination.
### SBF2210 FOOD INTERACTIONS

**Campus** Werribee  
**Prerequisite(s)** SBF2410 Food Components  
**Content** The aim of this subject is to provide an integrated study of food components, their interactions and the manipulation of these to enhance texture and other food attributes which influence consumer acceptance of products. Topics covered include changes occurring during food processing; food additives; processing aids; oxidative deterioration and rancidity, anti-oxidants, colour measurement, pigments; browning reactions; natural and synthetic colourants 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%.

### SBF2230 MEAT (BIOLOGICAL) QUALITY

**Campus** Werribee  
**Prerequisite(s)** SBF1111 Introductory Meat Technology.  
**Content** This subject concentrates on factors affecting the microbiological quality of meat, and considers the sources of pathogens and contamination of public health significance. An introduction to the recognition of relevant meat safety aspects; microbial contamination of meats and sources; microbiological examination of meat, line surveys; food-borne diseases related to meat and meat products; control mechanisms and the effect of chilling/ freezing; microbiology of cured meats and by-products; sampling schemes. Cleaning and sanitation; personal hygiene.  
**Required Reading** To be advised by lecturer.  
**Class Contact** Fifteen hours per week of lectures, practicals and demonstrations for a three-week period.  
**Assessment** Assignments, 30%; practicals, 30%; final examination, 40%.

### SBF2300 MICROBIOLOGY 1

**Campus** Werribee.  
**Prerequisite(s)** SBF1310 Biology 1.  
**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 micro-organisms. 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%.

### SBF2311 ECOSYSTEMS

**Campus** Werribee  
**Prerequisite(s)** SBF1110 Biology 1, SBF1310 Ecology 1.  
**Content** History of ecology and systems theory. Evolutionary theory in ecology including speciation, co-evolution, and kin and group selection. Population biology, including demographics and interactions between individuals (e.g. competition, predation, mutualism and parasitism). Habitat and niche. Community ecology (synecology), including succession and individualistic
models, and the definition, origins and maintenance of diversity. Ecosystem structure and function, trophic levels and biogeochemical cycles. Biomes and major life forms. Palaeoecology.


**Class Contact** Five hours per week for one semester; comprising two hours of lectures, one hour of tutorial and two hours of practical, including field excursions.

**Assessment** Field studies and practicals, 40%; examination, 60%.

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**SBF2330 CELL BIOLOGY**

**Campus** St Albans, Werribee.

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

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**SBF2364 CONSERVATION BIOLOGY**

**Campus** St Albans

**Prerequisite(s)** SBF1310 Biology 1, SBF1320 Biology 2, SBF2331 Ecosystems, or at the discretion of the subject coordinator.

**Content** Biodiversity definitions and status - Australian and world-wide, measurements of biodiversity presence, density, abundance, plants - practical methods of assessment including sampling and statistics, animals - practical methods of assessment including statistics, community assessment - diversity, complexity patchiness, other methods - biotech., indicator species, rapid assessment, interpretation of assessments, reliability of data, levels of significance and protective legislation, conservation of biodiversity; PHVA's action statements, historical biogeography, current biodiversity status and trends in Australia and overseas community perceptions of biodiversity, impacts on biodiversity including social and economic factors; use of biodiversity; approaches to conserving biodiversity.

**Required Reading** Class handouts and tutorial reading sheets.


**Class Contact** Five hours per week for one semester; comprising three hours of lectures and two hours of practical work. A number of practical sessions will be organised into more extended field excursions.

**Assessment** Practical work, 50%; examination, 50%.

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**SBF2372 ETHOLOGY**

**Campus** St Albans

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


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

**Class Contact** Four hours of lectures/tutorials per week for one semester.

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

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**SBF2390 MOLECULAR GENETICS**

**Campus** Werribee

**Prerequisites** SBF2320 Biochemistry I; SBF2330 Cell Biology.

**Content** Introduction to developments at the forefront of molecular biology of gene structure and function and molecular genetics. The subject will build on material covered in Biochemistry I 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 telomerases, methylation and imprinting of DNA, mutations and repair mechanisms, regulation of gene expression, specialised genetic systems including genes in early development, genes responsive to hormones and heat shock.

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

**Class Contact** Four hours per week, comprising three hours of lectures and one hour tutorial, for one semester.

**Assessment** Assignment work, 40%; examination, 60%.

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**SBF2410 FOOD COMPONENTS**

**Campus** Werribee

**Prerequisite(s)** SCS1003 Chemistry 1E

**Content** The aim of this subject is to provide an integrated study of food components as a basis for further studies in nutrition and food processing. Topics covered include: food composition and classification of constituents; water in foods; structure, chemistry, stability and functional properties of proteins, carbohydrates, fats and oils, vitamins and minerals. Function of nutrients, proximate analysis of foods; the use of food composition tables.


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

**Assessment** Assignments, 40%; final examination, 60%.
SBF2452 ENVIRONMENTAL BIOLOGY

Campus St Albans

Prerequisite(s) SBF1320 Biology 2, SBF2311 Ecosystems, SBF1342 Biological Diversity or at the discretion of the subject co-ordinator.

Content Ecophysiology and environmental biology of plants and animals (autoecology) with an emphasis on Australian ecosystems. Character and adaptations of Australian plants and animals in rainforests, sclerophyllous forests, woodlands, shrublands, grasslands, deserts, alpine and freshwater ecosystems, including soil infertility and fire. Environmental history of global change. Impact of human activities on ecosystems, including agriculture, the biodiversity crisis, endangered species, introduced species, and green house effect.


Class Contact Five hours per week for one semester comprising two hours of lectures, one hour of tutorial and two hours of practical, including field excursions.

Assessment Field studies (including overnight camp) and practicals, 40%; examination, 60%.

SBF2460 ANIMAL BIOLOGY

Offered only from 2001

Campus St Albans

Prerequisite(s) SBF1310 Biology 1, SBF1320 Biology 2.

Content What is an animal? Origin of animal diversity: classification and evolutionary history. The major groups of invertebrates and vertebrates, including their structure, physiology, behaviour, ecology and developmental biology, with an emphasis on Australian examples. Basic laboratory techniques in animal biology.


Recommended Reading As advised by the lecturer.

Class Contact Five hours per week for one semester, comprising three hours of lectures and two hours of practical.

Assessment Assignments, 20%; practicals, 30%; final examination, 50%.

SBF2470 PLANT BIOLOGY

Offered only from 2001

Campus St Albans

Prerequisite(s) SBF1310 Biology 1, SBF1320 Biology 2.

Content Introduction to plant physiology and anatomy, including photosynthesis, gas exchange, nutrition, xylem and phloem function, stomatal function, primary and secondary growth, meristems, hormone function and action, and cell differentiation in plant tissues. Diversity of plant life and systematic botany, including classification and phylogeny of plants, taxonomy and biological nomenclature. The major groups of algae, bryophytes, simple vascular plants, ferns, gymnosperms, and angiosperms, including their basic biology, morphological characteristics, reproduction, and evolution with an emphasis on Australian examples. The use of traditional identification keys and computer-aided identification. Morphological versus molecular characteristics in systematics.


Recommended Reading As advised by the lecturer.

Class Contact Five hours per week for one semester, comprising three hours of lectures and two hours of practical.

Assessment Herbarium assignment, 20%; practicals, 30%; final examination, 50%.

SBF2520 BIOCHEMISTRY 1

Campus St Albans, Werribee.

Prerequisite(s) SBF1310 Biology 1; SCS1003 Chemistry 1E or equivalent.

Content This subject aims to provide a general introduction to biochemistry and includes: structure and functions of carbohydrates, lipids, proteins and nucleic acids. Biological membranes. Enzymes kinetics and regulatory enzymes. Metabolism: bioenergetics, glycolysis, citric acid cycle, chemiosmosis, gluconeogenesis, amino acid metabolism, fatty acid metabolism, photosynthesis. D.N.A: structure, replication, expression, and basic gene cloning.

Required Reading To be advised by lecturer.

Class Contact Seven hours per week, comprising three hours of lectures, three hours of laboratory, and one hour of tutorial work for one semester.

Assessment Practical work, 30%; final examination, 60%; assignment/test, 10%.

SBF2530 BIOCHEMISTRY 2

Campus Werribee

Prerequisite(s) SBF2520 Biochemistry 1.

Content The aim of this subject is to expand on material covered in Biochemistry 1, and complement the Molecular Cell Biology and Microbiology subjects. Along with Biochemistry 1, this subject will provide a solid foundation in biochemical principles, reactions and applications. Topics covered include bioenergetics, the pentose phosphate pathway, amino acid and nucleotide metabolism, photosynthesis, aspects of plant metabolism and biochemistry of neurotransmitters. Other topics covered will include the structure and function of biological molecules, ligand binding and conformational changes, mechanisms of enzyme action, advanced enzyme kinetics, regulation of biochemical systems such as hormonal and transcriptional control. Applied aspects of biochemistry will also be considered.

Required Reading To be advised by lecturer.

Class Contact Seven hours per week, comprising three hours of lectures, three hours of laboratory work and one hour tutorial for one semester.

Assessment Tutorials and assignments, 25%; practical work (including test), 30%; final examination 45%.

SBF2610 FUNDAMENTALS OF ECOLOGY

Campus St. Albans (this subject will first run in 2004)

Prerequisites SBF1310 Biology 1, SBF 1320 Biology 2

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, geochemical cycles, global patterns & processes; World biogeography & biomes; Palaeoecology


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 ANIMALS

Campus  St. Albans (this subject will first run in 2004)

Prerequisites  SBF 1310 Biology 1, SBF 1320 Biology 2

Content  Diversity of animal life, with an emphasis on the Australian fauna; the science of systematics, including cladistic analysis; 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.


Class Contact  Four hours per week for one semester, comprising two hours of lectures and two hours of practical workshops.

Assessment  Practical: 50%; Examination: 50%.

SBF2630 COMMUNITY AND ENVIRONMENT

Campus  St. Albans (this subject will first run in 2004)

Prerequisites  Nil

Content  Exploration of the various socially-based conceptual frameworks for understanding the range of environmental viewpoints in the community, and the consequences of these frameworks for practical environmental protection and repair. Practical experience in working with a wide range of community representatives on environmental protection and repair projects. Practical skills development in how to communicate with community groups and individuals, including clear, simple explanations, active and reflective listening, negotiating, consulting and drawing up and presenting project proposals. Insights into the range of skills and experience required to gain employment in environmental management fields, and the range of employment available.

Required Reading  To be advised


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 PLANTS

Campus  St. Albans (this subject will first run in 2004)

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.


Class Contact  Four hours per week for one semester, comprising two hours of lectures and two hours of practicals.

Assessment  Practical assignments: 60%; examination: 40%.

SBF2739 BIOCHEMISTRY 2 (OSTEOPATHY)

Campus  City, St Albans

Prerequisite(s)  SBF1719 Biochemistry 1 or equivalent

Content  Further extension of the biochemical pathways looked at in Biochemistry 1: pentose phosphate pathway; amino acid metabolism, nucleotide metabolism and the urea cycle; regulatory points, interconnections and flow of intermediates between various pathways; enzyme kinetics; neurotransmitters metabolism and action; DNA replication; transcription, protein synthesis and processing, hormonal regulation and mechanisms; biochemical pathology; biochemical basis of pain, arthritis and diseases such as PKU, Parkinson’s Disease, 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 PRINCIPLES OF FOOD PRESERVATION

Campus Werribee

Prerequisite(s) SBF1130 Introductory Food Science and Technology


Required Reading To be advised by lecturer.


Class Contact Four hours per week comprising lectures/ tutorials for one semester.

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

SBF2922 SCIENCE AND SOCIETY

Campus St Albans, Werribee.

Prerequisite(s) Nil.

Content The subject aims to encourage students to appreciate modern scientific culture as an historically unique phenomenon, and thus to enable them to analyse specific developments and events in modern society. The subject looks at the failure of philosophical attempts to establish a scientific method, and explores the view that science is fantastically creative rather than ‘dull-but-honest’. Two case-studies are used: the development of Darwinism, and the transition from Newton’s theory of gravitation to Einstein’s theory of general relativity. The development of modern scientific culture is analysed in the following case studies in particular: China and Japan’s divergent responses to confrontation with Western culture, technological developments in Nazi Germany and Stalinist Russia, the structure and funding of American basic research, and the development of the nuclear industry. The teaching of science subject and popular perceptions of science will also be looked at.


Class Contact Four hours per week for one semester, comprising one two-hour lecture and one two-hour tutorial. Assessment Assignments, 50%; semester examination, 50%. A satisfactory assessment will require satisfactory attendance (80%) at tutorials.

SBF3120 PRODUCT AND PROCESS DEVELOPMENT

Campus Werribee

Prerequisite(s) Successful completion of Years 1 and 2 of the Diploma of Meat Management.

Content This subject looks at the value adding process for meat and meat products. It considers existing and future opportunities for new products and processes. Topics include introduction to marketing; the product development process; sensory evaluation of foods; production of smallgoods, restructured meats, cured meats; canned meats; packaging materials, systems, costs and selection criteria; meat products as ingredients for the food and pharmaceutical industries; advanced processing techniques, programmable and computer control systems; robotics (Fututech).

Required Reading To be advised by lecturer.

Class Contact Eight hours per week for ten weeks comprising lectures, practicals and projects.

Assessment Assignments, 30%; projects, 50%; progressive assessments, 20%. Selection of projects will be made by students after successful completion of Year 2, and submitted for assessment and approval prior to starting Year 3.

SBF3130 INDUSTRY PROJECT

Campus Werribee

Prerequisite(s) Year 3 of the Diploma of Meat Management.

Content This subject requires students to prepare a confidential report on a new initiative or development for the Company. Alternatively, a generic assignment which relates to the industry can be undertaken if a company based project is not available. Report to be finalised prior to graduation.

Required Reading To be advised by lecturer.

Class Contact Fifteen hours on introduction, consultation and preparation of a 1500–2000 word report.

Assessment Report, 75%; oral presentation, 25%.

SBF3131 PLANT AND PROCESS DESIGN

Campus Werribee

Prerequisite(s) SBF2130 Meatworks Plant Operations.

Content This is a project based subject involving aspects of design, construction, equipping, costing and layout for a meatworks or smallgoods operation. Topics include master planning; site selection and layout; building materials selection criteria, plant layout, equipment design and materials of construction; ventilation and air conditioning; design and construction of cold stores; corrosion in buildings and plant; cost and project management - critical path network; basic drafting, and use of computer aided design software; legislative requirements.

Required Reading SCARM, Construction of Premises for Processing Meat for Human Consumption, CSIRO...AQIS Construction Guidelines for Export Meatworks, AQIS.

Class Contact Six hours per week for ten weeks comprising lectures, plant visits, and project work.

Assessment Written project, 60%; oral presentation, 20%; assignments, 20%. A choice of project will be made following successful completion of Year 2 and submitted for approval prior to starting Year 3.

SBF3132 MANUFACTURING MANAGEMENT

Campus Werribee

Prerequisite(s) SBF2013 Management of Employees.

Content The subject provides a thorough grounding in analytical techniques and financial methods required for effective management of a manufacturing process. Topics include strategic development of companies; capital budgeting and decision making; cost analysis and control options; financial management and profit; production planning and control, logistics and distribution; data capture and management information systems; computer integrated manufacture.


Class Contact Nine hours per week for ten weeks comprising lectures, workshops and projects.
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; probiotics, probiotics, probiotic bacteria and symbiosis.
Class Contact Three hours per week comprising lectures/tutorials for one semester.
Assessment Assignments, 40%; final examination, 60%.

SBF3250 QUALITY MANAGEMENT
Campus Werribee
Prerequisite(s) Successful completion of Years 1 and 2 of the Diploma of Meat Management.
Content This subject covers the organisational and operational aspects required for implementing a total quality management program in the meat industry. Topics include quality improvement programs, role of senior management; principles of quality assurance, statistical process control; quality standards; problem solving techniques; quality costs; preparation of quality manuals, hazard analysis (HACCP); computer software for quality control.
Class Contact Six hours per week for ten weeks comprising lectures, workshops, and practical exercises.
Assessment Preparation of a quality manual, 40%; assignments and tests, 20%; final examination, 40%.

SBF3251 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: tissue and 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, algae biotechnology, quality assurance.
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
SBF3320 REHABILITATION AND RESTORATION ECOLOGY

Campus St Albans

**Prerequisite(s)** SBF2311 Ecosystems, SBF 2452 Environmental Biology, SBF3211 Microbiology

**Content** Current conservation status of bioregions and their representations in parks and reserves, principles & practices of recovery of species and communities, effects of fragmentation; ways of viewing fragmented communities, weed growth and control - problems & opportunities, freshwater & wetland communities - establishment, recovery & management, succession, three type strategists & competition theory - ways of viewing change during restoration, ecological models & strategies for managing remnant populations and communities, long-term ecological change - effects on remnant & degraded communities, purposes and limitations of restoration ecology - including insights into how ecosystems function, future of restoration ecology


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

**Assessment** Field studies and practicals, 50%; examination, 50%.

SBF3321 RENEWABLE RESOURCE MANAGEMENT

Campus St Albans

**Prerequisite(s)** SBF2311 Ecosystems

**Content** Renewable and non-renewable resources. Distributional pattern and supply of renewable resources. Agriculture and forestry management. Wildlife and rangeland management. Fisheries resources and aquaculture management. Conservation and endangered species. Remote sensing and Geographic Information Systems (GIS) and their use in renewable resources management.

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

**Class Contact** Four hours of lectures and tutorials per week for one semester and one whole day field excursion, which may be held on a weekend.

**Assessment** Assignments, 20%; final examination, 70%; excursion reports, 10%.

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** Metham, B., 1996, Food Ethics, Routledge.

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

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

SBF3331 MARINE AND FRESHWATER ECOLOGY

Campus St Albans

**Prerequisite(s)** SBF1310 Biology 1; SBF1320 Biology 2; SBF1342 Biological Diversity; SBF2311 Ecosystems or at the discretion of the Course Co-ordinator.

**Content** Physical and biological characteristics, classification and ecology of marine and freshwater systems. Classification, biology and ecology of aquatic organisms with an emphasis on community structure and the interaction between organisms/ populations/ communities and the physical environment. Dynamics of aquatic systems, food chains and the processing of organic material within such systems. Long-term effects of anthropogenic activities on aquatic systems.


**Class Contact** Six hours per week involving three hours of lectures and three hours of practical, field work will constitute a major portion of the practical component, day and/ or overnight.

**Assessment** Practicals and assignment work, 40%; examination, 60%.

SBF3332 INTRODUCTION TO MOLECULAR BIOLOGY AND BIOTECHNOLOGY

Campus Footscray Park

**Prerequisite(s)** SBF2192 Applied Microbiology; SCS2381 Biochemistry 1.

**Content** This subject will cover current knowledge about genes (what they are, how they work and how they are manipulated), and examine various techniques used to study and manipulate genes. Topics include: the function of genes, the chemical identity, structure and properties of genes, strategies used by nature or developed in the laboratory for manipulating genes and specific uses of laboratory based gene manipulation.

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

**Class Contact** Two hours of lectures per week and two hours of practicals on alternate weeks.

**Assessment** Short tests, practical reports and end-of-semester examination.
SBF3400 MICROBIAL ECOLOGY

Campus St Albans

Prerequisite(s) SBF2331 Microbiology I or equivalent.

Content Diversity of environmental microbes (viruses, bacteria, algae, fungi); Ecological interactions among microbes; Ecological interaction of microbes with 'higher' organisms; Microbiology of ecosystems; Microbiology of sustainable development: microbiology and environmental pollution, novel approaches to pest control; microbiology of wastes.


Class Contact Four hours per week.

Assessment Assessment will be ongoing via three sets of activities. Essay and literature review, 20%; Report on field excursion, 20%; three tutorial assessments 60%.

SBF3510 PREPARATIVE AND ANALYTICAL BIOCHEMISTRY

Campus Werribee

Prerequisite(s) SBF2520 Biochemistry I.

Content This subject will further develop the students' skills in modern approaches to molecular biology. Topics covered include: genomic and proteomic analysis, covering differential gene expression and bioinformatics (use of computer databases and analysis of gene and protein sequences), analytical and preparative chromatography, electrophoresis; and centrifugation, a broad range of preparative and analytical techniques including GC and HPLC; spectroscopy; qualitative and quantitative use of radioisotopes, scintillation counting, fluorography and autoradiography, use of physical biochemical techniques to determine protein structure.

Required Reading To be advised by lecturer.

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

Assessment Assignments 20%; practical work (including test), 40%; final examination 40%.

SBF3530 ENVIRONMENTAL PHILOSOPHY

Campus St Albans

Prerequisite(s) Nil.

Content Philosophy: a brief overview of Ancient, Medieval and Modern Western philosophy. Environmental Philosophy as the search for principles for guidance in conducting our lives in a practical way that is beneficial to the environment and as a spectrum of thought from Anthropocentrism to Ecocentrism. A focus on Ecocentrism, in particular what informs Deep (or Transpersonal) Ecology and the role of nature-based religions and patriarchy in the development of Ecofeminism.

Required Reading To be advised by lecturer.

Class Contact Three hours per week for one semester.

Assessment Assignments, 50%; examination, 50%.

SBF3540 LEADERSHIP AND THE ENVIRONMENT

Campus St Albans

Prerequisite(s) Nil.

Content Three phases in the history of leadership studies: the characteristics or traits of leaders from studies done in the first half of this century; the thirty years of theories of what would lead to effective leader behaviour in certain situations; the 1980’s and after when a broader picture of what might explain leader success began to develop. The current place of ethics, morals, values, feelings and power as sources of information regarding leader behaviour; Leadership as an art and as a service - as a weaving of relationships rather than an amassing of information. The strong links which exist between holistic environmentalism and emerging leadership theory. Case studies from business, government and environmental organisations of successful leaders who show evidence of wholeness, care and service for the other.

Required Reading To be advised by lecturer.

Class Contact Three hours per week.

Assessment Assignments, 50%; examination, 50%.

SBF3600 AQUATIC ECOLOGY

Campus St Albans (this subject will first run in 2005)

Prerequisites SBF 1310 Biology 1, SBF 1320 Biology 2, SBF xxxx Fundamentals of Ecology (new subject)

Content This subject provides an overview to the ecology and management of freshwater, estuarine and marine ecosystems in southern Australia. The material covered includes: ecology of upland and lowland-floodplain rivers (including impact of flow regulation and environmental water allocations); ecology of lakes and reservoirs (including algal bloom control and impacts of recreation); wetland ecology and management (including international conventions on waterbirds); seagrass, mangrove and saltmarsh ecology and management; significance of rocky shore habitats in southern Australia; estuarine ecology (with particular emphasis on Port Phillip Bay and the Gippsland Lakes) and environmental degradation and repair of aquatic systems.


Class Contact 4 hours per week, comprising 1 x 2 hr lecture, 1 x 1 hr tutorial/ directed learning and 2 x day-long field excursions.

Assessment Within-semester (on-going) assessment at Weeks 6 and 13 (60%) plus two field reports (40%).

SBF3610 BIOSTATISTICS

Campus St. Albans (this subject will first run in 2005)

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 (this subject will first run in 2005)

**Prerequisites** SBF 1310 Biology 1, SBF 1320 Biology 2, SBF xxxx Fundamentals of Ecology (new subject), or at the discretion of the subject co-ordinator.

**Content** The subject ties together, in both theoretical and practical ways, concepts and practices for maintaining biological diversity, and how these concepts and practices can be integrated with social and economic needs. The subject covers: the development of conservation theory and practice in Australia; extinction and its significance, including pathways to extinction; the meanings, levels and interpretation of concepts of biodiversity; ecological and adaptive management approaches to conservation and recovery, including design of reserves, setting priorities, off-reserve conservation and ex-situ (captive breeding, reintroduction and translocation). Practical field studies and site visits will investigate the contributions of zoos, national and state parks, friends groups, councils and shires, other government agencies and private landholders to the conservation and recovery of plant and animal species, from insects to mammals, and from mushrooms to trees. The subject will also include practical appraisals of techniques used to determine integrity of ecosystems, landscapes and overall environment, the contributions made by biodiversity to ecosystem services and integrated methods for recovery and sustainable management of species and ecosystems.


**Class Contact** Four hours per week for one semester, comprising two hours of lectures and two hours of practical.

**Assessment** Practical and assignments: 40%; exam: 60%.

**SBF3630 ENVIRONMENTAL IMPACTS AND MONITORING**

**Campus** St. Albans (this subject will first run in 2005)

**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, salination, habitat destruction, exotic species, extraction, biodiversity loss etc); The Environmental Impact Assessment process used to quantify impacts (e.g. role of consultants, the EEI process itself); Approaches to monitoring environmental degradation and recovery (e.g. sampling design, monitoring procedures, rapid assessment protocols, ANZECC guidelines); Mechanisms and approaches available to minimise impacts (reserve systems, limits of acceptable change technologies, financial tools, role of government departments). Particular emphasis is given to "hands on" experience.


**Class Contact** 4 hours per week comprising 1 x 2 hr lecture; 1 x 2 hr interactive tutorial/directed learning session (including group presentations).

**Assessment** Within semester (on-going) assessment at Weeks 6 and 13 (60 %) plus 1 case study report or project (40 %, including group presentation ).

**SBF3640 TERRESTRIAL ENVIRONMENTS AND REHABILITATION**

**Campus** St. Albans (this subject will first run in 2005)

**Prerequisites** SBF 1310 Biology 1, SBF 1320 Biology 2, SBF xxxx Fundamentals of Ecology (new subject), or at the discretion of the subject co-ordinator.

**Content** The major types of ecosystems, including forests, woodlands, grasslands, tundra and desert. The biological limits and adaptations of the organisms contained in these ecosystems and key ecological relationships between organisms. Case studies of rehabilitation of several of these ecosystems, including approaches based on understanding of biology and ecology. Practical experience in rehabilitation projects.


**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 (this subject will first run in 2005)

Prerequisites SBF3xxx Fundamentals of Ecology, SBF1310 Biology 1, SBF1320 Biology 2, Biometrics SBF3xxx, or subject coordinators discretion.

Content This subject aims to introduce students to the impact of pollutants on natural ecosystems. Topics covered include: Principles and concepts which apply to the analysis and evaluation of pollutant impacts on the natural environment. Experimental methodology employed in the evaluation of organism and ecosystem responses to pollutant exposure with special emphasis on statistical procedures which can be employed in evaluating impacts. Types of and significance of different groups of pollutants. Tolerance and susceptibility of organisms and biological systems to pollutants; pollution monitoring; biological indicators of pollution induced environmental stress; sequestering of exogenous compounds; partitioning; sources and environmental transport; uptake and depuration; case studies.

Required Reading To be advised


Class Contact Four hours per week for one semester, comprising two hours of lectures and two hours of practical. Assessment Practicals and assignments: 40 %; examination: 60 %.

SBF3660 INDIGENOUS SOCIETY AND ENVIRONMENTAL MANAGEMENT

Campus St Albans

Prerequisites Nil


Class Contact Two hours per week

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

SBF3730 FOOD MICROBIOLOGY

Campus Werribee

Prerequisite(s) SBF2300 Microbiology 1.

Content The aim of this subject is to develop and increase the student's knowledge and skills in microbiology with particular reference to the role of micro-organisms in food processing, food spoilage and food-borne disease. Topics include: characteristics of major groups of micro-organisms of importance in foods; ecology of food spoilage. Microbial growth in foods; microbial fermentation and fermented products; biomass; waste treatment; food-borne infections and food poisoning; control and prevention of food-borne disease; hygiene and sanitation; mycotoxins; legislation and standards will be covered.


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

Assessment Assignments, 15%; practical work, 25%; final examination, 60%.

SBF3731 ANIMAL FOOD PROCESSING

Campus Werribee

Prerequisite(s) SBF2410 Food Components, SBF2210 Food Interactions

Content World animal food resources: nature, distribution and production. Meat and Meat Products: muscle composition, structure and conversion to meat, post mortem glycolysis and meat quality: nutritional and sensory properties, chilling, freezing, curing and processing. Marine products: composition, structure, quality, spoilage, preservation and processing including chilling, freezing, salting, drying, smoking and fermenting. Milk and Milk
Products: composition, chemical and physical properties of milk processing of milk including butter, powdered, fermented and fractionated product manufacture, by-product utilisation. Egg and Poultry Products: structure and composition of egg, storage and preservation of eggs, egg products, poultry processing and poultry products.


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

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

**SBF3732 PLANT FOOD PROCESSING**

**Campus** Werribee

**Prerequisite(s)** SBF2410 Food Components; SBF2210 Food Interactions


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

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

**SBF3733 ANIMAL FOOD PROCESSING LABORATORY**

**Campus** Werribee

**Prerequisite(s)** SBF3731 Animal Food Processing

**Content** A program of laboratory and pilot plant exercises and industry visits designed to illustrate the principles and procedures of animal food processing and preservation and to investigate the factors that affect the quality of food during handling, processing and storage.

**Required Reading** There are no prescribed texts for this subject.

**Class Contact** Four hours per fortnight of practical work and industry visits for one semester.

**Assessment** Practical skills 20%, team involvement 10%, practical work and industry visits 70%.

**SBF3734 PLANT FOOD PROCESSING LABORATORY**

**Campus** Werribee

**Prerequisite(s)** SBF3732 Plant Food Processing

**Content** A program of laboratory and pilot plant exercises and industry visits designed to illustrate the principles and procedures of plant food processing and preservation and to investigate the factors that affect the quality of food during handling, processing and storage.

**Required Reading** There are no prescribed texts for this subject.

**Class Contact** Four hours per fortnight of practical work and industry visits for one semester.

**Assessment** Practical skills 20%, team involvement 10%, practical work and industry visits 70%.
SBF3770 BUSINESS ENVIRONMENT STUDIES

Campus Werribee
Prerequisite(s) Nil.

Content This subject aims to introduce students to some fundamental aspects of organisations and the business environment, in particular to enhance their understanding of accounting, marketing and organisational structures and behaviour. This subject covers: accounting and costing analysis and interpretation of financial statements; elements of costs; cost behaviour; cost analysis; costs and decision making; budgeting; capital budgeting. Management: types of organisations; management theories; motivation; individual, inter-personal and group dynamics; industrial relations case studies. Marketing: the marketing concept; business environment and marketing; marketing research; marketing strategies; elements of marketing mix; evaluation processes; contemporary issues and business ethics; case studies.

Required Reading To be advised by lecturer.

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

Assessment Class presentation, 10%; syndicate exercise, 20%; report, 20%; final examination, 50%.

SBF3900 PROJECT - FOOD TECHNOLOGY

Campus Werribee
Prerequisite(s) Students would normally be expected to have successfully completed all Year 1 and 2 subjects.

Content The subject aims to enable students to become competent in applying research methodology to a specific problem and to enable them to develop an area of personal interest relevant to their degree specialisation. This subject covers project methodology, 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 all or 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%.

SBF3920 BIOMETRICS AND EXPERIMENTAL DESIGN

Campus St Albans
Prerequisite(s) SMA1110 Mathematics 1, SMA1120 Mathematics 2, Core second year subjects; or at discretion of subject co-ordinator.

Content Revision of statistical concepts and the significance of statistics/biometrics in biological/environmental analysis. Trend analysis and the use of correlation and regression in developing hypotheses; distributions and the nature of biological/environmental data. Sampling regimes and units, hypothesis testing, parametric versus non-parametric testing and assumptions; post-hoc testing. Experimental design for environmental surveys and experimental programs; type-I versus type II errors, statistical power and the use of power in experimental design; BACI designs and utilisation of adequate controls in experimental procedures; true replication versus pseudoreplication. Optimisation of experimental design for a given sampling unit and variance; confounding variables. Multiple factor design for a given sampling unit and variance; confounding variables. Multiple factor designs, univariate techniques versus multivariate techniques in environmental programs.

Required Reading To be advised by the lecturer.


Class Contact Six hours per week for one semester comprising three hours lectures and three hours practical or tutorial as indicated.

Assessment Practical/torial exercises, 40%; examination, 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.

SBM1100 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
metabolism and energy balance will be considered. 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 and three hours of laboratory exercises.

**Assessment**
Progressive laboratory assessment tasks, 50%; one examination 50%.

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**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.

**Recommended Reading**

**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.

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**SBM1172 INTRODUCTION TO HUMAN PHYSIOLOGY**

**Campus**
Footscray Park/ St Albans

**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 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 function on the body. The senses, in particular sight, hearing and taste, and endocrine system are discussed to highlight their regulatory function on the body.

**Required Reading**

**Recommended Reading**

**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%

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**SBM1510 HUMAN BIOSCIENCE 1A**

**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.

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**SBM151H FUNCTIONAL ANATOMY 1 (UPPER & LOWER LIMBS)**

**Campus**
St Albans

**Prerequisite(s)**
Nil.

**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 2.

**Required Reading**

**Class Contact**
Six hours per week for one semester; 3 hours lecture, 3 hours practical/tutorial

**Assessment**
Theory examination 55%, practical examination and oral examination 45%

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**SBM1515 ANATOMY AND PHYSIOLOGY 1**

**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.

**Required Reading**

**Recommended Reading**

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

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

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**SBM1517 BIOSCIENCE 1 (NURSING)**

**Campus**
St Albans

**Prerequisite(s)**
Nil.

**Co-requisite(s)**
HHN1210 Nursing 1: Health Assessment; HHN1220 Nursing 2: Communication in Health.
In this subject the human biosciences will be introduced and placed in context with nursing. Anatomy, physiology and basic concepts in chemistry and microbiology will be taught in an integrated fashion. The bones, joints and muscles of the body are taught in an integrated way using a regional approach. Basic concepts in chemistry are covered, providing the groundwork to support an understanding of the various types of cells within the body and their functions. 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 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. 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 special senses, in particular sight, hearing and balance. Topics studied in this subject may be interchanged with those of SBM1528 Physiology 2: Human Physiology

**Required Reading**

Marieb, E.N., 2001, Human Anatomy and Physiology, 5th edn, Addison Wesley;

Tortora, G.J. and Grabowski, S., 2000, Principles of Anatomy and Physiology, John Wiley and Sons Inc.


**Recommended Reading**


**Assessment**

Practical test, 30%; assignment and practical reports, 20%; test and examination, 50%.

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**SBM1520 HUMAN BIO SCIENCE 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%.

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**SBM1524 FUNCTIONAL ANATOMY 2 (HEAD, NECK AND TRUNK)**

**Campus** St Albans

**Prerequisite(s)** SBM1514 or equivalent

**Content** The following regions are studied in detail: skull and cranial cavity, scalp and face, eye and ear, nasal and oral cavities, major structures of the neck, deep and superficial structures of the back, thoracic wall, cavity and contents, abdominopelvic wall, cavity and contents. As with Functional Anatomy 1, the relevance of anatomy to health and healing will be highlighted. Topics studied in this subject may be interchanged with those of the subject Functional Anatomy 1.


**Class Contact** Six hours per week for one semester; 3 hours lecture, 3 hours practical/ tutorial

**Assessment** Theory examination 55%, practical examination and oral examination 45%

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**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 neuroendocrine 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.

SBM1527 BIO SCIEN CE 2 (NURSING)

Campus St Albans

Pre requisite(s) SBM1517 Human Bioscience 1 (Nursing)

Content This subject continues the study of the structure and functions of the body, using the 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 coordination via the neuro-endocrine system. This provides an understanding of how homeostatic mechanisms regulate variables such as blood pressure, blood gas status, acid-base balance, fluid and electrolyte balance and blood glucose. The provision of nutrients to the body by the gastrointestinal system is integrated with the study of biochemistry and metabolism. An introduction to basic concepts of inheritance is followed by the study of the male and female reproductive systems. Topics studied in this subject may be interchanged with those of SBM1518 Physiology 1.


Class Contact Six hours per week for one semester, comprising four hours of lectures and two hours of practical/tutorial class.

Assessment Practical reports/test and assignment/worksheets, 45%; test/examination, 55%.

SBM1528 HUMAN PHYSIOLOGY 2

Campus St Albans

Pre requisite(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 inheritance is followed by the study of the male and female reproductive systems. Topics studied in this subject may be interchanged with those of SBM1518 Physiology 1.


Class Contact Seven hours per week for 11 weeks of one semester; comprising four hours of lectures and two or three hours of practical/tutorial class.

Assessment Practical reports/test 30%; assignment/worksheets 15%; examination 55%.

SBM1529 INTRODUCTION TO PLANT SCIENCE

Campus St Albans

Pre requisite(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 Kanaparatnam, 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 Lab reports, 10%; Field Trip report, 10%; Practical examination, 20%; Final examination, 60%. A pass must be gained in each component of assessment.

SBM1572 BODY CONTROL MECHANISMS

Campus St Albans

Pre requisites SBM1514 Functional Anatomy 1 (Acupuncture) and SBM1524 Functional Anatomy 2 (Acupuncture)

Content The importance of homeostasis and the role of the neuro-endocrine system in maintaining equilibrium within the body is emphasised. The nervous system and endocrine system are introduced in an integrated way to highlight their regulatory role for control, coordination and communication. The cardiovascular, respiratory and urinary systems are placed in context with their overall regulation and coordination via the neuro-endocrine system. This provides an understanding of how homeostatic mechanisms regulate variables such as blood pressure, blood gas status, acid-base balance, fluid and electrolyte balance and blood glucose. This subject introduces students to basic principles in pharmacology.

Required Reading Marieb, E.N., 1998, Human Anatomy and Physiology, 4th edn, Addison Wesley Longman, California; also available with five CDs on Interactive Physiology for Windows and Macintosh.


Class Contact The equivalent of 40 hours for one semester comprising lectures, tutorials, laboratory sessions and field trips.

Assessment Lab reports, 10%; Field Trip report, 10%; Practical examination, 20%; Final examination, 60%. A pass must be gained in each component of assessment.

Class Contact Three hours per week for two semesters.
Assessment Examination / test 75%; test / assignment / worksheets 25%

**SBM2260 DIET AND NUTRITION**

Campus St Albans
Prerequisite(s) SBM1528 Human Physiology 2 or equivalent
Content This subject will demonstrate the relationships between gastrointestinal function, diet and human health. The subject examines the gastrointestinal structure and function, body composition, anthropometry, chemical nature of the nutrients, and their roles in body structure and function, energy intake and regulation, metabolism of nutrients, nutritional requirements under various environmental and physiological states, diet and disease, dietary guidelines, hormonal control of digestion, vitamins as antioxidants, nutrition and prevention of disease, role of intestinal flora in nutrition.

Required Reading To be advised by lecturer.

Class Contact Six hours per week for one semester comprising three 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 microorganisms and their growth requirements; normal flora; host defence mechanisms, immunoresponse, 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 microorganisms 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 Footscray Park
Prerequisite(s) Nil
Content This unit will introduce basic concepts of epidemiology. It will describe the 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 diseases; 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 FUNCTIONAL ANATOMY**

Campus St Albans
Prerequisite(s) SBM1525 Anatomy and Physiology 2
Content The revision of the gross anatomy of areas considered 'dangerous to needle'; the functional dimension of the musculo-skeletal system; the role of other physiological systems in the maintenance and performance of the musculo-skeletal system. In understanding the relevance of functional anatomy to health and healing students will also be introduced to kinesiology, biomechanics, muscle testing, and posture awareness through Feldenkrais and Alexander techniques.


**Recommended Reading**


Class Contact The equivalent of two hours per week over two semesters consisting of lectures, tutorials and workshops.
Assessment One workshop report, 50%; and one examination, 50% for each of the two semesters over which the subject will run.

**SBM2516 BIOSCIENCE 3: DEVIATION FROM HEALTH**

Campus St Albans
Prerequisite(s) SBM1527 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. Pathophysiological concepts such as route of administration, distribution, metabolism and excretion of drugs will be discussed. The main classes of therapeutic drugs and their mode of action will be outlined. Microbiology will be discussed with reference to the growth and physiology of micro-organisms, their pathogenic potential, infection control and antibiotic treatment. The pathophysiological principles underlying disorders of major body systems and subsystems will be discussed; for example, in cardiovascular pathophysiology; shock, cardiac failure, hypertension and atherosclerosis will be examined. Other topics covered may include haematology, the respiratory system, renal system, and fluid and electrolyte imbalances, however specific systems in this subject may be interchanged with those in the fourth semester subject as appropriate.


Class Contact One hour per week for one semester.
Assessment Assignments, 40%; case study, 60%

152
SBM2524 FUNCTIONAL ANATOMY 2

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 25% and oral examination 20%.

SBM2526 BIOSCIENCE 4: DEVIATION FROM HEALTH

Campus St Albans

Prerequisite(s) SBM2516 Bioscience 3

Content This subject furthers the understanding of pathophysiological principles and disease processes introduced in SBM2516 Bioscience 3: Deviation from Health. These will include neoplasia, the adaptive immune response (immunisation, hypersensitivity, immune deficiency, auto-immunity), and endocrine disorders such as diabetes mellitus. Further pathophysiology, and musculoskeletal pathophysiology of specific systems will be discussed, for example, neurological disorders and gastrointestinal tract. But this content may be interchanged with systems listed in the third semester subject. Disorders of the reproductive tract including infertility will be presented. The normal functioning of the reproductive system in pregnancy will be discussed together with embryological development. Important genetic disorders such as cystic fibrosis and their modes of inheritance will be examined.


Class Contact Five hours per week (3 hours of lectures and two hours of tutorial/laboratory) for eleven weeks. Assessment Assignment and tutorial/laboratory reports, 40%; examination, 60%.

SBM2530 PATHOPHYSIOLOGY 1

(HUMAN BIO SCIEN CE 3A)

Campus St Albans, Werribee

Prerequisite(s) SBM1520 or SBM1528 or equivalent

Content This subject aims to provide students with an understanding of the control and co-ordination of body systems and the effects of disturbances to body functions. The mental status and some psychosocial factors associated with these processes will be discussed. Students are introduced to major pathologic processes which may affect all parts of the body. Topics include tissue injury, inflammation and repair, normal immune function and deviations from normal, cancer from the molecular level to the whole person, neural and endocrine dysfunction including impaired cognition such as dementia and impaired co-ordination and control. In the laboratory, students will be introduced to basic laboratory techniques and apply scientific principles to the assessment of dysfunction in humans. Students are also introduced to the research literature, research techniques and the communication of scientific information by a series of presentations. There may be some interchange of topic material relating to specific body systems between SBM2530 and SBM2540 and the specific diseases chosen to illustrate major processes may vary as appropriate.


Class Contact Seven hours per week comprising three hours of lectures, three hours of laboratory and one one-hour tutorial for one semester. Assessment Test and examinations, 65%; practical and tutorial work, 35%. Students are required to obtain a satisfactory grade in all components of the assessment to obtain a pass grade.

SBM2540 PATHOPHYSIOLOGY 2

(HUMAN BIO SCIEN CE 4A)

Campus St Albans, Werribee

Prerequisite(s) SBM2530 Human Bioscience 3A or equivalent

Content This subject primarily examines the effects of dysfunction in particular human body systems, drawing on the knowledge of basic pathophysiological processes and overall regulation of the human body discussed in SBM2530. Overall organ and system dysfunction such as hepatic, renal, cardiovascular and respiratory failure will be discussed. Major disease types and processes such as circulatory shock, obstructive airways disorders, atherosclerosis, disorders of acid-base balance and sexually transmitted diseases will be examined and the psychosocial effects of some 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 rule 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, 50%; practical work, 35%, assignment 15%. Students are required to obtain a satisfactory grade in all components of the assessment to obtain a pass grade.

SBM2580 ADVANCED FUNCTIONAL ANATOMY

Campus St Albans

Prerequisite(s) SBM1524 Functional Anatomy or SBM1526 HumanPhysiology 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. The subject provides necessary background for more advanced study in the area of molecular cell biology, in particular, the use of immunohistochemical and in situ hybridization techniques. 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 50%

SBM2580 MEDICAL BIOCHEMISTRY

Campus St Albans

Prerequisite(s) SBF1310 Biology I, SCS1100 Chemistry for Biomedical Sciences.

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 assessed.


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

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

SBM2570 PHYTOPHARMACEUTICS

Campus St Albans

Prerequisite(s) SBM1520 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 concept; 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.
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.

**Required Reading**

**Class Contact**
Four hours per week comprising two one hour lectures and one two hour tutorial/seminar session for one semester.

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

**SBM2750 NUTRITION**

**Campus** Werribee

**Prerequisite(s)** SBF1310 Biology 2 or equivalent. Students would be expected to have studied or undertake concurrent study in SBF2520 Biochemistry 1.

**Content**
The subject aims to provide an introduction to the principles of human nutrition as a background for further studies in Food Technology (units SBF3731 and SBF3732), to enable students to appreciate the nutritional consequences and responsibilities associated with the provision, processing and development of food and food products. This subject examines: body composition and anthropometry; nutrient requirements and role in body structure and function; energy intake and expenditure; food and nutrient supply; nutritional requirements under different environmental and physiological states; diet and health; dietary guidelines; dietary requirements and special dietary foods.

**Required Reading**

**Class Contact**
Four hours per week for one semester comprising three hours of lectures and one hour of tutorials.

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

**SBM2800 CARDIORESPIRATORY AND RENAL PHYSIOLOGY**

**Campus** Footscray Park

**Prerequisite(s)**
SBM1518 Human Physiology 1 and SBM1528 Human Physiology 2.

**Content**
This subject aims to provide students with an understanding of the function, control and co-ordination of the cardiovascular, respiratory and renal systems. The subject will examine cardiac, pulmonary and renal function and normal circulatory, respiratory and renal dynamics. An overview of the co-ordination of these systems will be achieved through an examination of the mechanisms involved in maintaining fluid and electrolyte balance including: the role of membrane structures and capillary dynamics, and the integration of neural, endocrine function in the control of cardiovascular, respiratory and renal systems. Homeostatic control of the cardiac, pulmonary and renal systems will also be examined by investigating their responses to stresses, including exercise, high altitude, increased temperature, spaceflight and aging.

**Recommended Reading**

**Class Contact**
Six hours per week for one semester comprising three hours of lectures and three hours of practical and/or tutorial per week.

**Assessment**
Semester examination, 60%; practical reports, 20%; assignment, 20%.

**SBM2810 PHARMACOLOGY**

**Campus** Footscray Park, St Albans

**Prerequisite(s)**
SCS1100 Chemistry for Biological Sciences, SBM2560 Medical Biochemistry, SBM1518 and SBM1528 Human Physiology 1 and 2, or equivalent units.

**Content**
The unit examines the pharmacodynamic processes of drug action, molecular pharmacology and specific drug therapies. Aspects relating to both medicinal chemistry, toxicity testing, clinical trials and requirements for the admission of new drugs are covered in topics that relate to new drug development. Pharmacokinetics, pharmacogenetics, sensitivity and resistance to drug therapies are further topics that address variation in drug outcomes. Social drug abuse and types of drug dependence are also discussed in this unit.

**Required Reading**

**Class Contact**
Six hours per week over one semester based on two hours of lecture, one hour of tutorial and three hours of practical sessions.

**Assessment**
Assignment 15%; practical reports 20%; end of semester examination 65%.

**SBM3171 ENDOCRINOLOGY AND REPRODUCTION**

**Campus** Footscray Park, St Albans

**Prerequisite(s)**
SBM1528 Human Physiology 2 or equivalent.

**Content**
This subject examines the mechanisms by which hormones exert their effects on metabolism, renal function, reproductive function and growth. This subject encompasses the basic principles involved in understanding the mechanisms of hormone action and specifically concentrates on the following areas: Mechanisms of hormone action; peptide hormones and steroids; hormonal control of metabolism; the importance of renal function in maintaining homeostasis; reproductive endocrinology; growth and development; hormonal and metabolic control of growth.

**Required Reading**

**Class Contact**
Two hours per week for one semester comprising 20 hours of lectures and 6 hours of practical work.

**Assessment**
Based on assignments, practical reports and an end-of-semester examination.

**SBM3264 ADVANCED NERVE AND MUSCLE PHYSIOLOGY**

**Campus** Footscray Park

**Prerequisite(s)**
SBM2800 Cardiorespiratory and Renal Physiology or equivalent.

**Content**
The aim of the subject is to examine in detail the mechanisms of nerve and muscle function. Topics include:
physico-chemical principles underlying nerve and muscle function; behaviour of excitable cells; mechanisms of muscle contraction; neural influences over muscles and muscle fibre types; muscle fibre recruitment; metabolic processes in active muscle; neuromuscular fatigue; co-ordinating motor activity; and diseases of the nervous and muscular systems. Research techniques in nerve and muscle physiology.


**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.

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**SBM3515 CLINICAL PHARMACOLOGY AND PATHOPHYSIOLOGY**

**Campus** St Albans

**Prerequisite(s)** SBM2570 Phytopharmaceutics

**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%.

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**SBM3550 ADVANCED BIOSCIENCE 5A**

**Campus** St Albans, Werribee.

**Prerequisite(s)** SBM2540 Human Bioscience 4A.

**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 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 laboratory work for one semester.

**Assessment** Test, examination and project, 70%; practical work and tutorials, 30%. Students are required to obtain a satisfactory grade in all components of the assessment to obtain a pass grade.

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**SBM3554 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, sphygmomanometer, 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%.

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**SBM3560 ADVANCED BIOSCIENCE 6A**

**Campus** St Albans, Werribee.

**Prerequisite(s)** SBM3550 Advanced Bioscience 5A.

**Content** This subject continues on the theme of development and aging and the physiological processes that occur, building on SBM3550 Advanced Bioscience 5A. This subject investigates specific areas of human physiology such as immunology, genetics, neoplasia and systems of the body. This includes the exploration of changes that occur throughout the life cycle and interaction with the environment. The subject allows exposure to a range of scientific techniques through the laboratory component and may include a minor project.

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

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

**Assessment** Test, examination and project, 70%; practical work and tutorials, 30%. Students are required to obtain a satisfactory grade in all components of the assessment to obtain a pass grade.

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**SBM3564 CLINICAL PHARMACOLOGY**

**Campus** St Albans

**Prerequisite(s)** SBM2722 Human Biomedicine 4 and SBM2560 Botanical Pharmaceuticals or equivalent.

**Corequisite** SBM3554 Clinical Pathophysiology

**Content** An introduction to the mechanisms of drug action with particular reference to drugs prescribed in the hospital situation. From the subject it is expected that students will be able to identify the selective therapeutic and prophylactic effects of drugs. This is covered by describing the theory of drugs at a molecular level. With these constructs the students should be able to relate the advantages of a particular drug therapy, as well as its unwarranted side effects and drug-drug interactions. This unit is designed to run in conjunction with SBM3554 Clinical Pathophysiology.

Recommended Reading  Society of Hospital Pharmacists of Australia, 1995, Pharmacology and Drug Information for Nurses, 4th edn, W.B. Saunders/ Balliere Tindall.

Class Contact The 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 Footscray Park

Prerequisite(s) SC5237 Toxicology 1 or equivalent unit

Content The unit covers the possible adverse effects from exposure to hazardous chemicals in work environments, chemicals. Topics include biotransformation and pharmacokinetics; biological monitoring and health surveillance; air pollutants and respiratory tract irritants; the deposition of particulates and fibres along in the ventilatory system; ecotoxicology; effects of various substances used in industry that have documented effects on the nervous, reproductive, cardiovascular, renal and hepatic system, genotoxins, mutagens and carcinogens. Food toxins, ionising radiation and electromagnetic field effects are also discussed.


La D O'U, 1990, Occupational Medicine, Appleton and Lange. Lecture notes

Class Contact Two hours per week for two semesters.

Assessment Reports (60%) and assignment (40%)

SBM390 ADVANCED HISTOLOGICAL TECHNIQUES

Campus St Albans

Prerequisite(s) All year 2 core units (SBM2800, SBM2260, SBM2530, SBM2540), SBM2590 Functional Histology and SBM2560 Medical Biochemistry.

Content This subject introduces students to a variety of histological techniques and the role they play in medical research. There will be a particular emphasis on students receiving practical skills in a histology laboratory setting. Students will obtain skills in tissue sampling, preparation of fixed and frozen sections for light and electron microscopy, basic tissue staining, immunohistochemistry and in situ hybridization. Students will be introduced to light microscopy, confocal microscopy, transmission and scanning electron microscopy, morphology and morphometry.


Class Contact Six hours per week for one semester comprising 3 hours of lectures and 3 hours of practicals

Assessment Theory examination 55%, practical examination/assignment 45%

SBM3610 BIO MEDICAL 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 therapies 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 of 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.


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%.

SBM3630 SCIENCE, MEDIA AND COMMUNICATION

Campus St Albans

Prerequisite(s) ACC1042 Communications A; ACC1043 Communications B or equivalent.

Content In this subject, students will be introduced to the forms by which information about biomedical sciences and health is communicated via the media. A critical understanding will be developed of the ways in which media information is used to persuade individuals about the value or otherwise of biomedical information to market products and influence behaviour will be
examined with particular attention paid to the marketing of pharmaceutical products, medical practice, health education programs and complementary therapies. Students will examine materials such as newspapers, popular magazines concerned with health, health education material and examples of the scientific reports of public institutions concerned with the biomedical sciences.

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

**Class Contact** Four hours per week comprising two one-hour lectures and one two-hour seminar session for one semester.

**Assessment** Assignment, 40%; class presentation, 20%; media scrapbook and critical journal, 40%.

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**SBM3640 ADVANCED NEUROSCIENCES**  
**Campus** St Albans  
**Prerequisite(s)** SBM2530 Pathophysiology (Bioscience 4A)  
**Content** This subject provides an advanced series of lectures in specialised areas of neuroscience research. The content of the subject may vary with the expertise and research interests of the lecturing staff.

**Required Reading** Various scientific journals

**Class Contact** Three hours of lectures per week for one semester

**Assessment** Theory examination 55%, practical examination/assignment 45%

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**SBM3650 ADVANCED REPRODUCTION AND DEVELOPMENT**  
**Campus** St Albans  
**Prerequisite(s)** SBM2530 Pathophysiology (Bioscience 4A)  
**Content** This subject provides an advanced series of lectures examining current research questions in the area of reproduction and development. Topics include: maternal recognition of pregnancy via foetal signalling and the resultant maternal response during the period of implantation; development of the embryonic neural crest, including epithelial-mesenchymal transformation, migration, and contribution to mature differentiated cell types; the role of steroid hormones in placental function; the role of autocrine and paracrine growth factors in the development of the foetal lung; the role of various extracellular matrix cytokines in the breakdown of the foetal membranes at birth. The content of this subject may vary with the expertise and research interests of the lecturing staff.

**Required Reading** Various scientific journals

**Class Contact** Three hours of lectures per week for one semester

**Assessment** Theory examination 55%, practical examination/assignment 45%

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**SBM3660 HUMAN DEVELOPMENTAL AND CLINICAL GENETICS**  
**Campus** St Albans  
**Prerequisite(s)** SBM 2560 Medical Biochemistry or equivalent, SBP 2330 Cell biology  
**Content** The subject is designed to introduce students to developmental and clinical genetics with a specifically human focus. The major emphasis is on the importance of gene expression in normal development and variation, and the contribution of genetic abnormalities to disease. Topics may include: The role of genes in development; differentiation and congenital malformation; human genetic principles such as assortment and segregation of genes, genetic variation and genetic defects, the importance of genetic heterogeneity, mendelian inheritance and gene frequencies in populations; Diagnosis and classification of genetic disorders; prenatal screening and diagnosis; disorders with genetic and environmental associations.

**Required Reading** Research and review articles as appropriate

**Class Contact** Three hours of lectures and three hours practical work for 1 semester

**Assessment** Theory examination 50%, practical reports/assignment 50%

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**SBM3670 MOLECULAR PSYCHOLOGY**  
**Campus** St Albans  
**Prerequisite(s)** SBM 1234 Advanced Bioscience 5A or equivalent  
**Content** This subject explores the relationships between Molecular Biology, Psychology, Anatomy and Genetics and Human Behaviour and Emotions. These relationships will be discussed in light of current research findings and current literature. The lecture series will explore the current zeitgeist of the medical and scientific community with respect to Molecular psychology e.g. Topics may include: abnormal psychology and anatomy and psychology and anti-social behaviour patterns. e.g; violent criminal behaviour.

**Required Reading** Research and review articles as appropriate

**Class Contact** Three hours of lectures 1 semester

**Assessment** Theory examination 50%, assignments 50%

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**SBM3720 IMMUNOLOGY**  
**Campus** Werribee  
**Prerequisite(s)** SBF2300 Microbiology 1 or SBM2530 Pathophysiology 2  
**Content** The aims of this subject is to provide students with an understanding of the theoretical and practical bases of immunology. Subject topics include: active and passive immunity; components of the immune system, the immune response, immunological techniques and their application, molecular diagnostics including the use of monoclonal antibodies. The subject will be explored as a basic science with applications in the agriculture industry, food science, environmental science and medical science.


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

**Assessment** Assignments, 20%; practical work, 30%; final examination, 50%.

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**SBM3810 WELLNESS 1**  
**Campus** St Albans  
**Prerequisite(s)** SBM2530 and SBM2540 or equivalent, or SBM2800 Cardiorespiratory and Renal Physiology plus other relevant second year units at the discretion of the co-ordinator.

**Content** Module A: This unit introduces the concepts of mind, body and spirit. These areas are explored from psychological, physiological, philosophical and sociological perspectives. Current literature will be used to introduce the areas of psychophysiology and psychoneuroimmunology and their connections to the mind/body/spirit paradigm. The ethics of human research and evaluation will be discussed throughout the series of lectures. In addition, students will be introduced to basic methods of information gathering with respect to the mind-body-spirit paradigm including the evaluation of its status in individuals.
Module B: Students will be introduced to fundamental concepts of health and wellness. The difference between professional/scientific concepts and lay concepts will be explored. Wellness promotion will be presented primarily in the context of established public health approaches utilised in health education, promotion, and prevention including medical, behavioural, educational, social and empowerment strategies. Some of the dilemmas and pitfalls in health promotion will be canvassed. Students will also be introduced to 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.

**SBM3810 WELLNESS 2**

**Campus** St Albans

**Prerequisite(s)** SBM3810 Wellness 1.

**Content** Module A: The subject extends the material covered with respect to Mind, Body and Spirit, exploring in greater depth, aspects of psychophysiology and psychoneuroimmunology such as stress and disease, sexuality and the impact of environment on the health of the mind, body and spirit. Techniques used to investigate and address these areas of health and lifestyle will be explored. Wellness promotion will be provided that is regularly updated.

**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.

**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.

**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

**SBM4000 SCIENCE HONOURS**

**Campus** St Albans, Werribee, Footscray Park.

**Prerequisite(s)** Satisfactory completion of an undergraduate degree program with a credit average in the final year.

**Content** The Honours program consists of SBM4100 Honours Research Project, SBM4200 Honours Coursework and, if appropriate, a Research Design subject (HPS6010 or equivalent). The research project will be undertaken in one of the research areas of the School of Life Sciences and Technology 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 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.

### SBM4200 HONOURS COURSEWORK

**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** There are two times 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 Performance and Loading” examined by the Civil Aviation Safety Authority.


**Class Contact** 1 x 1.5 hour workshop per week for one semester or equivalent.

**Assessment** Examination as required by the Civil Aviation Safety Authority.

### SCA2053 AERODYNAMICS AND SYSTEMS FOR THE CPL

**Campus** Footscray Park

**Prerequisite(s)** SCA1102

**Content** Aircraft aerodynamics and systems theory sufficient to pass the Commercial Pilot’s Licence theory subject “CPL Aerodynamics and Systems” examined by the Civil Aviation Safety Authority.


**Class Contact** 1 x 1.5 hour workshop per week for one semester or equivalent.

**Assessment** Examination as required by the Civil Aviation Safety Authority.

### SCA2055 FLIGHT PLANNING FOR THE CPL

**Campus** Footscray Park

**Prerequisite(s)** SCA2013

**Content** Aircraft flight planning theory sufficient to pass the Commercial Pilot’s Licence theory subject “CPL Flight Planning” examined by the Civil Aviation Safety Authority.


**Class Contact** 1 x 1.5 hour workshop per week for one semester or equivalent.

**Assessment** Examination as required by the Civil Aviation Safety Authority.

### SCA2057 METEOROLOGY FOR THE CPL

**Campus** Footscray Park

**Prerequisite(s)** SCA2013

**Content** Aircraft flight planning theory sufficient to pass the Commercial Pilot’s Licence theory subject “CPL Meteorology” examined by the Civil Aviation Safety Authority.
### Required Reading

### 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.

### SCA2059 AIR LAW FOR THE CPL

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<th>Campus</th>
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<tbody>
<tr>
<td>Prerequisite(s)</td>
<td>SCA2013</td>
</tr>
<tr>
<td><strong>Content</strong></td>
<td>Air law sufficient to pass the Commercial Pilot's Licence theory subject &quot;CPL Air Law&quot; examined by the Civil Aviation Safety Authority.</td>
</tr>
<tr>
<td><strong>Class Contact</strong></td>
<td>1 x 1.5 hour workshop per week for one semester or equivalent.</td>
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<tr>
<td><strong>Assessment</strong></td>
<td>Examination as required by the Civil Aviation Safety Authority.</td>
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### SCA2061 NAVIGATION FOR THE CPL

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<tr>
<th>Campus</th>
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<tbody>
<tr>
<td>Prerequisite(s)</td>
<td>SCA2013</td>
</tr>
<tr>
<td><strong>Content</strong></td>
<td>Aircraft flight planning theory sufficient to pass the Commercial Pilot's Licence theory subject &quot;CPL Navigation&quot; examined by the Civil Aviation Safety Authority.</td>
</tr>
<tr>
<td><strong>Class Contact</strong></td>
<td>1 x 1.5 hour workshop per week for one semester or equivalent.</td>
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<td><strong>Assessment</strong></td>
<td>Examination as required by the Civil Aviation Safety Authority.</td>
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### SCA2063 HUMAN FACTORS FOR THE CPL

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<tr>
<td>Prerequisite(s)</td>
<td>SCA2013</td>
</tr>
<tr>
<td><strong>Content</strong></td>
<td>Human Factors in flying sufficient to pass the Commercial Pilot's Licence theory subject &quot;CPL Human Factors&quot; examined by the Civil Aviation Safety Authority.</td>
</tr>
<tr>
<td><strong>Required Reading</strong></td>
<td>Civil Aviation Safety Authority, 2000, <em>Human Factors Notes</em>, CASA Canberra. Subject study notes as provided by the subject lecturer.</td>
</tr>
<tr>
<td><strong>Class Contact</strong></td>
<td>1 x 1 hour workshop per week for one semester or equivalent.</td>
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<tr>
<td><strong>Assessment</strong></td>
<td>Examination as required by the Civil Aviation Safety Authority.</td>
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### SCA2011 BASIC AERONAUTICS (AREA SOLO/ BAK)

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<th>Campus</th>
<th>Footscray Park</th>
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<tr>
<td>Prerequisite(s)</td>
<td>SCA1101 Introductory Aeronautics.</td>
</tr>
<tr>
<td><strong>Content</strong></td>
<td>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 (G FPT).</td>
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<tr>
<td><strong>Required Reading</strong></td>
<td>To be advised.</td>
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<tr>
<td><strong>Class Contact</strong></td>
<td>2 x 1 hour lectures per week for one semester.</td>
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<tr>
<td><strong>Assessment</strong></td>
<td>Internal examination determined by lecturer in charge.</td>
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</table>
SCA3112 NAVIGATION FOR THE ATPL

Campus Footscray Park
Prerequisite(s) SCA2051, SCA2053, SCA2055, SCA2057, SCA2059, SCA2061, SCA2063

Content Aircraft flight planning theory sufficient to pass the Air Transport Pilot’s Licence theory subject “ATPL Navigation” 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.

SCA3114 AERODYNAMICS AND SYSTEMS FOR THE ATPL

Campus Footscray Park
Prerequisite(s) SCA2051, SCA2053, SCA2055, SCA2057, SCA2059, SCA2061, SCA2063

Content 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.

Required Reading 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.

Class Contact 1 x 3 hour workshop per week for one semester or equivalent.

Assessment Examination as required by the Civil Aviation Safety Authority.

SCA3116 PERFORMANCE AND LOADING FOR THE ATPL

Campus Footscray Park
Prerequisite(s) SCA2051, SCA2053, SCA2055, SCA2057, SCA2059, SCA2061, SCA2063

Content 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.

Required Reading 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.

Class Contact 1 x 3 hour workshop per week for one semester or equivalent.

Assessment Examination as required by the Civil Aviation Safety Authority.

SCA3118 METEOROLOGY FOR THE ATPL

Campus Footscray Park
Prerequisite(s) SCA2051, SCA2053, SCA2055, SCA2057, SCA2059, SCA2061, SCA2063

Content Aircraft flight planning theory sufficient to pass the Air Transport Pilot’s Licence theory subject “ATPL Meteorology” examined by the Civil Aviation Safety Authority.

Required Reading 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.

Class Contact 1 x 3 hour workshop per week for one semester or equivalent.

Assessment Examination as required by the Civil Aviation Safety Authority.

SCA3120 AIR LAW FOR THE ATPL

Campus Footscray Park
Prerequisite(s) SCA2051, SCA2053, SCA2055, SCA2057, SCA2059, SCA2061, SCA2063

Content Air law sufficient to pass the Air Transport Pilot’s Licence theory subject “ATPL Air Law” examined by the Civil Aviation Safety Authority.

Required Reading Thom, T., et al, 2000, Flight Rules and Air Law for the Air Transport Pilot, Aviation Theory Centre, Melbourne. Subject study notes as provided by the subject lecturer.

Class Contact 1 x 3 hour workshop per week for one semester or equivalent.

Assessment Examination as required by the Civil Aviation Safety Authority.

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.

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 laboratory/tutorial.

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

SCM1312 PROGRAMMING 2

Campus Footscray Park, Hong Kong

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.

Required Reading To be advised by lecturer.

Recommended Reading Lewis, J. and Loftus, W., 2000, Java Software Solutions, 2nd 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 and tests, 30%.

SCM1613 APPLIED STATISTICS 1

Campus Footscray Park, Hong Kong

Prerequisite(s) Nil.


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

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

SCM1614 APPLIED STATISTICS 2

Campus Footscray Park, Hong Kong

Prerequisite(s) SCM1611 Applied Statistics 1.


SCM2111 MATHEMATICAL FOUNDATIONS 1

Campus Footscray Park

Prerequisite(s) SCM1711 Mathematical Foundations 1.


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

Assessment Final examination, 75%; mid semester test, 25%.

SCM2112 MATHEMATICAL FOUNDATIONS 2

Campus Footscray Park

Prerequisite(s) SCM1711 Mathematical Foundations 1.


Class Contact Four hours per week for one semester, comprising three hours of lectures and one hour of tutorial.

Assessment Final examination, 75%; mid semester test, 25%.

SCM2113 DATA COMMUNICATIONS AND NETWORKS 1

Campus Footscray Park, Hong Kong

Prerequisite(s) SCM1113 Computer Organisation and Architecture.


**Recommended Reading** Beyda, W.J. 1995, Data Communications: Basics to BroadBand, 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%.

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**SCM211 DATABASE SYSTEMS 1**

**Campus** Footscray Park, Hong Kong

**Prerequisite(s)** SCM1113 Introduction to Computer Systems 1; 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%.

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**SCM221 DATABASE SYSTEMS 2**

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

**Prerequisite(s)** SCM2211 Database System 1.

**Content** Data analysis and modelling using the NIAM method, Comparison of the ER and NIAM models. Transaction analysis and specification: the transaction concept, ACID properties, transaction and use interface specification. Application development: embedded SQL, form-based approach to application development. Transaction processing: commit and rollback, concurrency control, locking and recovery.

**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%; assignment and tests, 30%.

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**SCM321 OBJECT ORIENTED PROGRAMMING 1**

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

**Prerequisite(s)** SCM3131 Programming 1; SCM3132 Programming 2.

**Content** This subject covers the critical concepts and features that support object-oriented programming. Classes and data abstraction, graphical user interfaces, threads, streams and exceptions. Multimedia and networking applications. Mastery of these concepts provide the foundation to practice object-oriented programming in a productive way and the subsequent mastery of the finer points of object-oriented programming.

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


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

**Assessment** Final examination, 70%; assignment and tests, 30%.

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**SCM321 SOFTWARE ENGINEERING 1**

**Campus** Footscray Park, Hong Kong

**Prerequisite(s)** SCM2313 Software Development; SCM3131 Programming 1; SCM3132 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 design, programming languages, testing strategies, documentation of software systems.

**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 one-hour lectures and one one-hour laboratory/tutorial.

**Assessment** Final examination, 80%; assignments: 20%.
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, 70%; project, 30%.

SCM2411 MATHMATICAL ECONOMICS 1

Campus Footscray Park

Prerequisite(s) SCM1613 Applied Statistics 2.


Required Reading McTaggart, D., Findlay, C. and Parkin, M. 2003, Microeconomics, 4th edn, Addison-Wesley.


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

Assessment Final examination, 75%; assignment and tests: 25%.

SCM2412 MATHMATICAL ECONOMICS 2

Campus Footscray Park

Prerequisite(s) SCM2411 Mathematical Economics 1.


Required Reading Pindyck, R.S. and Rubinfeld, D.L. 2000, Microeconomics, 5th edn, Prentice Hall.


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

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

SCM2511 IMAGE PROCESSING

Campus Footscray Park, Malaysia

Prerequisite(s) SCM1111 Introduction to Computer Systems 1 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%.

**Required Reading** Nil.


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

**Assessment** Laboratory test, 10%; Project, 40%; Examination, 50%.

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**SCM2613 SAMPLING AND DATA ANALYSIS**

**Campus** Footscray Park

**Prerequisite(s)** SCM1614 Applied Statistics 2.

**Content** Survey design, Finite population estimation, Determining sample size, Sampling techniques, Non-parametric methods, Exploratory data analysis, Data presentation methods, Distributions, Parameter estimation, Large data sets.


**Recommended Reading** Kish, L. 1965, *Survey Sampling*, Wiley.

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

**Assessment** Final examination, 60%; assignment and test, 40%.

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**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%.

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**SCM2711 DISCRETE MATHEMATICS**

**Campus** Footscray Park, Hong Kong

**Prerequisite(s)** SCM1711 Mathematical Foundations 1.

**Content** Algorithms - worst case and asymptotic analysis, O, Ω and 0 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 hours of lectures and one hour of laboratory/tutorial.

**Assessment** Final examination, 80%; tests, 20%.

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**SCM2712 ANALYSIS OF CONTINUOUS PROCESSES**

**Campus** Footscray Park

**Prerequisite(s)** SCM1712 Mathematical Foundations 2.

**Content** Integration - multiple integrals, improper integrals, Laplace transforms, Fourier series, Fourier transforms, Spectral Analysis, Differential Equations, Partial Differentiation, Modelling of continuous processes using differential and functional equations.

**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 test, 20%.

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**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. Collection and interpretation of data, setting up models, checking models data collection and modelling. Interpolation, extrapolation and fitting models to data. Discrete versus continuous modelling with examples of general interest in a variety of fields. Counting methods: recursion, generating functions, inclusion/exclusion.


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

**Assessment** Final examination, 80%; assignments, 20%.

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**SCM2911 LINEAR PROGRAMMING**

**Campus** Footscray Park

**Prerequisite(s)** Nil.

**Content** Introduction to linear programming, model formulation, graphical solution, simplex methods for maximisation and minimisation problems, primal and dual problems, sensitivity analysis. Special linear programming models: transportation, transshipment and assignment problems. Pure and mixed integer linear programming, branch and bound techniques for solving ILP. Knapsack problems. Use of a computer package (LINDO/LINGO) for solving LP and ILP.


Class Contact Three hours per week for one semester, comprising two one-hour lectures and one one-hour laboratory/tutorial.
Assessment Final examination, 80%; tests, 20%.

SCM2912 PROJECT SCHEDULING

Campus Footscray Park, Hong Kong, Malaysia, Singapore
Prerequisite(s) Nil
Content A selection of topics from the following: Standard Flow Shop and Job Shop Scheduling Techniques, Project Scheduling and Management - Finding a critical path, PERT calculations, Time/Cost Trade-offs in reducing total project time, Crashing and indirect costs, Time-Charting and Resource levelling; Decision Analysis; Decision Making without and with probabilities, Decision Tress, EVPI and EVSI. Multicriteria Decision Making: Scoring Model, Analytical hierarchy Process; Spreadsheet Analysis. Selected Combinatorial Optimisation. Models: Network Models - Spanning tree, shortest path, and maximum flow problems; Set Covering Problem; Cutting Stock Problem; Bin Packing Problem. Queuing (Waiting Line) Theory: Basic components of a queuing model, arrival and service time distributions; operating characteristics of a queuing system; multiple server models; no waiting time and finite calling population; Economic Analysis; Spreadsheet Analysis.
Recommended Reading Anderson, Sweeney and Williams, 1999, Contemporary Management Science with Spreadsheets, South Western College Publishing.
Assessment Participation in Tutorials, 5%; Class Test, 15%; Assignment, 10% Final examination, 70%. To obtain a grade of pass or better a student must obtain 50% or more in the final examination.

SCM2913 OPTIMISATION METHODS 1

Campus Footscray Park
Prerequisite(s) SCM1611 Applied Statistics 1 or equivalent
Required Reading Anderson, Sweeney and Williams, 1999, Contemporary Management Science with Spreadsheets, South Western.
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 and tests, 20%.

SCM2915 STOCHASTIC AND COMBINATORIAL OPTIMISATION

Campus Footscray Park, Hong Kong, Malaysia, Singapore
Prerequisite(s) SCM1614
Content Decision Analysis: Decision Making without and with Probabilities; Decision Tress, EVPI and EVSI. Multicriteria

SCM3002 PROJECT 2

Campus Footscray Park, 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 45 hours per week
Assessment Based on performance in the projects oral presentations and quality of final reports.

SCM3001 PROJECT 1

Campus Footscray Park, 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 45 hours per week
Assessment Based on performance in the projects oral presentations and quality of final reports.

SCM3111 DATA COMMUNICATIONS & NETWORKS 2

Campus Footscray Park
Prerequisite(s) SCM2111 Data Communications & Networks 1
Content Review of data communication principles, standards and signals. Data transmission methods and protocols. Fundamentals of multimedia communications. Wide area...


**Recommended Reading** Halball, 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%.

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**SCM312 USER INTERFACE DESIGN**

**Campus** Footscray Park, Malaysia

**Prerequisite(s)** SCM1111 Introduction to Computer Systems 1, SCM1112 Introduction to Computer Systems 2, plus 8 electives.


**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%.

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**SCM313 MULTIMEDIA SYSTEMS DESIGN**

**Campus** Footscray Park

**Prerequisite(s)** SCM1111 Introduction to Computer Systems 1; SCM1112 Introduction to Computer Systems 2.


**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, 50%; assignment and tests, 50%.

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**SCM315 ARCHITECTURES FOR ENTERPRISE WIDE COMPUTING**

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

**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; COBRA; 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%.

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**SCM321 DATABASE SYSTEMS 3**

**Campus** Footscray Park

**Prerequisite(s)** SCM218 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%.

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**SCM331 OBJECT ORIENTED PROGRAMMING 2**

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

**Prerequisite(s)** SCM231 Object Oriented Programming 1.

**Content** The subject bridges the gap between object-oriented programming and design in the context of software engineering perspective. The following topics are covered. Overview of object-oriented concepts relating to inheritance, data and procedure encapsulation. Design and implementation of larger programs: modules, abstract data types, programming tools. Dynamic data structures. Formal aspects of object-oriented programming.

**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 laboratory/tutorial.

**Assessment** Final examination, 80%; assignments, 20%.

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**SCM332 INTELLIGENT SYSTEMS**

**Campus** Footscray Park

**Prerequisite(s)** SCM1111 Introduction to Computer Systems 1; SCM1311 Programming 1.

**Content** Introduction to Artificial Intelligence and intelligent agents. Problem solving by search and heuristic methods. Knowledge and reasoning. Agents and logic. Logical reasoning systems. Problem solving and planning. Machine learning.


**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%.
SCM333 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.

Required Reading Rainbaugh, J., et. al, Object-Oriented Modeling and Design, Prentice Hall or similar.

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 30%.

SCM334 OBJECT ORIENTED ANALYSIS AND DESIGN

Campus Footscray Park

Prerequisite(s) EEC3601 Windows Programming or SCM3311 Object Oriented Programming 2.

Content This is an advanced subject in object oriented analysis and design. Topics will be selected from: Designing object-oriented systems; Use case approach; UML methodology; Differences between pure and non-pure object-oriented languages; Case studies.

Required 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 laboratory/tutorial.

Assessment Test, assignment and laboratory exercises: 30%; examination: 70%. A pass in each component of assessment is required for a subject pass.

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%.

SCM351 IMAGE PROCESSING 2

Campus Footscray Park

Prerequisite(s) SCM2511 Image Processing


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

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

SCM361 TIME SERIES ANALYSIS

Campus Footscray Park

Prerequisite(s) SCM2612 Statistical Forecasting or equivalent.


Class Contact Three hours per week comprising two hours lecture and one hour laboratory.

Assessment Final examination, 50%; project, 50%.
SCM3614 EXPERIMENTAL DESIGN 1
Campus Footscray Park
Prerequisite(s) SCM1611 and SCM1614.
Content The differences between experiments and observational studies. Completely randomised and randomised block experiments. Two-level factorial and fractional factorial designs. Response Surface designs and analysis. An introduction to designs with factors at more than two levels. Taguchi methods.
Required Reading To be advised by lecturer.
Class Contact Three hours per week for one semester, comprising one one-hour lecture, one one-hour tutorial/practical class and one one-hour laboratory.
Assessment Final examination, 70%; assignment and tests, 30%.

SCM3615 MULTIVARIATE STATISTICS
Campus Footscray Park
Prerequisite(s) SCM2611 Linear Statistical Models, SCM2711 Discrete Mathematics.
Content A selection of topics from the following list will be covered: revision of univariate methods, classification methods, plotting and understanding multivariable datasets, multiple regression methods, weighted least squares, use of regression diagnostics, multivariate normal distribution, Hotellings T², confidence regions, discriminant analysis, principal components, tree based methods.
Class Contact Three hours per week for one semester, comprising two hours of lectures and one hour of laboratory/tutorial.
Assessment Final examination, 75%; assignments, 25%.

SCM3616 SYSTEM RELIABILITY AND MAINTENANCE
Campus Footscray Park
Prerequisite(s) SCM1614 Applied Statistics 2; SCM1711 Mathematical Foundations 1; 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/tutorial.
Assessment Final examination, 80%; Assignment and tests, 20%.

SCM3712 CODING, CRYPTOGRAPHY AND COMPUTER SECURITY
Campus Footscray Park
Prerequisite(s) SCM1711 Mathematical Foundations 1 and SCM1712 Mathematical Foundations 2.
Content Information Theory, error correcting and error control codes, cryptosystems and secure protocols, one way functions, public key systems, Data Encryption Standard.
Class Contact Three hours per week for one semester, comprising two one-hour lectures and one one-hour laboratory/tutorial.
Assessment Final examination, 80%; assignment and tests, 20%.

SCM3713 DISCRETE MATHEMATICAL MODELLING
Campus Footscray Park
Prerequisite(s) SCM2711 Discrete Mathematics.
Content A selection from: Petri nets; Chaos and Fractals; z-transforms; Combinatorics; Data Compression and Transmission.
Required Reading Nil.
Class Contact Three hours per week for one semester, comprising two one-hour lectures and one one-hour laboratory/tutorial.
Assessment Final examination, 80%; assignment and tests, 20%.

SCM3911 SIMULATION
Campus Footscray Park, Hong Kong
Prerequisite(s) Pass in eight electives (advisory). Students should have successfully completed second year.
Content On completion of the subject, students should be able to: understand the philosophy and concepts of simulation; have a good knowledge and understanding of a modern simulation language including principles of modelling, design, justify, and implement computer-based models of the operation of manufacturing and business systems.
Required Reading SCM3911 Lecture Notes.
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%.
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.


Recommended Reading To be advised by lecturer.

Class Contact Six hours per week for one semester comprising three hours of lectures, one hour tutorial and two hour practical classes.

Assessment Assignment, 10%; Practical work, 20%; Examination, 70%.

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 Six hours per week for one semester comprising three hours of lectures, one hour tutorial and two hour practical classes.

Assessment Assignment, 10%; Practical work, 20%; Examination, 70%.

SCS1500 CHEMISTRY AND BIOLOGY

Campus Footscray Park

Prerequisite(s) Nil.

Content Semester one: Fundamental concepts from general chemistry including: modern atomic theory and the periodic classification of elements; various types of chemical bonding between atoms; chemical reactions, equations, quantities and calculations using molar/equivalent entities and stoichiometric balances; the nature of solutions, solubility products, acid-base theory and reactions and the concept of pH; introduction to electrochemistry and oxidation-reduction reactions; reaction equilibrium constants and reaction kinetics; introduction to organic chemistry via polymer chemistry. Semester two: Characteristics of the living condition, the chemical and structural basis of life, cells and their environment, photosynthesis, respiration, cell energy and growth. The diversity of life. Basic biology of plants and animals, including their natural history, evolutionary history and phylogeny, 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 two semesters based on 1.5 hours lectures and 1.5 hours tutorials/laboratory sessions.

Assessment Assignments, laboratory reports and unit tests, 50%; end-of-semester examinations, 50%. A satisfactory level of assessment for each component is required for a subject pass.

SCS1601 CHEMISTRY 1A

Campus Werribee

Prerequisite(s) Nil.

Content Chemistry methods and measurements; atomic theory and the periodic table; structures and properties of ionic and covalent compounds; chemical equation, reactions and solutions; coordination chemistry, acids and bases.

Required Reading Chang, R., Essential Chemistry (A Core Text for General Chemistry), 2nd edn, McGraw-Hill. Laboratory manuals as directed.

Recommended Reading Denniston, Topping, Caret, General, Organic and Biochemistry, 3rd edn, McGraw-Hill.

Class Contact Three hours per week comprising one hour of tutorial and three hours of practical classes per week.

Assessment Laboratory work, 30%; tutorial assessments, 15%; examination, 55%.
SCS1602 CHEMISTRY 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, 55%.

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%.

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%.

SCS2000 INDUSTRIAL EXPERIENCE 2

Campus Footscray Park  
Prerequisite(s) Nil.

Credit Points 15 per semester for two semesters.

Content No formal content, but student will be required to provide evidence of appropriate industrial experience, acceptable to the Head of School. Students should consult with appropriate staff prior to commencing the subject to ensure this situation is acceptable to the School.

Class Contact No set contact hours.

Assessment Evidence of appropriate industrial experience in the form of a letter from the employer detailing the experience is required.

SCS2001 MINOR PROJECT

Campus Footscray Park  
Prerequisite(s) Nil.

Content The subject aims to develop understanding and skills related to setting up, conducting and successfully completing, an occupational health and safety project. Methodologies; ergonomics, incident investigation, occupational hygiene, risk analysis, system safety. Problem formulation and problem definition, project management, publication of project outcomes, case studies.


Class Contact Three hours of lectures/tutorials per week for one semester.

Assessment Practical assignments (2 x 40%), 80%; oral class presentation, 20%.

SCS2071 BIOLOGICAL CHEMISTRY

Campus Footscray Park  
Prerequisites Nil.

Content The aim of this unit is to cover chemical, biological and biochemical topics that have relevance to occupational health professionals. Initially this unit will review basic chemical concepts and aspects of physical and organic chemistry that relate to biological and health science studies. Where possible particular emphasis is placed on the functional characteristics of biological molecules. The later topics deal with the interaction of xenobiotics with biological molecules. This entails the description of hypotheses on the actions of volatiles on the neuron membrane, enzyme inhibition and drug-receptor theory. Aspects of pharmacogenetics, drug tolerance, substance abuse and allergies are also covered.


Class Contact Two hour lecture or tutorial per week for one semester.

Assessment Assignment (40%) and a case study (60%)

SCS2101 TASK ANALYSIS AND JOB DESIGN

Campus Footscray Park  
Prerequisite(s) Nil.

Content Descriptive task analysis techniques, inferential task analysis techniques, the benefits of task analysis, the task analysis statement, history of job design, techniques of job design, measures of job design, the benefits of improved job design, who wants to know about job design?
Class Contact Two hours of lectures/tutorials per week for one semester.
Assessment Work based written assignments (2 x 50%), 100%.

SCS2250 PROCESS ENGINEERING 1
Campus Werribee
Prerequisite(s) Students would normally be expected to have successfully completed SPH1210 Physics 1F and SMA1110 Mathematics I.
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
Prerequisite(s) SCS1500 Chemistry and Biology (for Environmental Engineering students only)
Co-requisite(s) EZW2110 Principles of Material Science (for Civil Engineering students only)
Content Semester One: Overview of man made and natural environmental problems. Materials and energy balances. Introduction to climate, meteorology, atmospheric phenomena and a hydrologic cycle. Measurement of precipitation, evaporation and stream flow. Basic principles of ecology; ecosystem structure and biomes, trophic level and productivity, chemical cycling, ecological niches, changes in ecosystems, land carry capacity, urban systems vs natural ecosystems.
Semester two: Review of important concepts from general chemistry. Introduction to organic chemistry and organic waste materials. Key parameters in water chemistry and review of solubility considerations and precipitation. Basic concepts on colloids, Fundamentals of soil chemistry, soil solutions, importance and availability of key elements, soil pH. The major gases and introduction to air chemistry Microbiology major microbial groups conditions for growth and population dynamics, effects of microbes on the environment, role in disease transmission and epidemiology.
Class Contact Three hours per week for two semesters based on two hours lectures and one hour laboratory/tutorial sessions.
Assessment Assignments and laboratory work, 30%; end of semester examinations, 70%. A satisfactory level of assessment for each component is required for a subject pass.

SCS2301 STUDY DESIGN
Campus Footscray Park
Prerequisite(s) Nil.
Content Asking a question - what information do you need?, designing a study, testing hypotheses, designing forms and questionnaires for studies, setting up the data file, summarising data, from sample to population, testing hypotheses about independence, testing hypotheses about dependence, measuring association.
Required Reading To be advised by lecturer.
Class Contact Two hours of lectures/tutorials per week for one semester.
Assessment Assignments, 100%.

SCS2372 TOXICOLOGY 1A
Campus Footscray Park
Prerequisites SCS1051 Chemistry for Occupational Health and Safety and SBM1270 Human Biology 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.
Assessment Assignments (65%) and a case study (35%).

SCS2373 TOXICOLOGY 1B
Campus Footscray Park
Prerequisites SCS2372 Toxicology 1A
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 show specific toxicological effects and recognise the mechanism of toxicity for specific drugs, solvents, metals and pesticides. Additional topics discussed in this subject are biological monitoring, health surveillance, ecotoxicology; effects of food toxins, and ionising radiation and electromagnetic field effects. Part of the unit assessment involves reviewing toxicology and occupational medicine journal articles.
Class Contact Two hour lectures or tutorials for one semester.
Assessment Assignment (65%) and a case study (35%).

SCS2381 BIOCHEMISTRY 1
Campus Footscray Park
Prerequisite(s) SCS1501 Medical Forensic and Analytical Chemistry 1, SCS1006 Chemistry 1.
Content This subject aims to give an overview of the bases of biochemistry. Topics covered include enzymes; bioenergetics; metabolism; hormone action and hormonal regulation of blood
SCS243I 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 hour-tutorial and one three-hour laboratory session.
Assessment Practical work 40%, final examination 60%.

SCS246I RISK MANAGEMENT

Campus Footscray Park
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%.

SCS2503 FORENSIC CHEMISTRY 2

Campus Werribee
Prerequisite(s) SCSxxxx 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.
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.

SCS2521 APPLIED CHEMISTRY 2 - ORGANIC

Campus Werribee
Prerequisite(s) SCS1006 Chemistry 1
Co-requisite(s) Nil.
Content The aims of this subject are to introduce students to fundamental aspects of synthetic organic chemistry, organic reaction mechanisms along with applications of spectroscopy to organic chemistry. Aromaticity. Electrophilic and nucleophilic aromatic substitution - use in synthesis. Physical, organic chemistry, spectroscopy, including UV, IR, NMR and mass spectroscopy. Chemistry of carbanions - applications in synthesis. The chemistry of free radicals. The chemistry of carbocations. Organic synthesis, particular emphasis will be placed on the relationship of this chemistry to industrial chemistry. Practical exercises providing substantial hands-on experience with chromatographic and spectroscopic instrumentation will complement the lecture material.
Class Contact Five hours per week for two semesters, comprising two hours of lectures and three hours of practical work.
Assessment End-of-semester examination, 60%; practical work 20% and two assignments 20%.

SCS2502 MEDICAL CHEMISTRY 2

Campus Werribee
Prerequisite(s) SCS1006 Chemistry 1, SCS1501 Medical, Forensic and Analytical Chemistry 1
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 work per week for one semester.
Assessment Based upon practical reports, a practical examination, short tests and an end-of-semester examination.
SCS2580 CHEMISTRY 4F

Campus Werribee

Prerequisite(s) SCS1003 Chemistry 1E

Content The mathematical basis of physical chemistry. Aspects of thermodynamics, kinetics, electrochemistry and surface chemistry which are applicable to the food industry, and are of environmental, biological and industrial importance. Bonding theories as they apply to inorganic and organometallic systems. Spectroscopy in inorganic chemistry. Inorganic and organometallic reaction mechanisms. Inorganic and organometallic chemistry in industry. Bioinorganic chemistry including the essential trace elements, chemical speciation, trace elements, metalloproteins and metalloenzymes, the biochemistry of iron and other metals, biological electron transfer, bioinorganic modelling, alkanes and alkali 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%.

SCS2581 CHEMISTRY 4G

Campus St Albon

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%.
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 (VOC's) in indoor air; sources and sinks of VOC's; techniques of measuring VOC's; sick building syndrome; other considerations in IAQ analysis - microbiological organisms and dust particulates; methods of reducing VOC's in indoor air.


Class Contact Two hours of lectures per week for one semester.

Assessment Final examination 80%; assignments and written work 20%.

SCS3000 INDUSTRIAL EXPERIENCE 3

Campus Footscray Park

Prerequisite(s) Nil.

Content No formal content, students will be required to provide evidence of appropriate industrial experience, acceptable to the Head of Department. Students should consult with the appropriate staff prior to commencing the subject to ensure this situation is acceptable to the School.

Class Contact No set contact hours.

Assessment Evidence of appropriate industrial experience in the form of a letter from the employer detailing the experience is required.

SCS3061 SAFETY 3

Campus Footscray Park

Prerequisite(s) Nil.

Content The subject aims to provide an understanding of the benefits of safety science and the difficulties which may be involved in obtaining these. Topics to be covered include: Safety science - The quantitative level of operation, How is safety science different, Examples and reviews of case studies, the safety science study, Costs and benefits, difficulties in the conduct of safety science studies and how to avoid, overcome these.

Required Reading To be advised by lecturer.

Class Contact Two hours per week comprising one one-hour lecture and one one-hour tutorial for one semester.

Assessment Assignment, 100%.

SCS3161 SAFETY AND SOCIETY

Campus Footscray Park

Prerequisite(s) Nil.

Content The subject aims to provide an understanding of the impact of the wider community on the field of occupational health and safety. Topics include: The wider community and the management of occupational health; a historical overview, the origins, management and regulation of occupational illness, community processes, a paradigm shift in occupational health and safety; disputes in relation to occupational health and safety, the need for legal change, approaches to safeguarding the worker, a critical review of income maintenance.


Class Contact Two hours per week comprising one one-hour lecture and one one-hour tutorial for one semester.

Assessment Two assignments (40% and 60%), 100%.

SCS3301 PUBLIC HEALTH

Campus Footscray Park

Prerequisite(s) Nil.

Content Topics covered in this unit include the historical origins and development of public health, initiatives and policies in public health, common risk factors associated with the development of disease, ongoing programs to improve health outcomes in specific high-risk socio economic groups, health promotion in the workplace, and the effect of a person's health status on work and employment.


Class Contact One hour lecture or tutorial for one semester.

Assessment Assignment, 40%; and a case study, 60%.

SCS3361 ENVIRONMENTAL HEALTH

Campus Footscray Park

Prerequisite(s) Nil.

Content This unit discusses the nature of the ‘environmental idea’. In this context 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 examines 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 or pollution. Quality of the environment and environmental protection are also covered in this unit.

SCS3401 OCCUPATIONAL HEALTH AND SAFETY
BEST PRACTICE
Campus Footscray Park
Prerequisite(s) Nil.
Content The subject will provide an understanding of occupational health and safety practices which are effective in corporate settings; the occupational health and safety practices which are effective in 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.
Required Reading Kubr, M. 1993, How to Select and Use Consultants, ILO, Geneva. (No.51 in the Management Development series.)
Class Contact Two hours of lectures/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: fluorometry, 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 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%.

SCS3521APPLIED CHEMISTRY 3 - ORGANIC
Campus Footscray Park
Prerequisite(s) SCS2521 Applied Chemistry 2 - Organic
Co-requisite(s) Nil.
Content The aims of this subject are to introduce students to advanced analytical and organic chemistry including synthesis, natural product chemistry, the application of sophisticated spectroscopic techniques and the role of chemistry in an industrial environment. Applications of advanced spectroscopy to organic analysis and structure elucidation. Study of carbohydrates, lipids, terpenes, steroids, heterocycles and proteins. Toxicology. Reaction mechanisms in photochemistry.
and molecular reactions. Practical work providing substantial 'hands-on' experience will complement the lecture material.


**Recommended Reading** Students will be referred to various texts and journals during the subject and will be expected to read widely from them.

**Class Contact** Six hours per week for two semesters, comprising three hours of lectures and three hours of practical work.

**Assessment** End-of-semester examination 60%; practical work 20% and assignments (2), 20%.

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**SCS3601 ANALYTICAL CHEMISTRY 3A**

**Campus** Werribee

**Prerequisite(s)** SCSxxxx Analytical Chemistry 2A and SCSxxxx Analytical Chemistry 2B or equivalent.

**Content** Chemical literature and use of library resources; modern trends in chemical analysis; review of analytical methodologies; an operational model for analytical chemistry; evaluation and criticism of analytical results; development of new analytical methods and trends in analytical research; project planning; selection and purchase of analytical equipment and apparatus; optimisation of analysis. Applications of advanced spectroscopy to organic analysis and structure elucidation. Analysis of carbohydrates, lipids, terpenes, steroids, heterocyclic compounds and proteins.


**Recommended Reading** Students will be referred to various texts and journals during the subject and will be expected to read widely from them.

**Class Contact** Two hours of lectures per week and four hours of laboratory classes per week for one semester.

**Assessment** Students will be assessed on the basis of an examination, 70%; and practical work, 30%. Students must pass the practical component in order to pass this subject.

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**SCS3603 MEDICAL CHEMISTRY 3 (DRUG DESIGN)**

**Campus** Werribee

**Prerequisite(s)** SC2502 Medical Chemistry 2, SC2381 Biochemistry 1

**Content** The synthesis of new chemicals and biochemicals which mimic natural molecules. Methods used to assess the purity of synthetically generated products. Methods used for the bioassay of chemically synthesized chemical. The design of chemicals using 3D drug design.


**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 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)** SC2502 Medical Chemistry 2, SC2381 Biochemistry 1

**Content** Students enrolled in medical chemistry 3 will become skilled in the use of the theoretical basis of advanced physico-chemical and biochemical methods for body fluid analysis for the diagnosis of human diseases. These techniques will include ELISA assays and the analysis of human tissues using techniques such as PCR to determine the DNA profile of human tissues.

**Required Reading** A range of textbooks and journal articles will be recommended by the lecturer.


**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)** SCxxxx Medical, Forensic & Analytical Chemistry 1A and SC2503 Forensic Chemistry 2 or equivalent.

**Content** Forensic Methods 3A provides training in sophisticated methods of analysis as currently applied to the examination of materials that have in some way been associated with crime. Modern methods of analysis and materials identification will be studies as applied to crimes against property such as arson, burglary, vehicle accidents and theft; crimes against the person such as assault, sexual offences and murder; and crimes involving the possession, illicit manufacture and distribution of drugs of abuse.

Recommended Reading  Students will be directed to relevant sections of  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 examination, 70%.

SCS3606 FORENSIC METHODS 3B

Campus Werribee

Prerequisite(s)  SCSxxxx Medical, Forensic & Analytical Chemistry IA 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 manufacture and distribution of drugs of abuse. Various topics in this subject will be delivered by practicing forensic scientists. Legal studies is also included and introduces students to the legal system, courtroom practices and expert testimony.


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

Prerequisite(s)  Satisfactory completion of an appropriate undergraduate degree program.

Content  This subject, the aim of which 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 interests of item 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 conduct scientific research 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 in which the content of interests of the project 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 contact hours. Regular meetings with the students’ supervisors will be arranged.

Assessment  The thesis will constitute 40% 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.

SMA1010 INTRODUCTORY MATHEMATICS

Campus Footscray Park

Prerequisite(s)  Nil.


Recommended Reading  Daly, T. et al., 2000, Mathematical Methods, V.C.E. Units 3 & 4, Nelson Thompson Learning.

Class Contact  Four hours per week for two semesters based on two hour lectures and two hour tutorial sessions.
Required Reading

Inferential statistics including estimation, one data (i.e. quantitative or qualitative). Probability and probability distributions. 

Prerequisite(s)

With an emphasis on matching the right tool to the right type of sciences. An introduction to matrices and their use in solving equations. Methods and applications of differential calculus.

Prerequisite(s)

Equations. Methods and applications of differential calculus. 

Prerequisite(s)

An introduction to matrices and their use in solving equations. Methods and applications of differential calculus. 

Prerequisite(s)

A combination of lectures and tutorials.

Assessment

Tests and assignments, 52%; one three-hour examination at the end of each semester, 48%. A satisfactory level of assessment for each component is required for a subject pass.

SMA1071 MATHEMATICS 1 PART 1
Campus Footscray Park
Prerequisite(s) At least one VCE Levels 3 and 4 Mathematics.
Recommended Reading Victoria University publications as advised by the lecturer.
Class Contact Four hours per week for one semester comprising lecture and tutorial work.
Assessment Mid-semester test, 35%; end-of-semester examination, 65%.

SMA1081 MATHEMATICS 1 PART 2
Campus Footscray Park
Prerequisite(s) SMA1071 Mathematics 1 Part 1.
Recommended Reading Victoria University publications as advised by the lecturer.
Class Contact Four hours per week for one semester comprising lecture and tutorial work.
Assessment Mid-semester test, 35%; end-of-semester examination, 65%.

SMA1110 MATHEMATICS 1
Campus Werribee
Prerequisite(s) One of the Year 12 mathematics subjects.
Content Revision of pre-calculus algebra with an emphasis on the solution to polynomial equations and the study of functions and graphs of particular relevance to the chemical and biological sciences. An introduction to matrices and their use in solving equations. Methods and applications of differential calculus.
Required Reading To be advised by lecturer.
Class Contact Four hours per week for one semester consisting of a combination of lectures and tutorials.
Assessment Tests and examination with weightings to be advised by the lecturer.

SMA1120 MATHEMATICS 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 MATHEMATICS IAP
Campus Footscray Park, Werribee
Prerequisite(s) Nil
Corequisite Nil
Content Functions and graphs, roots of equations. Derivative of a function, differentiation rules, applications of differentiation. definite and indefinite integration, integration rules and techniques, simple differential equations. Complex numbers; Euler's and de Moivre's theorems. Vectors, vector algebra.
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%.

SMA1202 MATHEMATICS IAQ
Campus Footscray Park, Werribee
Prerequisite(s) SMA1201 Mathematics IAP
Corequisite(s) Nil
Class Contact Four hours per week for one semester based on two hour lectures and two hour tutorial sessions.
Assessment Tests 35%; end of semester examination 65%.

SMA2031 MATHEMATICS 2 PART 1
Campus Footscray Park
Prerequisite(s) SMA1071 Mathematics 1 Part 1 and SMA1081 Mathematics 1 Part 2.
Content Numerical methods, bisection and Newton-Raphson methods of solving equations; computer programming, using the BASIC language with personal computers; calculus, partial differentiation; Second order differential equations; statistics, probability distributions, sampling, linear regression, correlation.
Required Reading To be advised by lecturer.
Class Contact Three hours per week for one semester comprising lectures, tutorial and laboratory work.
Assessment End-of-semester examination.

SMA2051 MATHEMATICS 2 PART 2
Campus Footscray Park
Prerequisite(s) SMA1071 Mathematics 1 Part 1; SMA1081 Mathematics 1 Part 2; SMA2031 Mathematics 2 Part 1.
Content Numerical methods: approximate integration; solution of a system of linear algebraic equations. Calculus: integration-reduction formulæ, improper integrals, double integrals;
SMA2091 MATHEMATICS 2D

Campus Footscray Park

Prerequisite(s) SMA1091 Mathematics 1D.


Required Reading To be advised by lecturer.

Class Contact Three hours per week for one semester comprising lecture, tutorial and laboratory work.

Assessment End-of-semester examination, 70%.

SMA2122 MATHEMATICS C1

Campus Footscray Park, Werribee.

Prerequisite(s) SMA2201 Mathematics B.

Content The subject is comprised of two units: Linear Algebra and Complex Variables.

Linear Algebra
Vector spaces, linear independence, spanning sets, basis, eigenvalues and eigenvectors, Cayley-Hamilton theorem, factorisation, quadratic forms, selected applications.

Complex Variables
Locii in the z-plane, analytic functions, Cauchy-Riemann equations, Laplace’s equation and harmonic functions. Poles, zeros, Taylor and Laurent series contour integration, Cauchy’s theorem, path independence, work done, conservative fields.

Required Reading To be advised by lecturer.


Class Contact Two hours per week for one semester comprising one hour of lectures and one hour of tutorial/laboratory sessions.

Assessment One hour mid semester test 35%; end-of-semester examination, 65%.

SMA2311 MATHEMATICS 2P

Campus Footscray Park

Prerequisite(s) SMA1321 Mathematics 1Q.


Class Contact Four hours per week for one semester comprising lecture and tutorial work.

Assessment End-of-semester examination, 100%.

SMA2201 ENGINEERING MATHEMATICS

Campus Footscray Park

Prerequisite(s) SMA1202


Recommended 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%.

181
SMA3311 MATHEMATICS 3P
Campus Footscray Park
Prerequisite(s) SMA2311 Mathematics 2P or SMA2211 Engineering Mathematics.

Content Functions defined by integrals, gamma and beta functions, second order linear differential equations - reduction of order, variation of parameters, Euler's equation, series solutions, Bessel's equation, Bessel functions. Partial differential equations - Laplace's equation, the wave and heat equations, separation of variables in Cartesian and polar coordinates. Iteration - fixed point iteration, convergence/divergence, separation of variables in Cartesian and polar coordinates.


Class Contact Four hours per week for one semester comprising lecture and tutorial work.

Assessment End of semester examination, 40%; assignment, 20%.

SMA4201 MATHEMATICS
Campus Footscray Park
Prerequisite(s) SMA2211 Engineering Mathematics; SMA2231 Mathematics or equivalent.

Content Laplace Transforms: revision of the Heaviside unit-step function and the second shifting theorem; transforms of impulsive and periodic functions; initial-value and final-value theorems; transfer functions. Matrices: matrix representations, e.g. of a graph, of a transformation; linear dependence/independence of a set of vectors; eigenvalues and eigenvectors of a matrix. Stability of an autonomous system of ordinary differential equations (brief treatment). Numerical methods: solution of an equation using iterative methods with special reference to the Newton-Raphson method; convergence and rate of convergence of iterations; Gaussian elimination and iterative solution of a system of linear equations; numerical integration using the trapezoidal rule, Simpson's rule, Newton-Cotes formulae; analysis of errors in numerical integration; numerical solution of equations of the form y = f(x,y) using Euler's method and the Runge-Kutta method (second-order and fourth-order processes). Computer applications using MATLAB to be based on a selection of the above topics.

Required Reading To be advised by lecturer.


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

Assessment End-of-semester examination, 70%; assignments and laboratory work, 30%.

SPH 1091 PHYSICS LABORATORY 1A
Campus Footscray Park
Prerequisite(s) Nil.

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 1A Manual, Victoria University.

Recommended Reading Serway, R. and Beichner, R., 2000, Physics for Scientists and Engineers with Modern Physics, 5th edn, Saunders College Publishing.

Class Contact 26 hours of laboratory experiments.

Assessment Performance in experiments, 60%; end-of-semester laboratory test, 40%. Supplementary assessment will be granted at the discretion of the examination board.

SPH 1092 PHYSICS LABORATORY 1B
Campus Footscray Park
Prerequisite(s) Nil.

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 1B Manual, Victoria University.

Recommended Reading Serway, R. and Beichner, R., 2000, Physics for Scientists and Engineers with Modern Physics, 5th edn, Saunders College Publishing.

Class Contact 26 hours of laboratory experiments.

Assessment Performance in experiments, 60%; end-of-semester laboratory test, 40%. Supplementary assessment will be granted at the discretion of the examination board.

SPH 1100 ELECTRONICS 1
Campus Footscray Park
Prerequisite(s) Nil.

Content Semester one: SPH1101 Electronics 1A. Semester two: SPH1102 Electronics 1B.

Required Reading Serway, R. and Beichner, R., 2000, Physics for Scientists and Engineers with Modern Physics, 5th edn, Saunders College Publishing.


Class Contact 26 hours of lectures/tutorials in each semester. 26 hours of laboratory experiments in each semester.

Assessment End of semester three-hour examinations plus tutorial test(s), 80%; laboratory work, 20%. Students are expected to pass both the theory and laboratory components in order to gain a pass. Supplementary assessment will be granted at the discretion of the examination board.
SPH 1101 ELECTRONICS 1A

Campus Footscray Park
Prerequisite(s) Nil.
Content Digital Electronics: Number systems, number bases and conversions, binary arithmetic, complements, binary codes, binary logic, logic gates, Boolean algebra, logic theorems, Karnaugh maps, logic circuits, Combinational logic circuits, adders, encoders and decoders, code converters, multiplexers, and demultiplexers, comparators. Sequential logic circuits, flip flops (RS, JK, D, T), counters, registers. Characteristics of various logic types (TTL, CMOS, ECL). ROM and RAM. Programmable logic devices, eg PLA's. Timing and control, monostable vibrators, Schmidt trigger, integrated circuit timer and applications.


Class Contact 26 hours of lectures/tutorials. 26 hours of laboratory experiments.
Assessment End-of-semester three-hour examination, plus tutorial test(s), 80%; laboratory work, 20%. Students are expected to pass both the theory and laboratory components in order to gain a pass.

SPH 1102 ELECTRONICS 1B

Campus Footscray Park
Prerequisite(s) Nil.
Corequisite(s) SPH1022 Electricity, Magnetism and Modern Physics.
Content Analogue Electronics Capacitance, AC circuits, impedance, series RC, RL and RLC circuits, power dissipation. Cathode ray oscilloscope. Intrinsic and extrinsic semiconductors, n-type and p-type semiconductors, the p-n junction. Diodes, diode models and equivalent circuits, diode circuits and applications, load line analysis, Zener diodes and power supplies. The bipolar junction transistor (BJT), npn and pnp transistor characteristics and models, the CE amplifier and biasing methods, stability of operating point. Field effect transistors, the JFET and MOSFET, characteristics and biasing BJT and JFET amplifiers. The operational amplifier, ideal and real amplifiers, applications. Inverting and summing amplifiers, non-inverting amplifiers, difference amplifiers, integrating and differentiating amplifiers, practical considerations A/D and D/A converters.


Class Contact 26 hours of lectures/tutorials. 26 hours of laboratory experiences.
Assessment End-of-semester three-hour examinations, plus tutorial test(s), 80%; laboratory work, 20%. Students are expected to pass both the theory and laboratory components in order to gain a pass.

SPH 1111 ASTRONOMY

Campus Footscray Park
Prerequisite(s) Nil.
Content History of astronomy, telescopes, our sun, solar system, comets, meteorites, the night sky, stellar evolution and spectra, variable stars, distances of celestial objects, galaxies (pulsars, black holes and quasars).
Required Reading To be advised by lecturer.
Class Contact Four hours per week for one semester.
Assessment will be based on practical sessions, an assignment and an end of semester examination. Supplementary assessment will only be available if requested by the school/department governing the course in which the student is enrolled.

SPH 1210 PHYSICS 1F

Campus St Albans, Werribee.
Prerequisite(s) Year 12 Physics or equivalent is recommended.
Content The aim of this subject is to provide an introduction to some basic principles and techniques of physics. A selection of topics from the following will be studied: units; mechanics; thermal physics; fluid dynamics; electromagnetism, electronics.
Class Contact Four hours per week for one semester comprising lectures, tutorials and practical work.
Assessment Assignments, 20%; practical work, 20%; examination/tests, 60%. Supplementary assessment will only be available if requested by the school/department governing the course in which the student is enrolled.

SPH 1220 PHYSICS 2F

Campus St Albans, Werribee.
Prerequisite(s) Year 12 Physics or equivalent is recommended.
Content The subject aims to provide an introduction to some basic principles and techniques of physics. A selection of topics from the following will be studied: units; mechanics; thermal physics; fluid dynamics; electromagnetism, electronics.
Class Contact Four hours per week for one semester comprising lectures, tutorials and practical work.
Assessment Assignments, 20%; practical work, 20%; examination/tests, 60%. Supplementary assessment will only be available if requested by the school/department governing the course in which the student is enrolled.

SPH 1601 PHYSICS 1SA

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 dimension; motion in a circle; work done by a force, kinetic and potential energy; conservation of energy and momentum.
A final mark of at least 50 is required to pass.

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.

**SPH 1602 PHYSICS ISB**

**Campus** Footscray Park, Werribee.

**Prerequisite(s)** SPH1601 Physics 1SA.

**Content** Electricity and Magnetism: Concept of charge, electric field and electric potential, Coulomb's law; electric field lines; electric flux; Gauss' law; capacitance and dielectrics; force on current carrying conductors; concept of magnetic field intensity; Lorentz force; magnetic field lines; magnetic flux; Faraday's law; induced emf; inductance.

Waves: Wave motion; frequency, period, amplitude and wavelength; waves in strings; moduli of elasticity; sound waves in media; pressure variation; intensity of a wave; sound level; dB scale; variation of intensity with distance from source; Doppler effect; superposition of waves; interference; standing waves; beats.

Thermal Physics: Concept of temperature and heat energy; thermal expansion of solids and liquids; heat transfer; heat capacity and specific heat; latent heat; ideal gases; work and heat in thermodynamic processes; isothermal and adiabatic processes; first law of thermodynamics; heat engines and the second law of thermodynamics.


**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.

**SPH 2000 PHYSICS 2**

**Campus** Footscray Park

**Prerequisite(s)** SPH1101 or its equivalent, SMA1201

**Corequisite(s)** SMA1202 &/or SMA2311

**Content** Semester 1; SPH2021 Quantum Mechanics, SPH2021 Instrumentation & AC Theory, SPH2031 Thermodynamics, SPH2091 Physics Laboratory 2A. Semester 2; SPH2012 Electromagnetic Theory, SPH2022 Optics & Relativity, SPH2032 Solid State & Nuclear Physics, SPH2092 Physics Laboratory 2B

**Required Reading** See references under each unit.

**Recommended Reading** See references under each unit.

**Class Contact** 114 hours per semester, comprising lectures, tutorials and laboratory sessions. Supplementary assessment will be granted at the discretion of the examination board.

**Assessment** End of semester examinations plus assignments. Performance in experiments, written reports and oral presentations. The marks in each unit will be weighted by its credit point value and these will be summed and scaled out of 100. A final mark of at least 50 is required to pass. Supplementary assessment will be granted at the discretion of the examination board.

**SPH 2011 QUANTUM MECHANICS**

**Campus** Footscray Park

**Prerequisite(s)** a minimum of SPH1101, SPH1102, SMA1201

**Corequisite(s)** SMA1202 &/or SMA2311

**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.


**Class Contact** 26 hours lectures/tutorials

**Assessment** End of semester two-hour examination plus assignments as advised by lecturer (up to 20%). Supplementary assessment will be granted at the discretion of the examination board.

**SPH 2012 ELECTROMAGNETIC THEORY**

**Campus** Footscray Park

**Prerequisite(s)** SPH1021, SPH1022 & SMA2311

**Corequisite(s)** Nil

**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.


**Class Contact** 26 hours of lectures/tutorials

**Assessment** End of semester two-hour examination plus assignments as advised by lecturer (up to 20%). Supplementary assessment will be granted at the discretion of the examination board.

**SPH 2021 INSTRUMENTATION & AC THEORY**

**Campus** Footscray Park

**Prerequisite(s)** SPH1021 & SMA1201

**Corequisite(s)** SPH1100

**Content** Complex numbers in AC theory, phasor notation, Fourier spectral analysis, complex impedance & power, analysis of response of RLC circuits as an example of a second order system, resonance, corollaries, mesh current and node voltage analysis, Thévenin and Norton theorems. Quality of measurements, signal-to-noise, noise sources, filtering and noise reduction, frequency response and bandwidth, dynamic characteristics of measurement systems, control theory, open and closed loop systems, examples.

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


**Class Contact** 26 hours of lectures/tutorials
Assessment End of semester two-hour examination plus assignments as advised by lecturer (up to 20%). Supplementary assessment will be granted at the discretion of the examination board.

SPH2022 OPTICS & RELATIVITY
Campus Footscray Park
Prerequisite(s) SPH1011, SPH1012 & SPH1021
Corequisite(s) SMA2311
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: Stimulated emission, population inversion, Einstein coefficients, energy level diagrams, various types of lasers and their operation, mode structure, laser applications. Relativity - Conceptual basis of special relativity, length and time dilation, momentum, mass and energy. Introduction to conceptual basis and important results of general relativity.
Class Contact 26 hours of lectures/tutorials
Assessment End of semester two-hour examination plus assignments as advised by lecturer (up to 20%). Supplementary assessment will be granted at the discretion of the examination board.

SPH2031 KINETIC THEORY AND THERMODYNAMICS
Campus Footscray Park
Prerequisite(s) SPH1011 & SMA1201
Corequisite(s) Nil
Content Kinetic Theory: Microscopic and macroscopic definitions of an ideal gas, kinetic calculation of pressure, kinetic interpretation of temperature, internal energy of an ideal gas, equipartition of energy, specific heats of ideal gases, mean free path, distribution of molecular speeds. Thermodynamics: Zeroth law of thermodynamics, thermometry, International Practical Temperature Scale, revision of first and second laws of thermodynamics, entropy, heat engines and refrigerators, practical examples of these devices, Gibb's function, enthalpy, Helmholtz free energy, the Maxwell equations, first and second TdS equations, the energy equation, applications of thermodynamics to physical processes and devices apart from purely gaseous systems) including: magnetisation and adiabatic demagnetisation of paramagnetic materials, polarisation of dielectrics, the electro-chemical cell, the fuel cell, thermoelectricity and the Peltier and Thomson effects, thermoelectric refrigeration.
Class Contact 26 hours of lectures/tutorials
Assessment End of semester two-hour examination plus assignments as advised by lecturer (up to 20%). Supplementary assessment will be granted at the discretion of the examination board.

SPH2032 SOLID STATE AND NUCLEAR PHYSICS
Campus Footscray Park
Prerequisite(s) SPH1022, SMA1202
Corequisite(s) Nil
Content Crystal lattices and structures, Lattice planes and directions; Diffraction laws in Bragg and von Laue forms, reciprocal lattice, structure factor; Classical and quantum free electron theories of metals, Band theory of solids. Observed properties of nuclei, nuclear models, nuclear decay, radiation. Elementary particles - the standard model. Examples and experimental techniques in these fields.
Class Contact 26 hours lectures/tutorials
Assessment End of semester two-hour examination plus assignments as advised by lecturer (up to 20%). Supplementary assessment will be granted at the discretion of the examination board.

SPH2091 PHYSICS LABORATORY 2A
Campus Footscray Park
Prerequisite(s) SPH1010 or at least 4 units of 1st year physics units including SPH1091 & SPH1092
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 2A Manual. Victoria University
Class Contact 36 hours of laboratory experiences
Assessment Logbook of experimental work 50%, formal reports 25% and oral presentations 25%. Supplementary assessment will be granted at the discretion of the examination board.

SPH2092 PHYSICS LABORATORY 2B
Campus Footscray Park
Prerequisite(s) SPH2091
Corequisite(s) Nil
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 2B Manual. Victoria University
Class Contact 36 hours of laboratory experiences
Assessment Logbook of experimental work 50%, formal reports 25% and oral presentations 25%. Supplementary assessment will be granted at the discretion of the examination board.
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.

SPH 3000 PHYSICS 3

Campus Footscray Park

Corequisite(s) SMA2321 or SMA3311

Class Contact 118 hours per semester, comprising lectures, tutorials and laboratory sessions.

Assessment End of semester examinations. The marks in each unit will be weighted by its credit point value and these will be summed and scaled out of 100. A final mark of at least 50 is required to pass. Supplementary assessment will be granted at the discretion of the examination board.

SPH 2432 DATA ACQUISITION AND INTERFACING

Class Contact 26 hours per semester, comprising 20 lectures and 6 tutorials.

Assessment End of semester examination, 100%. Supplementary assessment will be granted at the discretion of the examination board.

SPH 3012 QUANTUM MECHANICS

Class Contact 26 hours per semester, comprising 20 lectures and 6 tutorials.

Assessment End of semester examination, 100%. Supplementary assessment will be granted at the discretion of the examination board.
SPH 3022 LASER RS

Campus Footscray Park

Prerequisite(s) SPH2000 or its equivalent, SMA2311

Corequisite(s) SMA2321


Required Reading To be advised.


Class Contact 26 hours per semester, comprising 20 lectures and 6 tutorials.

Assessment End of semester examination, 100%. Supplementary assessment will be granted at the discretion of the examination board.

SPH 3031 FIBRE OPTICS

Campus Footscray Park

Prerequisite(s) SPH2002 or its equivalent, SMA2311

Corequisite(s) SMA2321 and/or SMA3311


Class Contact 26 hours per semester, comprising 20 lectures and 6 tutorials.

Assessment End of semester examination, 100%. Supplementary assessment will be granted at the discretion of the examination board.

SPH 3032 ATOMIC PHYSICS AND ATOMIC SPECTROSCOPY

Campus Footscray Park

Prerequisite(s) SPH2000 or its equivalent, SMA2311


Required Reading To be advised.


Class Contact 26 hours per semester, comprising 20 lectures and 6 tutorials.

Assessment End of semester examination, 100%. Supplementary assessment will be granted at the discretion of the examination board.

SPH 3091 PHYSICS LABORATORY 3A

Campus Footscray Park

Prerequisite(s) SPH2000 or at least 4 units of 2nd year physics units including SPH2091, SPH2092 and SPH2432

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

Required Reading Physics Laboratory 3A Manual. Victoria University.

Class Contact 40 hours of laboratory experiences

Assessment Based on student performance in the laboratory exercises and on a series of formal reports. Supplementary assessment will be granted at the discretion of the examination board.

SPH 3092 PHYSICS LABORATORY 3B

Campus Footscray Park

Prerequisite(s) 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.

Recommended Reading Nil

Class Contact 40 hours of laboratory experiences

Assessment Based on student performance in the laboratory exercises and on a series of formal reports. Supplementary assessment will be granted at the discretion of the examination board.

SPH 3030 PHYSICS 30

Campus Footscray Park

Prerequisites SPH2000 or its equivalent, SMA2311

Corequisite(s) SMA2321 or SMA3311

Content Semester 1; SPH3301 Classical Mechanics, SPH3021 Optics 3, SPH3031 Fibre Optics, SPH3091 Physics Laboratory 3A. Semester 2; SPH3012 Quantum Mechanics, SPH3022 Lasers, SPH3032 Atomic Physics & Atomic Spectroscopy

Required Reading See references under each unit

Recommended Reading See references under each unit

Class Contact 118 hours in semester 1, comprising lectures, tutorials and laboratory sessions. 78 hours in semester 2, comprising lectures and tutorials.

Assessment End of semester examinations. The marks in each unit will be weighted by its credit point value and these will be summed and scaled out of 100. A final mark of at least 50 is required to pass. Supplementary assessment will be granted at the discretion of the examination board.
SPH 3200 OPTOELECTRONICS 3

Campus Footscray Park
Prerequisite(s) SPH2000 or its equivalent, SMA2311
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.

SPH 3430 PHYSICS PROJECT

Campus Footscray Park
Prerequisite(s) SPH2000 or at least 4 units of 2nd year physics units including SPH2091 and SPH2092.

Content The aim of the Physics project is to develop in students the ability to approach an investigative problem in a logical and sensible way, and to develop the ability to carry out and report on a small research or development task. Students will spend an average of three hours per week throughout the semester working independently on their allocated project under the supervision of a member of the academic staff.

Required Reading To be advised by the lecturer.

Recommended Reading Nil

Class Contact No formal classes are held. Students will be required to work on their projects systematically throughout the semester at times suitable to themselves and their supervisor.

Assessment The assessment is made on the basis of the student performance in the seminar organised by the supervisor and the quality of the written reports(s).

SPH 3441 OPTICAL PROPERTIES OF MATERIALS

Campus Footscray Park
Prerequisite(s) SPH2000 Physics 2, SMA2311
Co-requisite(s) SPH3100 Physics 30, SMA2321 or SMA3311


Class Contact Two hours per week for one semester comprising one one-hour lecture and one one-hour tutorial/laboratory class.

Assessment Assignments throughout the semester, 100%. Supplementary assessment will not normally be available in this subject.

SPH 3451 ADVANCED OPTICS AND OPTICAL DESIGN

Campus Footscray Park
Prerequisite(s) SPH2000 Physics 2, SMA2311


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.
structures, file types, file operation, file I/O formatting, function calls, parameter passing, control structures, data printed data, structured modular programming, subroutine and assignment and control statements, arrays, loops, formatting data types and constants, arithmetic and character expressions, be presented including the following features: fortran statements, FORTRAN. The fundamentals of the FORTRAN language will not normally be available in this subject.

Assessment End of semester examination 50%, assignments 50%. Supplementary examination will be granted at the discretion of the examination board.

Class Contact 39 hours of lectures/tutorials.

Required Reading To be advised.


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 Nil.

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) SCM1311 Programming 1 and SCM1312 Programming 2

Corequisite(s) Nil.

Content The programming language normally used will be FORTRAN. The fundamentals of the FORTRAN language will be presented including the following features: fortran statements, data types and constants, arithmetic and character expressions, assignment and control statements, arrays, loops, formatting printed data, structured modular programming, subroutine and function calls, parameter passing, control structures, data structures, file types, file operation, file I/O formatting. Assignments will normally cover topics such as: roots of non-linear equations, solution of simultaneous linear algebraic equations, eigenvalues and eigenvectors, differentiation and integration, solution of differential equations, discrete function approximation, non-linear regression, fast Fourier transforms, digital filtering, simulation.

Required Reading To be advised.


Class Contact 39 hours of lectures/tutorials.

Assessment End of semester examination 50%, assignments 50%. Supplementary examination will be granted at the discretion of the examination board.

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 laser 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.

SPH4410 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 Coordinator.

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.

SPH4331 FIBRE OPTIC TECHNOLOGY
FUN DAMENTALS
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

**Food Safety, Authenticity and Quality Unit**

This unit has been established in recognition of existing research work in the field of food quality within the Faculty and to develop active partnerships with institutions and individuals locally, nationally and internationally in the areas of safety and authenticity. Much of the facilities and support from the Centre for Bioprocessing and Food Technology have been transferred into the Unit providing both oversight and continuity for students and projects.

Preliminary discussions with a number of resident institutions on the Werribee Technology Precinct have promised support and collaboration in areas of mutual interest which it is expected will also provide expert teaching into appropriate courses with the Faculty. There is additional potential interaction with the Australian Government Analytical Laboratories (AGAL) given their increasing interests in the food area.

**Australian Food Marketing Centre**

The Australian Food Marketing Centre’s R & D programs cover the whole food system (at the farm, processing and consumer levels, and with public policy). The Faculty is in the process of assessing the benefits and viability of integrating the AFMC’s activities with food science, food nutrition and other food related R & D programs in the Faculty with the aim of creating a new multi-disciplinary unit. A team of academics is currently developing this proposal to establish The Australian Centre for Food and Nutrition.

The current R & D programs of the Australian Food Marketing Centre are as follows:

- Introduction of new crops, new products, industries and agricultural systems
- Integration and strategic partnerships across the food system
- Food trade and investment strategies and trends
- Food industry trends and performance
- Food business development and growth strategies
- Food public policy and trade issues
- Consumer behaviour, attitudes and purchase behaviour and its effects on purchasing decisions and product use
- Innovation and change in the food industry
- Customer satisfaction and business performance

The Centre also delivers conferences, seminars, workshops and training programs for Australian and overseas organisations. In the last five years more than 100 senior corporate executives, government officials, representatives of trade associations and overseas researchers have participated in various events organised by the Centre.

**Information Services**

The Centre publishes a fortnightly bulletin, *Food Information Brief*, delivers briefing programs on food industry issues, maintains a comprehensive database of food companies in Australia and conducts periodical review and analysis of different food industry sectors.

### Centre for Environmental Safety and Risk Engineering

**Courses Offered**

The Centre for Environmental Safety and Risk Engineering offers postgraduate courses leading to the award of:

- Doctor of Philosophy
- Master of Engineering (Research)
- Master of Engineering in Building Fire Safety and Risk Engineering (Coursework)
- Master of Science in Occupational Safety and Health
- Master of Science in Occupational Hygiene
- Graduate Diploma in Building Fire Safety and Risk Engineering
- Graduate Certificate in Performance-Based Building and Fire Codes

**International Programs**

Offshore Programs conducted in Hong Kong (in conjunction with the Chinese University of Hong Kong):

- 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

**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
- Human Behaviour in 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 Facility is some $1.5m. In late 2001, the Centre received a $2,000,000 Systemic Infrastructure Initiative Grant from the Federal Government to build a large scale experimental building – fire facility over the top of the existing facility. This is a step in developing the facility into a major national and international focus for research on fire. A further $875,000 is being provided by Victoria University and collaborative partners – SSL, CFA, BHPSteel and OneSteel.

The Centre has been very successful in attracting research funds from various bodies, including competitive Australian Research Council (ARC) Grants. Grants obtained include: two ARC Large Grants, ARC Collaborative Research Grant (with BHP and the National Association of Forest Industries, NAFI), ARC Infrastructure Grant, industry grants, contracts and scholarships (for example, from BHP and NAFI), research contracts from the National Fire Laboratory, National Research Council of Canada (on behalf of the Department of National Defence, Canada, and Public Works Canada). The annual research budget for the Centre is some $1million.

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 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.

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.

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 may be taken in the evenings (two evenings per week) or 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

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<th>Semester One</th>
<th>Credit Points</th>
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<tr>
<td>EQB5611</td>
<td>15</td>
</tr>
<tr>
<td>EQB5621</td>
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</table>

<table>
<thead>
<tr>
<th>Semester Two</th>
<th>Credit Points</th>
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<tbody>
<tr>
<td>EQB5632</td>
<td>15</td>
</tr>
<tr>
<td>EQB5642</td>
<td>15</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.

Graduate Diploma in Building Fire Safety and Risk Engineering

Course Code: EGQB

Course Objectives
The course aims to produce professionals who are familiar with fire science and technology fundamentals, who can apply rational engineering principles and techniques to identify cost-effective fire safety system designs for buildings, and will be familiar with the content and application of fire engineering design codes.

Admission Requirements
To qualify for admission to the course an applicant must have successfully completed a degree in engineering or a degree in science or building surveying.

A corresponding diploma having equivalent content of the relevant technical subjects will also be considered.

Relevant industrial experience is required.

Applicants must either have previously studied, or demonstrated a sound basic knowledge of the following topics: fluid dynamics, heat transfer, properties of materials and structural behaviour. Bridging subjects may be required to overcome any inadequacies.

A letter of recommendation and an interview may be required.

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 and in block modules over two years. Students must complete 120 credit points. The maximum time period to complete the course is six years.

Course Structure

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Credit Points</th>
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</thead>
<tbody>
<tr>
<td>Semester One</td>
<td>EQB5611</td>
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<tr>
<td></td>
<td>EQB5621</td>
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<tr>
<td>Semester Two</td>
<td>EQB5632</td>
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<tr>
<td></td>
<td>EQB5642</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 2</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semester One</td>
<td>EQB5751</td>
</tr>
<tr>
<td></td>
<td>EQB5761</td>
</tr>
<tr>
<td>Semester Two</td>
<td>EQB5772</td>
</tr>
<tr>
<td></td>
<td>EQB5782</td>
</tr>
</tbody>
</table>
**Assessment**

Assessment is by a combination of written projects, assignments, submissions, laboratory work and oral presentation. Distribution of marks among each aspect of assessment is determined individually for each subject.

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

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**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, coordinate 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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</thead>
<tbody>
<tr>
<td>Semester One</td>
<td></td>
</tr>
<tr>
<td>EQB5611 Risk Assessment and Human Behaviour 15</td>
<td></td>
</tr>
<tr>
<td>EQB5621 Fire Growth, Detection &amp; Extinguishment 15</td>
<td></td>
</tr>
<tr>
<td>Semester Two</td>
<td></td>
</tr>
<tr>
<td>EQB5632 Smoke and Fire Spread, Fire Safety System Design 15</td>
<td></td>
</tr>
<tr>
<td>EQB5642 Performance Codes Methodology and Structure 15</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 2</th>
<th>Credit points</th>
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<tbody>
<tr>
<td>Semester One</td>
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<tr>
<td>EQB5751 Fire Technology Modelling 15</td>
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</tr>
<tr>
<td>EQB5761 Fire Safety Systems Modelling 15</td>
<td></td>
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<tr>
<td>Semester Two</td>
<td></td>
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<tr>
<td>EQB5772 Fire Safety System Design 15</td>
<td></td>
</tr>
<tr>
<td>EQB5782 Fire Spread and Fire Safety System Design Project 15</td>
<td></td>
</tr>
</tbody>
</table>

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**Master of Science in Occupational Safety and Health, and Master of Science in Occupational Hygiene**

The University of Greenwich, London, UK, in conjunction with the Centre for Environmental Safety and Risk Engineering, offers a two-year program in the distance learning mode. The degree is awarded by the University of Greenwich.

### Master of Science in Occupational Safety and Health

The course will necessitate completion of six taught units comprising five core units in:
- Occupational Safety Practice
- Safety and Risk Management
- The Monitoring, Analysis and Control of Toxic Substances in the Workplace
- Industrial Toxicology, Occupational Health Practice and Epidemiology
- The Thermal and Acoustic Environment.

In addition, students will take ONE unit from the following options. The optional units are:
- Lighting, Ionising and Non-Ionising Radiation
- Ergonomics and Industrial Psychology

Completion of the six units will give students the 90 credits for the award of a Postgraduate Diploma. The Master of Science will be completed via a 30 credit dissertation which will be based on an empirical investigation.

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These programs are designed to provide students with advanced knowledge and skills that are relevant to their fields.
**Master of Science in Occupational Hygiene**

Students will be required to complete all the units offered in the Master of Science in Occupational Safety and Health, except the first unit, Occupational Safety Practice. Completion of the six units will give students the 90 credits for the award of a Postgraduate Diploma. The Master of Science will be completed via a 30 credit dissertation which will be based on an empirical investigation.

**Masters (by Research)**

*Course Code:* ERQR

**Course Structure**

Full-time: EQT6010  
Part-time: EQT6020

**Doctor of Philosophy**

*Course Code:* EPQR

**Course Structure**

Full-time: EQT6030  
Part-time: EQT6040

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**Centre for Packaging, Transportation and Storage**

**Courses Offered**

The Centre for Packaging, Transportation and Storage offers postgraduate courses leading to the award of:

- Graduate Certificate in Intermodal Freight Systems Management
- Graduate Diploma in Intermodal Freight System Management
- Doctor of Philosophy
- Master of Engineering (Research)

A wide variety of research projects are available. Most programs offer participation in industry projects.

The Centre also offers these undergraduate subjects in Packaging Technology, available within the School of the Built Environment:

- EMU4401 Transportation Dynamics
- EMU4402 Design and Testing of Containers

**Focus**

The Centre for Packaging, Transportation and Storage (CPTS) at Victoria University is a multi-disciplinary centre supported by scientists and engineers from departments across the University. Established in 1994, its purpose is to complement the University's educational courses in packaging technology with research programs in areas concerned with the packaging, handling, transportation and storage of goods. In addition, the Centre undertakes technical studies and testing for industry clients and runs seminars, workshops and training programs related to packaging technology. Almost $2 million has been invested in the laboratory facilities.

The University is unique in Australia in having dedicated considerable resources toward high quality research in packaging. Current and future research programs include the Major Research Area of Food Science, Packaging and Marketing in its Research Management Plan.

**Mission**

The mission of the Centre is to be a leading, internationally recognised provider of education, research and related services in packaging, transportation and storage.

The Centre is particularly mindful of its role in the development of close links with industry, commerce and government through collaborative research, consultancy, educational and training programs and dissemination of technical information. It receives cooperation from several departments, schools and faculties.

**Research Activities**

Research projects currently being conducted include investigations on packaging materials properties under extreme environmental conditions, measurement, analysis and laboratory simulation of distribution environments, numerical modelling of storage of respiring produce, pesticide-free storage of grains, development of new techniques for packaging design and evaluation, odour characterisation and oxidative stability of packaging trims, fuzzy neural clustering techniques for grading and packaging produce, life cycle assessment of product packaging systems, among others.
Graduate Certificate in Intermodal Freight Systems Management

Course Code: ETIF

Course Objectives

The course seeks to provide transport specialists and managers with the background, analytical skills and techniques useful and necessary to manage intermodal freight - and elements in the systems - efficiently and effectively. Among other things, it seeks to provide an understanding of: The nature and operational dynamics of integrated transport systems. Competition, competitive forces and competitive efficiency in markets and the way in which modal and intermodal systems 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

| Credit points | EPM5000 | Intermodal Freight Markets - Dynamics and Structure | 20 |
| | EPM5001 | Intergrating Intermodal Freight Systems | 20 |
| | EPM5002 | Defining Strategies for Intermodal Freight Systems | 20 |

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, teamwork and joint research - all requiring and/or developing effective oral and written communication skills.

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 (i.e. logistics or supply chain management) and a minimum of three years relevant industry experience.

Course Duration

The course is taught in six teaching units each of five days scheduled at twelve week intervals.

Course Structure

| Credit points | EPM5000 | Intermodal Freight Markets - Dynamics and Structure | 20 |
| | EPM5001 | Intergrating Intermodal Freight Systems | 20 |
| | EPM5002 | Defining Strategies for Intermodal Freight Systems | 20 |
| | EPM5003 | Advanced Chain Systems Management | 20 |
| | EPM5004 | Financial and Investment Planning | 20 |
| | EPM5005 | Strategy, Strategic Options and Business Success in Chain Systems Management | 20 |

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 exposure 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, competent accumulates over the three related subjects to deliver excellent learning outcomes.
**Telecommunication and Electronic Technologies Centre (TET)**

Telecommunication and microelectronics is one of the Key Research Areas of the University. The research focus of the TET Centre is to create technologies that are required for the future wireless telecommunication services, internet services and microelectronic systems. These areas are currently experiencing major growth worldwide. Major industry groups are targeting their research centres involved in telecommunications and microelectronics both within Australia and overseas. The Centre is a partner in the Australian Telecommunication CRC (AT-CRC), Chipskills Program, Swedish Microelectronics Consortia and Heterogeneous Signal Processing Research Group.

**Research Activities**

**Mobile Communication and Signal Processing**
- System Consideration
- Air Interface
- Technology, Implementation and Software Radio

**Microelectronic Systems**
- Mixed Signal
- ASIC/DSP/Full Custom Design
- Analog and RF
- Microprocessor and Embedded Systems

**Australia Telecommunications CRC**
- Wireless Technologies

The Centre has well-established laboratories equipped, with modern test equipment and design tools to support all the above areas.

**National Networked Tele Test Facility - Victorian Node**

Supported by the Commonwealth Government of Australia and the State Government of Victoria.

Testing of MicroChips is a fundamental step in development of any electronic circuit or system. It becomes impossible to design and map any “clever” algorithms associated with IT, communications, telecommunications including wireless and optoelectronics networks, opto-VLSI systems, sensor and MEMS technology and the like into leading edge hardware effectively without access to the latest Electronic Design Automation (EDA) tools and Advanced Test Equipment (ATE). Thus advanced testing becomes a prerequisite component of chip ‘design flow’ for implementation of Very Large Scale Integrated (VLSI) circuits and System-on-a-Chip (SoC) into hardware. The National Networked Tele Test Facility for Integrated Systems - Victorian Node was established in 2002 as the Commonwealth Government of Australia Major National Research Facility (MNRF) funded project. The Victorian Node of the facility provides state-of-art testing environment for electronics and microelectronics teaching, research and development. This facility will enable designers to test and prototype VLSI circuits and SoC, prior to production.


**School of Communications and Informatics**

The School embraces the disciplines of Electrical and Electronic Engineering, Applied Physics and Computer and Mathematical Sciences. These boast a range of research specialisations which include mobile communications: system design, digital signal processing and communication software, applied optical science, fibre optic sensors, fibre optic communications, laser physics and laser applications, photonics, thin film coatings and vacuum physics. The Mobile Communication and Signal Processing Group is part of the Australian Telecommunication CRC Program.

The research group in mathematical inequalities and applications (RG MIA) 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.

Electrical and Electronic Engineering course and staff specialist interests cover electronics, communications, power, control, and computer systems engineering.

School staff members are active in a number of research projects supported through the co-operation of industrial bodies and national research organisations.

The Applied Physics staff have research interests in applied optics, lasers and laser applications, optical fibres and fibre sensing, vacuum physics, surface physics, nuclear physics, remote atmospheric sensing, geophysics and acoustics.

Most of the research activities in this area come under the umbrella of the Optical Technology Research Laboratory. The facilities available are amongst the best in Australia and compare favourably with the best overseas.

**Postgraduate Programs by Research**

The School offers the following research degrees:
- Doctor of Philosophy
- Master of Engineering
- Master of Science

Research topics compatible with the School’s experimental facilities and staff expertise are negotiated between student and supervisors. A number of research programs are available in the above areas. In addition, applicants with interests in similar areas are encouraged to discuss them with the School, telephone (03) 9688 4492/4703.

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.

Master of Engineering (Research)
Course Code: ERER

Master of Science (Research)
Course Code: SRNL

Course Structure
ECI8000 Research (Full Time)
ECI8010 Research (Part Time)

Doctor of Philosophy
Course Code: SPNL, EPER, SPSC

Course Structure
ECI8000 Research (Full Time)
ECI8010 Research (Part Time)

Coursework Programs
The School offers a range of coursework programs at postgraduate level:
1. Graduate Certificate in:
   • Microelectronic Engineering
2. Graduate Diplomas in:
   • Communication Systems
   • Computer Science
   • Computer and Mathematical Sciences
   • Microelectronic Engineering
   • Multimedia Information Networking
   • Software Engineering
3. Master of Engineering in:
   • Microelectronic Engineering
4. Master of Engineering Science in:
   • Computer Systems Engineering
   • Telecommunication Engineering
5. Master of Science in:
   • Computer Science
   • Computer and Mathematical Sciences
   • Software Engineering

Graduate Diploma in Communication Systems
Course Code: EGET

Course Objectives
This postgraduate program, first offered in 1979 and reaccredited in 1985 and 1989 is designed to extend the education of practising engineers.
The main objective of the course is to provide practising engineers with advanced training in modern communication systems and associated technologies. Specifically, the course is designed to assist engineers in acquiring specialist knowledge not normally available in undergraduate courses and keep abreast with new developments in communication technology.
The course also helps communication engineers to broaden their technical horizon and develop new skills in other areas of communication engineering which are outside their immediate expertise.

Admission Requirements
To qualify for admission to the course an applicant must have successfully completed a degree in electrical, electronic or communication engineering, or have successfully completed other appropriate qualifications and relevant professional experience.
Full fee paying international students must have qualifications which are equivalent to those listed above. In addition they must provide evidence of proficiency in the English language:
IELTS - an overall band score of 6.0, subject to individual profile;
or
TOEFL - a score of 550+, and a Test of Written English (TWE) score of 5+.

Course Duration
The course is offered on a full-time basis over one year or on a part-time basis over an equivalent period of time. Completion of the course requires the accumulation of 120 credit points.

Course Structure
The program is made up of three compulsory subjects, six elective subjects, and a Case Study. The compulsory subjects and the Case Study form the core. The core subjects are designed to give students the necessary theoretical background, programming skills, and exposure to independent study while the elective subjects (to be chosen from a comprehensive set), offer a high degree of specialization.
The elective subjects are common with the School's Master of engineering Science (by coursework) programs. Eligible students wishing to transfer to the Masters programs can claim credit for these subjects completed in the Graduate Diploma.

<table>
<thead>
<tr>
<th>Semester One</th>
<th>Credit points</th>
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</thead>
<tbody>
<tr>
<td>EET5510</td>
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</tr>
<tr>
<td>SCMS8000</td>
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</tr>
<tr>
<td>SCMS811</td>
<td>12</td>
</tr>
<tr>
<td>2 Elective Subjects</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester Two</th>
<th>Credit points</th>
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</thead>
<tbody>
<tr>
<td>EET5500</td>
<td>12</td>
</tr>
<tr>
<td>Case Study</td>
<td>12</td>
</tr>
<tr>
<td>4 Elective Subjects</td>
<td>48</td>
</tr>
</tbody>
</table>
Elective subjects

- EET6511  Data Network Analysis and Design  12
- EET6521  Digital Switching and Signalling Systems  12
- EET6531  Wireless Communication Subsystems  12
- EET6541  Multimedia and Internet Technology  12
- EET6551  Microwave Electronic Circuit Design  12
- EET6561  Local Area and Broadband Networks  12
- EET6512  Intellignet Networks and Network Management  12
- EET6522  Telecommunication Tariff Structures And Teletraffic Engineering  12
- EET6532  Microwave and Satellite Communication Systems  12
- EET6542  Mobile and Personal Communication Systems  12
- EET6552  Computer Networks and Networking Software  12
- EET6562  Digital Signal Processing  12

Assessment

Assessment will be a combination of written assignments, test, laboratory work, project work and examinations. Except in special circumstances, supplementary assessment will not be available.

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

Graduate 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 & Software Engineering
- Multimedia & Networking

**Mathematical Sciences:**
- Production and Distribution Management
- Finance and Marketing Statistics

The courses provide maximum flexibility allowing specialisation in either one or a combination of the two streams.

To complete a Graduate Diploma, students are required to pass the equivalent of eight semester subjects. All subjects are three hours per week.

For the award of Graduate Diploma in:

**Computer Science Stream**

- SCM5800  Object Oriented Programming GD1
- SCM5802  Information Systems
- SCM5803  Data Structures and Programming
- SCM5804  Software Engineering
- SCM5805  Communication and Networks
- SCM5807  Advanced Information Systems
- SCM5811  Operating Systems
- SCM5813  Artificial Intelligence
- SCM5819  Cobol Programming
- SCM5821  Introduction to Multimedia Systems
- SCM5824  Object Oriented Programming GD2

**Mathematical Sciences Stream**

- SCM5404  Financial Decision Support Systems
- SCM5601  Statistical Forecasting
- SCM5602  Quality Management and Statistics
- SCM5901  Introduction to Decision Support Systems
- SCM5902  Optimisation Techniques
- SCM5903  Systems and Simulation Studies
- SCM5904  Production and Distribution Management

Students study eight subjects, each worth 15 credit points.

Progression Regulations

The School's Academic Committees (Examiners' Meetings) will, at the end of each semester, consider the results and progress of all students enrolled in the course.

Progression is based on the following guidelines:

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

(ii) Students will not normally be allowed to enrol in any subject for which at least a P grade has not been attained in any of the pre-requisite subjects.

Unsatisfactory Progress

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

(i) The following shall constitute unsatisfactory progress:

- (a) failure in at least 50% of the assessed subjects for which a student has enrolled in a semester of study,
- (b) failure in any subject twice,
- (c) transgression of a conditional enrolment stipulation and agreement.
(ii) Where a student's progress is unsatisfactory, the Departmental Academic Progress Committee may recommend the following:
   (a) a restricted and conditional enrolment only be approved, 
   (b) exclusion from the course.

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

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

Graduate Diploma in Multimedia Information Networking
Course Code: SGMN

Course Objectives
The aim of this course is to impart fundamental knowledge and training to people with non-computing backgrounds in the application and development of Multimedia Information Networks.

The fundamental knowledge provides students with the ability to adapt to different computing platforms, application environments and rapid technological advancements encountered in the workplace.

Students will be able to gain employment in the Network Management area, as well as in the areas of Multimedia systems development, and Multimedia applications.

Admission Requirements
To qualify for admission to the course an applicant must have successfully completed an undergraduate degree in a non-computing discipline. Equivalent academic standing based on successful completion of recognised courses and industrial experience may also be considered sufficient for admission to the course.

Course Duration
Graduate Diploma in Multimedia Information Networking will require one year of full-time study, or equivalent part-time study. Classes will be scheduled to cater for part-time students.

Course Structure
The course will cover the following four areas, each comprising two subjects:
- Computer Systems and Programming
- Information Systems
- Data Communication and Networks
- Multimedia Systems

The subjects offered in the course are:
- SCM5800 Object Oriented Programming GD1
- SCM5802 Information Systems
- SCM5805 Communication and Networks
- SCM5807 Advanced Information Systems
- SCM5824 Object Oriented Programming GD2
- SCM5820 Network Systems Administration
- SCM5821 Introduction to Multimedia Systems
- SCM5822 Networked Multimedia Systems

Students study eight subjects, each worth 15 credit points.

Progression Regulations
The School's Academic Committees (Examiners' Meetings) will, at the end of each semester, consider the results and progress of all students enrolled in the course.

Progression is based on the following guidelines:
(i) Where any subject must be repeated, enrolment in that subject must be at the first opportunity following the initial failure.
(ii) Students will not normally be allowed to enrol in any subject for which at least a P grade has not been attained in any of the pre-requisite subjects.

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   (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.

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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. 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 six (6) core subjects and two (2) elective subjects.

Core Subjects

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEG5012</td>
<td>Managing Software Projects</td>
<td>15</td>
</tr>
<tr>
<td>SCM5800</td>
<td>Object Oriented Programming GD1</td>
<td>15</td>
</tr>
<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>SCM6803</td>
<td>Software Engineering 1</td>
<td>15</td>
</tr>
<tr>
<td>SCM6804</td>
<td>Software Engineering 2</td>
<td>15</td>
</tr>
</tbody>
</table>

Elective Subjects

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<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>SCM5813</td>
<td>Artificial Intelligence</td>
<td>15</td>
</tr>
<tr>
<td>SCM5820</td>
<td>Network Operating Systems Admin</td>
<td>15</td>
</tr>
</tbody>
</table>

Plus appropriate electives from other graduate programs.

Progression Regulations

The School’s Academic Committees (Examiners’ Meetings) will, at the end of each semester, consider the results and progress of all students enrolled in the course.

Progression is based on the following guidelines:

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

(ii) Students will not normally be allowed to enrol in any subject for which at least a P grade has not been attained in any of the pre-requisite subjects.

Unsatisfactory Progress

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

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

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

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

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

Master of Engineering Science in Computer Systems Engineering (Coursework)

Course Code: EMCM

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 M.Eng.Sc. course in Computer Systems Engineering addresses all aspects of this technology. From high level specification of computer and microelectronic systems, through implementation alternatives, to realisation of chips and also introduces students to the anticipated demands of Information Technology in the twenty first century. Course material is drawn from a variety of backgrounds and includes: Integrated Circuit Design Methodologies, Digital and Analog Circuit Design, and Computer System Design and Implementation. The course aims to produce engineers with the necessary skills and practical experience to satisfy the requirements of the microelectronics industry. An important feature of the course is the opportunity it provides for the students to design their own integrated circuits. The specific aims of the course are to: provide an integrated foundation for electrical disciplinary studies and course specialisation into the area of Computer Systems Engineering; develop the advanced technical skills necessary to master state of the art microelectronic technology; develop research skills necessary to obtain specialist knowledge of subjects pertinent to a given field of study; cultivate logical and lateral thinking that leads to creation and innovation in the pursuit of solutions to engineering problems.

Admission Requirements

Admission to the course requires a four year Bachelor of Engineering degree in Electrical & Electronic Engineering or a four year Bachelor of Applied Science (Honours) degree in an appropriate field, or an equivalent.

Applicants with a three year Bachelor of Applied Science degree (in an appropriate field) or a Bachelor of Engineering degree in another field may also be considered for admission on the condition that they may be required to complete some preliminary subjects that will strengthen their knowledge and skills in Computer Systems Engineering.

Full-fee paying international students are required to have qualifications equivalent to those above, and in addition, they must provide evidence of proficiency in English Language, as assessed by: (a) International English Language Testing System - an overall
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.

Research Project:
EEH6101  ASIC Design  12
EEH6102  Custom IC Design B  12

Core Subject:
EEH6003  EDA Tools  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
EEH6142  Emerging Technologies  12
EEH6151  VHDL and High Level Synthesis  12
EEH6152  Advanced Microprocessors  12

Credit points

Admission Requirements
Admission to the course normally requires a four year Bachelor of Engineering degree in Electronic Engineering or Computer Engineering or Communication/Telecommunication Engineering or a four year Bachelor of Science (Honours) degree in an appropriate field, or an equivalent qualification.

Applicants with a three year Bachelor of Science degree (in appropriate field) or a Bachelor of Engineering degree in another field may also be considered for admission on the condition that they may be required to take additional (preliminary) subjects that will strengthen their knowledge and skills in digital systems, analog electronics and microprocessor systems.

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

A panel comprising of academics from each of the partner universities will carry out student selection into this course.

Course Duration
The duration of the course, in normal mode of delivery, is one and a half years full-time or part-time equivalent.

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

- **EEH6001** HDL and High Level Synthesis: 10 points
- **EEH6002** Integrated Circuit Design: 10 points
- **EEH6003** EDA tools and Design Methodology: 10 points

### Electives

- **EEH6004** Digital System Design: 10 points
- **EEH6005** Embedded Systems Design: 10 points
- **EEH6006** Emerging Topics in IC Design: 10 points
- **EEH6007** Advanced VLSI Design: 10 points
- **EEH6008** VLSI Digital Signal Processing Systems: 10 points
- **EEH6009** Reliability and Testability in IC Design: 10 points
- **EEH6010** Introduction to Microsystems Technology: 10 points
- **EEH6011** Introduction to Semiconductor Device Fabrication: 10 points
- **EEH6012** Semiconductor Device Physics: 10 points
- **EEH6013** Project Management & Entrepreneurship: 10 points
- **EEH6014** RF and Mixed Signal Design: 10 points
- **EEH6020** Minor Project: 20 points
- **EEH6030** Major Project: 40 points

### 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.

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**Master of Engineering Science in Telecommunication Engineering (Coursework)**

**Course Code:** EMTE

The Master of Engineering Science in Telecommunication Engineering was introduced in 1998. It is intended for those who seek entry or are currently involved in the telecommunication industry who would require expertise in a range of fields in the telecommunication engineering discipline.

### Course Objectives

The objective of the course is to provide opportunities for suitably qualified persons to (a) acquire expertise, (b) develop research skills, and (c) enhance communication skills necessary to elucidate complex technical problems and perceived solutions in the field of telecommunication engineering.

### Admission Requirements

Admission to the course requires a four-year Bachelor of Engineering degree in Electrical & Electronic Engineering or a four-year Bachelor of Applied Science (Honours) degree in an appropriate field, or an equivalent. Applicants with a three-year Bachelor of Applied Science degree (in an appropriate field) or a Bachelor of Engineering degree in another field may also be considered for admission on the condition that they may be required to complete some preliminary studies.

Full-fee paying international students are required to have qualifications equivalent to those above, and in addition, they must provide evidence of proficiency in English Language, as assessed by: (a) International English Language Testing System – an overall band score of 6+ subject to individual profile, or, (b) Test of English as a Foreign Language – a score of 550+, and a Test of Written English score of 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 a core subject and a set of elective subjects each of 1 unit. The completion of the course requires the completion of the core subject and 8 other subjects of which at least 5 must be from the Telecommunication Engineering discipline.

#### Semester One

- **EET6500** Communication System Modeling and Simulation: 12 points
- 4 electives: 48 points

#### Semester Two

- **EET6500** Communication System Modeling and Simulation: 12 points
- 4 electives: 48 points

### Elective Subjects

- **EET6511** Data Network Analysis and Design: 12 points
- **EET6512** Intelligent Networks and Network Management: 12 points
- **EET6521** Digital Switching and Signalling Systems: 12 points
- **EET6522** Telecommunication Tariff Structures and Teletraffic Engineering: 12 points
- **EET6531** Wireless Communication Subsystems: 12 points
- **EET6532** Microwave and Satellite Communication Systems: 12 points
- **EET6541** Multimedia and Internet Technology: 12 points
- **EET6542** Mobile and Personal Communication Systems: 12 points
- **EET6551** Microwave Electronic Circuit Design: 12 points
- **EET6552** Computer Networks and Networking Software: 12 points
- **EET6561** Local Area and Broadband Networks: 12 points
- **EET6562** Digital Signal Processing: 12 points

### Assessment

Assessment will be based on a combination of written assignments, laboratory exercises, project work, tests and examinations.

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**Master of Science in Computer Science**

**Course Code:** SMCS

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

**Course Code:** SMCM

### Course Objectives

The Masters programs develop a sound theoretical knowledge of contemporary Computer Science techniques and/or the techniques in one specified field of study from the Mathematical
Sciences. Emphasis is also placed on the application of these techniques in areas of business and industry.

**Admission Requirements**

To qualify for admission to the course an applicant must have successfully completed an appropriate degree or an equivalent combination of qualifications and experience.

Applicants must be competent in tertiary level mathematics and computing (which may have to be demonstrated in special tests).

Applicants with any of the following qualifications may apply for credits against specific coursework subjects up to the indicated maximum.

(a) A degree in computer science (4)
(b) A four year honours degree in computer science (12)
(c) A pass degree (without a major in computer science) followed by an appropriate graduate diploma (6)
(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**

SCM6801 Object-Oriented Technology 1M
SCM6802 Object-Oriented Technology 2M
SCM6803 Software Engineering 1M
SCM6804 Software Engineering 2M
SCM6811 Information Network Design and Development
SCM6819 User Interface Design
SCM6820 Distributed Systems
SCM6821 Decision Support Technology
SCM6822 Internet Programming
SCM6823 Database Design, Management and Administration
SCM6824 Advanced Database Paradigms
SCM6825 Multimedia Systems Design and Development
SCM6826 Intelligent Agents
SCM6827 Research Perspectives in Computer Science

**Mathematical Sciences**

SCM6502 Image Processing Algorithms
SCM6601 Reliability and Maintenance
SCM6603 Statistical Control of Continuous Processes
SCM6604 Experimental Design
SCM6605 Regression Analysis
SCM6606 Time Series Analysis
SCM6608 Multivariate Analysis
SCM6902 Mathematical Programming 1
SCM6903 Mathematical Programming 2
SCM6904 Simulation
SCM6905 Sequencing and Scheduling
SCM6906 Optimization Techniques

**Minor Thesis**

Each subject is worth 15 credit points.

Students must obtain a pass in:

- 14 semester units and a thesis equivalent to two semester units, or
- 12 semester units and a thesis equivalent to four semester units.

For the award of MSc in Computer Science, at least 8 units must be selected from the Computer Science stream. For the award of MSc in Computer and Mathematical Sciences, at least 6 units must be selected from the Mathematical Sciences stream.

**Thesis**

Where possible the candidate will be encouraged to choose a topic related to his/her own work situation or with consulting projects being carried out by the School.

SCM6102 – 30 credit points
SCM6103 – 60 credit points

**Progression Regulations**

The School's Academic Committees (Examiners' Meetings) will, at the end of each semester, consider the results and progress of all students enrolled in the course.

Progression is based on the following guidelines:

(i) **Where any subject must be repeated, enrolment in that subject must be at the first opportunity following the initial failure.**

(ii) Students will not normally be allowed to enrol in any subject for which at least a P grade has not been attained in any of the 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 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 course School, where appropriate special grounds are seen to exist.

(iv) Supplementary assessment will require application, authorisation, and the payment of fees as defined by the School from time to time.

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 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
To complete the Master of Science in Software Engineering requires the successful completion of six (6) core subjects, eight (8) elective subjects and a minor thesis, (2 subject equivalence), or six (6) core subjects, six (6) elective subjects and a major thesis, (4 subject equivalence).

<table>
<thead>
<tr>
<th>Core Subjects</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCM5800</td>
<td>15</td>
</tr>
<tr>
<td>SCM5824</td>
<td>15</td>
</tr>
<tr>
<td>SCM6822</td>
<td>15</td>
</tr>
<tr>
<td>SCM6803</td>
<td>15</td>
</tr>
<tr>
<td>SCM6804</td>
<td>15</td>
</tr>
</tbody>
</table>

Effective Subjects

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCM5602</td>
<td>Quality Management &amp; Statistics</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>
<tr>
<td>SCM5811</td>
<td>Operating Systems</td>
<td>15</td>
</tr>
<tr>
<td>SCM5813</td>
<td>Artificial Intelligence</td>
<td>15</td>
</tr>
<tr>
<td>SCM5819</td>
<td>Cobol Programming</td>
<td>15</td>
</tr>
<tr>
<td>SCM5820</td>
<td>Network Operating Systems Admin</td>
<td>15</td>
</tr>
<tr>
<td>SCM5821</td>
<td>Introduction to Multimedia</td>
<td>15</td>
</tr>
<tr>
<td>SCM5822</td>
<td>Network Multimedia Systems</td>
<td>15</td>
</tr>
<tr>
<td>SCM6819</td>
<td>User Interface Design</td>
<td>15</td>
</tr>
<tr>
<td>SCM6823</td>
<td>Database Design Mgmnt &amp; Admin</td>
<td>15</td>
</tr>
<tr>
<td>SCM6804</td>
<td>Software Engineering 2</td>
<td>15</td>
</tr>
<tr>
<td>SCM6601</td>
<td>Reliability and Management</td>
<td>15</td>
</tr>
</tbody>
</table>

Progression Regulations
The School's Academic Committees (Examiners' Meetings) will, at the end of each semester, consider the results and progress of all students enrolled in the course.

Progression is based on the following guidelines:

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Supplementary Assessment

(i) Supplementary assessment is not normally available in any subject or course of the School, other than for reasons of Special Consideration of illness or other cause.

(ii) In special circumstances the Head of School may authorise supplementary assessment in one or more subjects, for example:
- for major discipline subjects taken for the first time; and
- where the student’s normal assessment was unsatisfactory in a small minority of subjects studied in a year, but had aggregate results significantly above pass level; and where a satisfactory supplementary result is a reasonable expectation of the student.

(iii) Supplementary assessment may be initiated by a subject Examination Board or the course School, where appropriate special grounds are seen to exist.

(iv) Supplementary assessment will require application, authorisation, and the payment of fees as defined by the School from time to time.

School of Life Sciences and Technology

Postgraduate Programs by Research

The School offers the following research degrees:
- Doctor of Philosophy
- Master of Science

The School’s research activities are organised within the following major areas and students may select from a variety of research topics within these areas.

Chemical Research Unit

The Chemical Research Unit encompasses research activity in the general area of applied and analytical chemistry. The unit has major research interests in the following areas: The analysis of environmental pollutants by novel methods, the exploration of novel methods for the separation and analysis of trace constituents of commercial materials, metallic ores and biological substances. The development of novel instrumentation for atomic analysis and wine science, polymer stabilisation and degradation, landfill technology and waste minimisation.

The group has active research in the areas of inorganic chemistry and separation technology; biocatalysis in the synthesis of materials of commercial importance; occupational and environmental health and safety; packaging science and polymers; environmental chemistry and waste minimisation.

Biochemistry Unit

The Biochemistry group has major research interests in the following areas: muscle cell biochemistry; applications of biochemistry and related sciences in agriculture, horticulture and floriculture.

The Unit has a wide range of research projects in the above areas and attracts external funding from industry and Government agencies in support of its activities.

Biomedical Sciences

The Biomedical Sciences group (encompassing the two major research units of Exercise Metabolism and Muscle Physiology, and Reproduction and Family Health) has active research within two key research areas within the University: Medical Biotechnology, Health and the Environment; and Physical Activity, Rehabilitation and Health. Both these areas have a major focus on the use of state-of-the-art medical research techniques to investigate the functioning of the human body in both health and disease. Specific expertise includes reproductive physiology, molecular biology, cancer, genetics exercise, muscle metabolism and physiology, nutrition, lifestyle management and rehabilitation. This expertise provides the opportunity to learn a wide variety of valuable skills within a project tailored to satisfy students’ interests.

Exercise Metabolism & Muscle Physiology Research Unit

Exercise is one of the most common human pursuits. From the weekend jogger to the professional athlete, the way in which our muscles produce and utilise energy is of the utmost importance. In addition, optimising skeletal muscle function and recovery from injury is also essential. The Exercise Metabolism & Muscle Physiology Research Unit (EMMPRU) is part of the Centre for Rehabilitation Exercise and Sports Sciences (CRESS) within Victoria University. The major focus of their work includes:
Reproduction & Family Health Research Unit

The Biomedical Sciences group has a very strong background in research into all facets of reproduction and perinatal development. This research unit is part of the Centre for Bioprocessing and Food Technology (CBFT) and links projects on women’s health, implantation and embryo development, foetal development and parturition, and family health – in particular, drug dependency. The current areas of research include:

Women’s Health, from puberty to late post-menopause, has become an important and popular area of reproductive research. Studies in this area include: the role of steroid and peptide hormones in the regulation and function of menstrual and reproductive cycles, the interrelationships between physiological and psychological parameters in response to stressors on the regulation of the menstrual and reproductive cycles, and the effect of hormone replacement therapy and exercise on bone resorption and cardiovascular parameters in normal and diabetic postmenopausal women.

Implantation and Embryo Development Studies into implantation and embryo development include: the role of steroid hormones and other factors in the successful establishment of pregnancy; the development of the neural tube of the embryo; and the growth and differentiation of the placenta.

Foetal Development and Parturition By the time of birth, the foetus must have developed sufficiently to adapt to its 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.

Premature Labour affects some 11% of all pregnancies and this rate has not shown any major reduction over the last 15 years. The underlying cause for premature delivery are still uncertain although there is some evidence indicating that the premature rupture of foetal membranes may be an important factor in at least 40% of cases. This research program is proposed to characterise and monitor changes in existing and new genes in foetal membranes which are induced or suppressed during normal labour and to investigate the underlying causes of premature delivery in women. The long term practical objective is to develop a test for predicting premature delivery in women and to develop a technique for prolonging pregnancy in women to due term.

Foetal Programming of Adult Disease is 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.

Family Health encompasses the health of infants and children as they mature through puberty to adolescents; of adults as they reproduce and mature to mid-life; and of older people. Health concerns are highlighted in each of these life cycle/ reproductive stages. Studies in the area of family health include: parenting transition; the aetiology and consequences of perinatal depression; the nature of neurotransmitters in heroin addicts; the clinical management of drug dependence; the aetiology of schizophrenia; the use of proteins in saliva as markers to assess stress, pain and inflammation; and the assessment of gas pollutants in indoor environments.

Human Health & Wellness

Incorporating diverse areas such as nutrition, psychology and the workplace, research undertaken within this area directly impacts on the health and well-being of the population at large.

Lifestyle Management (“Wellness”) is a new area of research that examines individuals’ well-being and levels of health. Particular interests are community awareness of and attitudes towards, as well as the effects of, issues relating to the general health of the population, such as genetic engineering of food and immunisation.

Natural Medicine The use of drugs for medical purposes have replaced “home remedies” and become commonplace in our everyday lives. However, many of these drugs are based on the same plant extracts that have been used for many years. Research will prove whether there is sound scientific basis to the use of these extracts, thus providing a realistic and healthy way to obtain the same effect without resorting to drug applications.

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.

Psychology While much is known about the function of hormones and drugs within our bodies, little is known regarding their function on the mind. “Healthy mind – health body” is a well known catchphrase, and illustrates the importance of investigating the effects of physiological stimuli on mood, stress and other psychological parameters.

Work Environment It is important for all workplaces to have a healthy environment. Research into the impact that environmental factors have on the health of an individual, and the implementation of health promotion programs, have great importance to all workplaces.

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 (marine, estuarine and fresh water) and terrestrial (grasslands and wet forests) ecosystems, in some cases with an emphasis on practical implications for improved management practices. Primary areas of specialisation are: ecotoxicology of marine systems, ecology and management of exotic marine pests, environmental leadership, ecology of freshwater wetlands, palaeoecology and evolution of the Australian flora, invertebrate systematics and biogeography, and microbial ecology of aquatic systems.

Staff in the Conservation Biology group are recognised internationally in their areas of specialisation, and publish in international and Australian refereed scientific journals. In recent years, staff in this group have had considerable success obtaining externally reviewed research grants, totalling in excess of $400,000.

Well-equipped laboratories are available for research activity with marine biology projects enjoying access to the Queenscliffe Marine Station and the Aquatic Laboratory at VU St Albans Campus. A 4WD vehicle is available for field-based research projects, and modern field equipment such as GPS, various meters (O2, light, etc.) are also available.
**Food Science and Biotechnology Research Unit**

The Food Science and Biotechnology Research Unit (FSBRU) 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, molecular biology, biochemistry, biotechnology and food science and technology, as well as incorporating the expertise of the Biocatalytic Synthesis Unit (BISUN). Specific expertise within the FSBRU includes protein chemistry, enzymology, genetic engineering, fermentation technology, food and anaerobic microbiology, analytical biochemistry and chemistry, sensory analysis, rheology and nutrition. This range of expertise is seen as a particular strength of the FSBRU, as complementary skills can be brought together to address both strategic and applied research activities and, as a result, the unit has attracted extensive financial support for its research programs.

The current areas of research interest in the FSBRU include:

- **Meat Science and Technology**: quality attributes of meat and meat products including: muscle metabolism and protein chemistry and influence on quality; activity and control of muscle proteases and their relationship to tenderness; role of pro- and anti-oxidants in lipid and haemoprotein oxidation in muscle and their effect on colour and odour; sensory and instrumental methods for quality assessment.

- **Grain Science and Processing Technology**: physical properties, chemical composition, enzyme activity and quality attributes including: pigments in wheat; biochemical characteristics of starch as markers of wheat and noodle quality; functional properties and food applications of wheat and legumes and their components; baking and other processing technologies including noodles and steamed breads.

- **Microbiology, Dairy and Fermentation Technology**: probiotics and functional foods; food and industrial applications of lactic acid bacteria yeast and other industrial fermentations including beer, pharmaceutical and speciality chemical production; isolation and characterisation of natural antimicrobials from native plants, herbs and spices; bacteriocins; applications of halophiles and their enzymes in biotechnology.

- **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; odour analysis.

- **Molecular Biology**: application of protein and gene technologies including: molecular characterisation and utilisation of genes and proteins associated with tolerance to cell stressors such as metal ions, alcohol and heat, particularly in relation to microorganisms utilised by the food and fermentation industries; use of molecular markers and DNA fingerprinting for identification of organisms; molecular characterisation of genes and proteins associated with starch biosynthetic pathways and associated grain quality and functional properties.

- **Resource Management**: loss monitoring, waste minimisation and utilisation; whey utilisation; bioconversion of agricultural and food industry by-products and wastes including lignocellulosic wastes; bioremediation.

All of the above research activities are supported by world class facilities and highly qualified research staff.

The School has a wide range of research projects in the above areas and has attracted good financial support for its programs. Much of the research attracts industry funding on a collaborative or contractual basis, however there is broad scope to develop projects of a fundamental nature as well. The School works closely with the University’s Centre for Bioprocessing and Food Technology and with external organisations including Food Science Australia and Agrifood Technology.

**Coursework Programs**

The School offers the following postgraduate coursework programs:

1. Graduate Diplomas in:
   - Environmental Management
2. Master of Science in:
   - Environmental Management
   - Food Science and Technology

**Graduate Diploma in Environmental Management**

*Course Code: SGEM*

**Course Objectives**

The course is aimed at producing graduates with a good understanding of contemporary environmental problems and solutions. A mixture of coursework will be provided including solid waste management, water pollution control, environmental law, and occupational health and safety.

**Course Duration**

The course will be offered in full-time (one year) and part-time (two years) modes.

**Admission Requirements**

The normal entry requirement is a relevant degree or diploma, but special admission may be granted for applicants without the required qualifications but with a number of years of relevant industrial experience.

**Course Structure**

The structure of the course is as follows:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credit Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCS5100</td>
<td>Research Methodology</td>
<td>12</td>
</tr>
<tr>
<td>SCS5101</td>
<td>Principles of Environmental Science</td>
<td>12</td>
</tr>
<tr>
<td>SCS5112</td>
<td>Principles of Environmental Management</td>
<td>12</td>
</tr>
<tr>
<td>SCS5121</td>
<td>Environmental Law and Standards 1</td>
<td>6</td>
</tr>
<tr>
<td>SCS5132</td>
<td>Environmental Law and Standards 2</td>
<td>6</td>
</tr>
<tr>
<td>SCS5141</td>
<td>Air Quality Management</td>
<td>12</td>
</tr>
<tr>
<td>SCS5152</td>
<td>Liquid Waste Management</td>
<td>12</td>
</tr>
<tr>
<td>SCS5161</td>
<td>Occupational and Public Health</td>
<td>12</td>
</tr>
<tr>
<td>SCS5172</td>
<td>Solid Waste Management</td>
<td>12</td>
</tr>
<tr>
<td>SCS5181</td>
<td>Water Pollution Monitoring</td>
<td>12</td>
</tr>
<tr>
<td>SCS5192</td>
<td>Clean Production Technology and Waste Minimisation</td>
<td>12</td>
</tr>
</tbody>
</table>

**Assessment**

Assessment will consist of assignments, field reports, class presentations and end-of-semester examinations. The use of electronic calculators and electronic storage devices is not permitted in any examination unless specified in the subject guide for that subject and/or in the examination paper for that subject.
Master of Science in Environmental Management

Course Code: SMEM

Course Objectives
The Masters program is designed to enhance the students' range of knowledge in environmental waste management, to provide additional skills in research and development and to enable a focusing of practical skills into a specific research area which may be related to the candidates' current employment.

Course Duration and Structure
The Masters program consists of a coursework component which is equivalent to the Graduate Diploma (12 months full-time) and a research project component (6 months full-time). Both components are available on a part-time basis.

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.

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:

Applicants who do not meet these qualifications may be admitted after the completion of an approved course of pre-study, or on submission of such other evidence of academic, professional or vocational attainment to indicate that the applicant possesses the educational preparation and capacity to pursue the course.

Course Duration
The course requires the successful completion of a program of compulsory and elective subjects, totalling a minimum of 120 credit points.
Subject to demand, the course is offered on a full time basis over one year or on a part time basis over two years.

Course Structure
The course structure is as follows:

Compulsory Subjects

<table>
<thead>
<tr>
<th>Credit</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>SBF6720 Food Microbiology</td>
</tr>
<tr>
<td>20</td>
<td>SBF6730 Preservation and Processing Technology</td>
</tr>
<tr>
<td>20</td>
<td>SBF6750 Food Safety and Quality Assurance</td>
</tr>
</tbody>
</table>

Elective Subjects

<table>
<thead>
<tr>
<th>Credit</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>SBF6710 Food Analysis</td>
</tr>
<tr>
<td>20</td>
<td>SBF6721 Fruit and Vegetable Science &amp; Technology</td>
</tr>
<tr>
<td>20</td>
<td>SBF6722 Grain Science and Technology</td>
</tr>
<tr>
<td>20</td>
<td>SBF6723 Muscle Food Science and Technology</td>
</tr>
<tr>
<td>20</td>
<td>SBF6724 Dairy Science and Technology</td>
</tr>
<tr>
<td>10</td>
<td>SBF6740 Special Topics in Food Technology</td>
</tr>
<tr>
<td>10</td>
<td>SBF6745 Food Product Development</td>
</tr>
<tr>
<td>20</td>
<td>SBF6910 Minor Project</td>
</tr>
<tr>
<td>40</td>
<td>SBF6920 Major Project</td>
</tr>
<tr>
<td>10</td>
<td>SCM3614 Experimental Design 1</td>
</tr>
</tbody>
</table>

Appropriate elective subjects may be selected from those offered by the Faculty of Science, Engineering and Technology or by other Faculties in the University subject to approval by the Head of the School of Life Sciences and Technology.
School of the Built Environment

Courses Offered
The School of the Built Environment offers postgraduate courses leading to the award of:
• Graduate Certificate in Project Management
• Graduate Diploma in Project Management
• Master of Engineering (Project Management) (coursework program, based on the above graduate diplomas)
• Master of Engineering (Research)
• Doctor of Philosophy

Research Activities
Master of Engineering (Research) and Doctor of Philosophy degrees are currently being awarded in the areas of Civil and Building Engineering and Mechanical Engineering. A brief description of the research activities follows. The School has a collaboration with a number industrial and government organisations in these activities. The area of Civil and Building Engineering carries out a wide range of research and development activities in the general areas of the built and natural environments. Some of the specific areas include:

Building Services
Work is being undertaken to help engineers design more efficient water supply distribution systems in commercial and residential buildings.

Research is also under way aimed at helping designers and owners of buildings to select the most energy efficient air conditioning systems.

A new air conditioner has been developed that uses solar energy to cool stored grain in silos. This device enables grains to be stored for prolonged periods of time without the use of toxic chemical pesticides.

Environmental Management
Research work is being carried out aimed at reducing the erosion of river banks and improving water quality from road construction sites. The area has a strong interest in wastewater treatment and recycling. Research is being undertaken with the aim of controlling the pollution of groundwater. Practical ways of reducing the use of materials in a wide range of manufactured artifacts are also being developed.

Fire Modelling
Researchers in the area of Civil and Building Engineering work closely with those in the Centre for Environmental Safety and Risk Engineering on modelling the spread of fires and the effects of fires on building structures.

Project Management
Research is being carried out on the new area of Project Risk Management and Life Cycle Cost Optimisation. A group of researchers work on the following areas:
• Risk Analysis for Construction Projects
• Quality Management for Construction
• A case study of a Project Deputy
• Client/Project Manager Agreement
• Constructability Comparisons
• Development of Feasibility Model
• Quality Performance Measurement
• Evaluation of BOT/BOU Project Delivery Systems
• Computer Simulation of Construction Site Management

Structural Engineering
Research is being carried out on new and efficient methods of optimising the design of structures that range from bicycles to large buildings. A group of researchers works on the design of tall buildings, and specifically those subject to earthquake forces.

The area of Mechanical Engineering focuses its research activities on the areas of research classified in the University’s Research Management Plan as either Major Research Areas, Strategic Research Areas or Complementary Research Activities. With each of these areas the specific topics currently being pursued by postgraduate students are many and varied. Typical research topics include:
• an experiment study of convective heat and mass transfer in bulk storage of respiring fruit and vegetables;
• analysis of vibration reduction via structural modification;
• prediction of vibrations from road profile in transportation of packages;
• dynamic characteristics of aerial optical fibre cables subjected to wind loading;
• diagnosis of local damage in structures using measured vibration data;
• numerical modeling and experimental study of fire spread through external windows in buildings;
• water storage using ocean wave energy;
• modelling of scavenging process in a two stroke I.C. engine;
• a heat transfer model of the refuelling process for natural gas vehicles;
• chatter control in turning;
• CFD studies and turbulence modelling;
• utilisation of banana fibres in composite materials;
• evaluation of the performance of corrugated shipping containers: virgin versus recycled liners;
• evaluation of a reusable engine packaging system;
• optimal dynamic design of gear trains using modal analysis approach;
• bruise modelling of agricultural products.

Admission Requirements
As indicated above, a wide range of challenging research projects are available leading to Master of Engineering by Research and Doctor of Philosophy degrees. For admission, high honours results in a recognised undergraduate course, or an equivalent qualification, is required. Initial enquiries regarding eligibility for admission and research projects should be directed to the Postgraduate Co-ordinator at (03) 9688 4227.

Academic Progression Guidelines and Unsatisfactory Progress
Normal progress through a course requires a student to complete any defined course year within one year of equivalent full-time enrolment. When all subjects in a course year are passed, a stage grading of ‘year completed’ may be given.

Any of the following may be considered to constitute unsatisfactory progress by a student:
• failure in any subject or unit for the second time;
• failure to complete the course within any maximum period defined by University Statute;
• failure to meet a conditional enrolment agreement.

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

Course Code: ETPM

The School of the Built Environment 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. This is particularly the case in the field of project management.

The aims of the course are to:
• introduce the concepts and alternative acceptable frameworks for performance based codes, with particular, but not exclusive, emphasis given to project management practices;
• provide building engineering and allied professions with the appropriate knowledge and skills necessary for the assessment and application of performance-based project management practices;
• develop an appreciation of the legal, statutory and design integrity requirements and the need for compliance of the design assumptions throughout the operational life of the building or facility; and
• develop a recognition of the desirability of undertaking additional courses to further upgrade skills and expertise.

Admission Requirements
Qualifications accepted are a degree or diploma or associate diploma in Engineering or Building or Quantity Surveying or Architecture or Construction from a University or College of Advanced Education or Technical and Further Education in Australia.

Applicants with other qualifications deemed to be equivalent to the degree, diploma or associate diploma may be admitted.

Applicants must have at least one year of relevant experience in the design, construction and/or management of building and engineering projects before being admitted to the course.

The formal qualification requirements may be waived in exceptional circumstances.

Course Duration
The course will be delivered as follows:
• Each subject will be presented as a three-hour workshop session one evening per week for one semester.
• Two subjects will be presented each semester.

The course will be presented over two semesters during a 12 month period.

Course Structure

<table>
<thead>
<tr>
<th>Year 1</th>
<th>Project Management subjects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Subjects</td>
<td></td>
</tr>
<tr>
<td>ECP5600 Project Management Fundamentals</td>
<td>15 -</td>
</tr>
<tr>
<td>ECP5610 Project Management Planning and Control</td>
<td>- 15</td>
</tr>
</tbody>
</table>

| Elective Subjects |
| ECP5620 Project Management & Contracts | - 15 |
| ECP5705 Project Management and Information Technology | 15 |
| ECP5715 Property Development Analysis | - 15 |
| ECP5725 Project Construction Management | 15 |
| ECP5735 Building Life Cycle Costing | - 15 |
| ECP5745 Building Regulatory Management | 15 |

plus approved subjects currently available at Victoria University, Footscray Campus, such as:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Credit points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCM5404</td>
<td>Financial Decision Support Systems 15</td>
</tr>
<tr>
<td>SCM5801</td>
<td>Introduction to Computer Science 15</td>
</tr>
<tr>
<td>SCM5802</td>
<td>Information Systems 15</td>
</tr>
</tbody>
</table>

Graduate Diploma in Project Management

Course Code: EGP

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 of these will be required prior to enrolment.

Other qualifications may be considered acceptable and the formal qualification requirements may be waived in exceptional circumstances.

In addition, all applicants applying as full-fee paying international students must provide evidence of proficiency in the English language:
- IELTS - an overall band score of 6+, subject to individual profile;
- or
- TOEFL - a score of 550+, and a Test of Written English score of 5+.

Course Duration

The course is offered on a full-time basis over one year for full-fee paying international students or on a part-time basis over a minimum of two years.

Course Structure

The course consists of eight subjects as follows: four ‘core’ subjects to develop a basic knowledge in fundamentals of project management, project planning and control, contract law and industrial relations in the building and construction industry; four ‘electives’ are selected to achieve a better understanding and working knowledge of all disciplines involved in management of a project. Students must complete 120 credit points.

Year 1

Compulsory core subjects
- BMO5589 Industrial Relations and the Building Industry 15
- ECP5600 Project Management Fundamentals 15
- ECP5610 Project Management Planning and Control - 15
- ECP5620 Project Management and Contracts - 15

Elective subjects
- ECP5705 Project Management and Information Technology 15
- ECP5715 Property Development Analysis - 15
- ECP5725 Project Construction Management 15
- ECP5735 Building Life Cycle Costing - 15
- ECP5745 Building Regulatory Management 15

plus approved subjects currently available at Victoria University, Footscray Park Campus. These approved subjects may include:

Computer Science
- SCM5404 Financial Decision Support Systems 15
- SCM5801 Introduction to Computer Science 15
- SCM5802 Information Systems 15

Decision Support Science
- SCM5602 Quality Management and Statistics 15
- SCM5901 Introduction to Decision Support Systems 15

The availability of electives from other departments depends on staff resources and enrolments.

Assessment

Assessment will be by projects, submission and examination.

Computer Science
- Financial Decision Support Systems
- Introduction to Computer Science
- Information Systems

Decision Support Science
- Quality Management and Statistics
- Introduction to Decision Support Systems

The MSc in Engineering (Project Management) is for students who
- have completed at least four subjects of a relevant Graduate Diploma with an upper second class honours average.
- are applying as full-fee paying international students or on a part-time basis over a minimum of two years.
- are seeking to complete the course 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

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.

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+.
Graduate Diplomas of Engineering plus a thesis/project of six hours per week for one semester or three hours per week for two semesters.

The Masters Degree structure is:

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

**Year 1**
- 4 Graduate Diploma subjects 60 -
- 4 Graduate Diploma subjects - 60
- or part-time over 2 or 3 years

**Year 2**
- ECC8000 Research Thesis (full-time) 60 -
- or ECC8010 Research Thesis (part-time) 30 30
- or ECC8040 Project work (full-time) 30 -
- 2 Graduate Diploma subjects (full-time) - 30
- or ECC8050 Project work (part-time) 15 15
- 2 Graduate Diploma subjects 15 15

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 Advanced Forecasting, Planning and Control
- BAO5544 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
- ECP5715 Property Development Analysis
- ECP5725 Project Construction Management
- ECP5735 Building Life Cycle Costing
- ECP5745 Building Regulatory Management
- SCM5404 Financial Decisions Support Systems
- SCM5602 Quality Management and Statistics
- SCM5801 Introduction to Computer Science
- SCM5802 Information Systems
- SCM5901 Introduction to Decision Support Systems

**Assessment**

Assessment will be by a combination of written assignments, oral presentations, case studies, written examination and by the satisfactory completion of a thesis. Except in special circumstances supplementary assessment for subjects taught by the School of the Built Environment 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.
BAO5735 ADVANCED FORECASTING, PLANNING AND CONTROL

Campus City Flinders
Prerequisite(s) Nil.

Content This subject introduces students to the economic principles of the allocation of human resources within organisations and the wider economy. It will equip them with skills necessary to analyse the likely outcomes of specific human resource decisions. Topics include: supply and demand for labour and labour markets; disadvantaged labour market groups; the impact of unions on wages; payment systems and productivity; and the impact of wage fixing systems on the broader economy.

Required Reading To be advised by lecturer.

Recommended 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 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.

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 the broader economy.

Required Reading To be advised by lecturer.


Class Contact Equivalent to 36 hours per semester normally to be delivered as a combination of lecture, seminar, tutorial and/or workshop or a delivery mode as approved by the Faculty of Business and Law. Subject equal to 15 credit points.

Assessment Class paper, 30%; research paper, 30%; test, 40%. Students are expected to satisfactorily complete each component of the assessment to gain a pass in the subject. Supplementary assessment will not be available.

BEO6400 RETAIL MANAGEMENT STRATEGIES

(ENGINEERING AND SCIENCE SERVICE SUBJECT)

Campus Werribee
Prerequisite(s) Nil.

Content This subject provides an analysis of the retail exchange process and the critical concepts and issues involved in retail management. Areas studied include the retail exchange process and retail competition; retailers in the marketing channels; product life cycles, packaging design and manufacture, and the intertwelkship with consumer, industrial and retail strategies; the changing retail environment; and the design of retail marketing and financial strategies.

Required Reading To be advised by lecturer.


Class Contact Equivalent to 36 hours per semester normally to be delivered as a combination of lecture, seminar, tutorial and/or workshop or a delivery mode as approved by the Faculty of Business and Law. Subject equal to 15 credit points.

Assessment Assignment 1 (1500 words), 40%; Assignment 2 (2500 words), 60%. Students must satisfactorily complete each component of the assessment to gain a pass in the subject. Supplementary assessment will not be available.

BH06505 MARKETING MANAGEMENT

Campus City Flinders, Kuala Lumpur, Singapore, China, Bangladesh.
Prerequisite(s) Nil.

Content Upon completion of the subject, students would be able to understand the Marketing Management Process, develop essential skills necessary in a Marketing Manager's job, appraise an organisation's performance in a competitive marketing environment (foreign and domestic), formulate and implement marketing mix strategies in consumer, industrial and service markets, solve problems and improve their abilities in making sound decisions based upon available market information and appreciate the applications of marketing principles to Service Sector and International business decision making.

Required Reading To be advised by lecturer.

Class Contact Equivalent to 36 hours per semester normally to be delivered as a combination of lecture, seminar, tutorial and/or workshop or a delivery mode as approved by the Faculty of Business and Law. Subject equal to 15 credit points.

Assessment Assignment, 25%; research project of a student's own choice, 25%; examination, 50%. In order to be awarded a pass in this subject, students must satisfactorily complete each component of the assessment. Supplementary assessment will not be made available.

BLO5513 LAW OF EMPLOYMENT

Campus City Flinders
Prerequisite(s) Nil.

Content The aims of the subject are: to assist students to become familiar with aspects of employment law relevant to human resource management and industrial relations; to provide students with an understanding of the skills necessary to deal with legal problems which may arise in the world of work. The subject includes contract of employment; termination of employment; health and safety; and equal opportunity law.

Required Reading To be advised by the lecturer.

Class Contact Equivalent to 36 hours per semester normally to be delivered as a combination of lecture, seminar, tutorial and/or workshop or a delivery mode as approved by the Faculty of Business and Law. Subject equal to 15 credit points.

Assessment Two case studies, 50% each. Students must satisfactorily complete each part of the assessment to gain a pass in the subject. Supplementary assessment will not be available.

215
BLO5337 BUSIN ESS LAW
Campus City Flinders.
Prerequisite(s) Nil.
Content This subject aims to provide students with a working knowledge and overview of the Australian legal system and to provide students with an appreciation of contract and tort law issues - students in their working life should be able to avoid problem situations, and be more aware of the need for reform in particular areas. The subject includes: an introduction to the law, an examination of the litigation process, onus of proof, the sources of law in Australia, precedent, the court system and tribunals in Victoria; criminal law and the law of tort as it relates to business; a study of the law of negligence with a particular emphasis on professional liability for negligent statements and advice; the definition and nature of a contract including examination of the rules of offer and acceptance, termination of offers, rules of consideration, revocation of offer and acceptance, intention to be legally bound, certainty and terms; a study of breach of contract an examination of the different remedies available under the law; the interaction of tort law with contract; statutory schemes relating to particular reference to the Trades Practices Act 1974 (Cth) and to the Goods (Sales and Leases) Act 1981 (Vic); discharge of contract by different occurrences such as frustration, mutual agreement, illegality and mistake.
Class Contact Equivalent to 36 hours per semester normally to be delivered as a combination of lecture, seminar, tutorial and/or workshop or a delivery mode as approved by the Faculty of Business and Law. Subject equal to 15 credit points.
Assessment Midsemester test, 20%; essay, 20%; final examination, 60%. Students must satisfactorily complete each part of the assessment to gain a pass in the subject. Supplementary assessment will not be available.

BMO5588 INDUSTRIAL RELATIONS FOR MUNICIPAL ENGINEERS (ENGINEERING SERVICE SUBJECT)
Campus City Flinders.
Prerequisite(s) Nil.
Content An introduction to industrial relations and a study of policy questions and techniques associated with the practice of industrial relations, specifically in the area of local government. Topics covered include the industrial relations framework, the parties to industrial relations, negotiation principals, conflict resolution, industrial awards, legal aspects of employment and contemporary industrial relations issues.
Required Reading To be advised by lecturer.
Class Contact Equivalent to 36 hours per semester normally to be delivered as a combination of lecture, seminar, tutorial and/or workshop or a delivery mode as approved by the Faculty of Business and Law. Subject equal to 15 credit points.
Assessment Essay, 30%; class assignments, 70%. Students must satisfactorily complete each component of the assessment to gain a pass in the subject. Supplementary assessment will not be available.

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.
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 practice; present the results of the research undertaken, both clearly and accurately in a written thesis. The research topic chosen will allow the candidate to develop a methodology and to apply it to an appropriate problem or situation. The thesis will normally be from 15,000 to 25,000 words. It will report on independently conducted research which demonstrates the student's ability to clearly define a problem, to undertake a detailed literature search and review the literature on the topic area. The student shall also demonstrate both the ability to develop and/or apply models to study the problem and good data selection, collection and analysis skills. Students will normally be supervised by an academic member of the School of the Built Environment and by a joint supervisor external to the Department. The external supervisor will be an academic from another Department/School at Victoria University or from another institution or an industry practitioner.

Required Reading To be advised by lecturer.

Class Contact Six hours per week for two semesters.

Assessment Before commencing actual research, students must complete, to the satisfaction of the research supervisor, a paper critically reviewing the literature and providing a clear outline of the proposed research methodology to complete the thesis. The final thesis will be assessed by two examiners with expertise in the area of the research. These examiners may be internal or external to the School 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 examinations; (b) pass, subject to corrections to the satisfaction of the School'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 practice; present the results of the research 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 8,000 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.

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**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
graphy 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
user requirements: planning for life-cycle of the facility;
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 International Journal of Project
Management. Adams, J.R. and Campbell, B.W., Roles and
Responsibilities of the Project Manager. Bennett, J., Construction Project
Construction Industry. Dell’Isola, A.J. and Cus, P.E., Value Engineering
in the Construction Industry. Fellows, R., Longford, D., Newcombe,
1981, Construction Site Studies – Prediction, Administration and
O’Brien, J., Value Analysis in Design and Construction. Wearnie, S.H.,
Control of Engineering Projects.

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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**ECP5620 PROJECT MANAGEMENT PLANNING AND
CONTROL**

**Campus** Footscray Park

**Prerequisite(s)** ECP5600 Project Management Fundamentals
(normally).

**Content** The subject will review the development process of
a project from its inception through to feasibility and go-ahead
decision; detail design documentation, construction commissioning
and life cycle planning; evaluate the role and function of Project Management in this process; explain
the purpose and to detail the theoretical basis of various techniques
used for planning and managing the building process. The subject
content includes: Systems approach to project planning; basic
principles and theory of systems analysis; current trends in
community project planning. Overview of subject and
introduction to project. Management of a Public Interest Project.
Preparation of financial feasibility of a building project; factors
involved, issues to be considered at concept stage; introduction of
a case study. Capital decision making for project managers; cost
concepts and cost factors. Project control and cost planning at
feasibility and design stage. Cost versus quality assurance. Project
control during construction phase; breakdown of the project for
estimating, budgeting and financial control; project term planning;
networks and other scheduling techniques; resource levelling; line
of balance concepts. Project cost planning and control in public
sector; pre-construction cost control, construction cost control;
N.P.W. 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 Adams, J.R. and Campbell, B.W., Roles
and Responsibilities of the Project Manager. Bennett, J., Construction
Project Management. Bennett, J., Flanagan, R. and Norman, G.,
Japanese Construction Industry. Dell’Isola, A.J. and Cus, P.E., Value
Engineering in the Construction Industry. Fellows, R., Longford, D.,
Forster, G. 1981, Construction Site Studies – Prediction, Administration and
O’Brien, J., Value Analysis in Design and Construction. Wearnie, S.H.,
Control of Engineering Projects.

Class Contact Three hours per week for one semester.
Assessment One major group project, 40%; two individual
assignments, 20%; examination, 40%. Students must attain a mark of
50% in each assessable component to pass this subject. Supplementary assessment will not be available.

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**ECP5620 PROJECT MANAGEMENT AND CONTRACTS**

**Campus** Footscray Park

**Prerequisite(s)** ECP5600 Project Management Fundamentals
(normally).

**Content** The subject will develop an understanding and
appreciation of management environment in Australia; evaluate

Discharge of a contract. Remedies. Quantum merit.

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.

ECP57/15 PROPERTY DEVELOPMENT ANALYSIS

Campus
Footscray Park

Prerequisite(s)
Nil.

Content

Required Reading
To be advised by lecturer.

Recommended Reading

Class Contact
Three hours per week for one semester.

ECP57/05 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 investigations 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.

Recommended Reading
Project Management, Prentice Hall. Project Management Information Systems, Australian PC-WORLD. Australian PC-USER. Project Management Information Systems (spreadsheet/ financial modelling, planning and resource control, Data Base Management Systems (DBMS), and 4th Generation Languages (4GLs)); detailed investigations 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.
Assessment: Assignments, 15%; group project, 45%; examination, 40%. Students must attain a mark of 50% in each assessable component to pass this subject. Supplementary assessment will not be available.

ECP5725 PROJECT CONSTRUCTION MANAGEMENT

Campus: Footscray Park
Prerequisite(s): Nil.

Content: The subject will develop an understanding of modern building technology with respect to 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.

ECP5735 BUILDING LIFE CYCLE COSTING

Campus: Footscray Park
Prerequisite(s): Nil.

Content: A description of and the need for consideration of lifecycle costing: maintainability and efficiency. Terotechnology: why we need to use terotechnology in building industry; economic and technical factors - measures of performance; present state of knowledge. An integrated treatment of design, specification, construction use, maintenance and re-use phases for building and the effect on the life-cycle costs of the building. 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 refurbish or demolish phase. Asset management using an integrated planning and budgeting approach. Need for an integrated system; provision of funds at regular intervals; and/or in emergency situations; fabric of building and other services; total assets management; case-studies - Latrobe system, others. Operational control. Control systems; identification of effective, preventive and remedial measures. Establishment of a maintenance policy. Preventive maintenance; corrective maintenance; records and register for maintenance as a control tool; accounting and costs records and audits. Degradation of buildings. Identification of 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 Systems (LMCS); Central Supervisory Systems (CSS). Building engineering services information and management systems; functions; commercially available packages; selection, evaluation of benefits. Case study presentation and review.

Required Reading: To be advised by lecturer.


Class Contact: Three hours per week for one semester.

Assessment: Assignment, 20%; group project, 40%; examination, 40%. Students must attain a mark of 50% in each assessable component to pass this subject. Supplementary assessment will not be available.

ECP5745 BUILDING REGULATORY MANAGEMENT

Campus: Footscray Park
Prerequisite(s): Nil.

check. Fire as hazard to life and property. Overview of current knowledge in fire start and spread in buildings. Overview of fire safety and regulations in Australia; current practices in regulation and building control; fire safety in new proposed Code. Overview of planning schemes in Victoria. Need for a Uniform Planning Scheme; need for optimisation of planning process. Local Government planning officials’ views on a rational new system; industry perception of the planning system’s current operation; possibility of planning being accomplished by certification. International – scene and practice – what can we learn from it.

Required Reading
To be advised by the lecturer.

Recommended Reading

Class Contact
Three hours per week for one semester.

Assessment
Assignments, 20%; examination, 70%; class participation, 10%. Students must attain a mark of 50% in each assessable component to pass this subject. Supplementary assessment will not be available.

EEA5310 CONTROL PRINCIPLES
Campus Footscray Park
Prerequisite(s) Nil

Content
This subject is intended to provide a review of classical control system design methods and an introduction to modern methods used in the analysis and design of control systems. The subject covers the following topics: review of continuous linear systems theory and its analytical techniques, e.g. mathematical models, transfer function, root locus, frequency response and state space techniques. Compensation of simple linear systems. Nyquist stability criterion. The design of continuous-time control systems in the s-plane.

Required Reading
Ogata, K., Modern Control Engineering, Prentice Hall, Englewood Cliffs, NJ.

Class Contact
Four hours per week for one semester comprising lectures, tutorials and laboratories.

Assessment
Laboratory exercises, 20%; tests, 30%; final examination, 50%. Students must attain a mark of 50% in each assessable component to pass the subject.

EEA6311 MODELLING AND COMPUTER CONTROL
Campus Footscray Park
Prerequisite(s) EEA5310 or equivalent subjects.

Co-requisite Nil

Content

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
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) EEA5310 or equivalent subjects.

Co-requisite Nil

Content
Overview of model based control design. Model complexity and the model building process. Design of robust control systems by the internal model control method; performance and robustness trade-off. Difficulty in the realisation of continuous-time Smith Predictors; design of the unified predictive controller (UPC). Analysis of design parameters and tuning of the UPC.

Required Reading
To be advised by the lecturer.

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.
EEA633I ROBOTICS AND PROGRAMMED CONTROL
Campus Footscray Park
Prerequisite(s) Completed an undergraduate degree in Engineering or Science
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: 50%; Examination: 50%. A pass in each component of assessment is required for a subject pass.

EEA632 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.

EEA631 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.

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.

EEG5012 MANAGING SOFTWARE PROJECTS
Campus Footscray Park
Prerequisite(s) EEG5011 Software Engineering
Content The subject will develop and improve the skills required to successfully plan and manage software development efforts. The subject content includes: the role of specification in the product life cycle; systems analysis and design, feasibility study and development cycle; the applicability of D P techniques to technical program management; defining software requirements, documentation; preparation of good project plans, size and function point metrics and their use in estimation of time and costs; implementing management controls for design and integration; the use of standard project management techniques and software packages; team working, codes of practice, whole life costing, system support plans; hardware/software integration and testing, product support and maintenance, controlling changes to software and documentation; control of the programming support environment. The assignment and laboratory work consists of design, analysis and management of a large scale software project.
Required Reading To be advised by lecturer.
Class Contact Three hours per week for one semester comprising approximately 65% lectures/tutorials and 35% laboratory.
Assessment Examination, 50%; assignments and project work, 50%.

EEG5601 PROJECT WORK
Campus Footscray Park
Prerequisite(s) Students must have completed at least two coursework units of the major sequence.
Content This is systematic experimental developmental work, using existing knowledge gained from research and/or practical experience, for the purpose of creating new or improved materials, products, devices, processes or services.
Required Reading To be advised by lecturer.
Class Contact Three hours per week for one semester.
Assessment Project work and report, 100%.
**EEH5602 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%.

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**EEH6001 HDL AND HIGH LEVEL SYNTHESIS**

Campus: Chipskills Partner Universities

**Prerequisite(s)**: Completed Digital Systems at undergraduate level or equivalent.


**Class Contact**: Four hours per week for one semester comprising two hours per week lectures and two hours per week of laboratory exercises and project.

**Assessment**: Assignment and laboratory exercises, 20%; project, 30%; and final examination, 50%.

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**EEH6002 INTEGRATED CIRCUIT DESIGN**

Campus: Chipskills Partner Universities

**Prerequisite(s)**: Completed Digital Systems at undergraduate level or equivalent.

**Content**: Overview of MOS and sub-micron technology. Scaling and signal integrity. IC design techniques. CMOS cell design. DEVICE-LEVEL design constraints. gate design, pae 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, U/Os, buffers, data path design and layout, etc. Chip floor planning. Basic analog building blocks. Design tradeoffs - cost, power and performance. Testability and yield.


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**EEH6003 TOOLS AND DESIGN METHODOLOGY**

Campus: Chipskills Partner Universities

**Prerequisite(s)**: Completed Digital Systems at undergraduate level or equivalent.


**Required Reading**: Current available text book- students to be advised.


**Class Contact**: Four hours per week for one semester comprising two hours per week lectures and two hours per week of laboratory/workshop and project.

**Assessment**: Assignment and laboratory exercises, 20%; project, 30%; and final examination, 50%.

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**EEH6004 DIGITAL SYSTEM DESIGN**

Campus: Chipskills Partner Universities

**Prerequisite(s)**: Completed Digital Systems at undergraduate level or equivalent.


**Required Reading**: Current available text book - Student to be advised.


**Class Contact**: Four hours per week for one semester comprising two hours per week lectures and two hours per week of laboratory exercises.

**Assessment**: Assignment, 20%; laboratory exercises, 30%; and final examination, 30%.

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**EEH6005 EMBEDDED SYSTEM DESIGN**

Campus: Chipskills Partner Universities

**Prerequisite(s)**: Completed Microprocessor Systems at undergraduate level or equivalent.

**Content**: Overview of embedded systems. Embedded system design cycle and system modelling. Embedded system hardware and software. Real-time embedded system. Embedded system specification and verification. Hardware/software co-design, partitioning and tradeoffs. Embedded development tools. Analysis...
and design methods using graphical notations eg UML, implementation considerations, testing strategies and construction of test cases, software engineering environments and CASE tools. Embedded system design and verification.


Class Contact Four hours per week for one semester comprising two hours per week lectures and two hours per week of laboratory exercises and project.

Assessment Assignment and laboratory exercises, 20%; project, 30%; and final examination, 50%.

EEH 6006 EMERGING TOPICS IN IC DESIGN

Campus Chipskills Partner Universities

Prerequisite(s) Nil.

Content New technologies such as: Silicon carbide high-power devices, Quantum based devices, quantum wells and quantum dots Nanometer MOSFETs, Wide bandgap materials and devices, Plasma-wave electronics, Ferroelectric devices, Overview of new process technologies, Deep sub-micron technology and noise, Ultra-high-speed devices, including microwave and optical devices. New Systems-Level Architectures, such as: Nanowire arrays, Neuromorphic architectures, Reconfigurable architectures, Wafer-scale systems, Memory systems. New EDA tools and future technology projections. EMC: regulations, measurement and testing. Design issues related to EMC.


Class Contact Four hours per week for one semester comprising two hours per week lectures and two hours per week of workshops and seminars.

Assessment Assignments, 30%; seminars, 20%; and final examination, 50%.

EEH 6007 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, 20%; project, 30%; and final examination, 50%.

EEH 6008 VLSI DIGITAL SIGNAL PROCESSING SYSTEMS

Campus Chipskills Partner Universities

Prerequisite(s) Completed DSP course at undergraduate level.


Recommended Reading Bagoumi, M.A., 1994, VLSI Design Methodology for DSP Architectures, Kluwer.

Class Contact Four hours per week for one semester comprising two hours per week lectures and two hours per week of laboratory exercises and project.

Assessment Assignment and laboratory exercises, 20%; project, 30%; and final examination, 50%.

EEH 6009 RELIABILITY AND TESTABILITY IN IC DESIGN

Campus Chipskills Partner Universities

Prerequisite(s) EEH6001, EEH6002 and EEH6003 or equivalents.

Content Reliability: parallel and serial reliability, failure rates. Reliability as affected by small dimensions and faster devices, thermal considerations. Redundancy and fault tolerance. Design for device reliability. Functional and formal verification and fault modelling. Hardware/software co-design, co-verification and co-simulation. Timing and power analysis. Design for testability and ATPG and fault coverage tools. Layout issues for testability. Testing methodologies (In-circuit, Built in self test), Boundary Scan Testing. Memory testing, BIST of RAMs, RAM interconnection testing, Scan based testing of multimegabit memories, external and internal testing of megabit DRAMs. Comprehensive testing of multistage interconnection networks. Embedded system testing. Board-level interconnect testing. Test bench design.


Class Contact Four hours per week for one semester comprising two hours per week lectures and two hours per week of laboratory exercises.

Assessment Assignment, 20%; laboratory exercises, 30%; and final examination, 50%.
EEH6010 INTRODUCTION TO MICROSYSTEM TECHNOLOGY
Campus: Chipskills Partner Universities
Prerequisite(s): Nil
Class Contact: Four hours per week for one semester comprising two hours per week lectures and two hours per week of laboratory exercises.
Assessment: Assignments, 20%; laboratory exercises, 30%; and final examination, 50%.

EEH6011 INTRODUCTION TO SEMICONDUCTOR DEVICE FABRICATION
Campus: Chipskills Partner Universities
Prerequisite(s): Nil
Content: Fundamental principles of fabrication processes, physical and chemical models for crystal growth, oxidation, ion implantation, etching, deposition, lithography and metallisation. Emphasis on practical aspects of silicon device fabrication, including wafer cleaning, photolithography, etching, oxidation, diffusion, ion implantation, chemical vapour deposition, physical sputtering and wafer testing. Imperfections in semiconductors, crystal growth, solid solubility, alloying and diffusion, ion implantation, oxide masking, and epitaxy. Practical and fundamental limits to the evolution of the technology of MOS and bipolar devices. How are integrated circuits fabricated and what future changes are likely? The implications for device performance caused by material properties and fabrication techniques. Fabrication techniques for bipolar and MOS-devices, and the electrical performance of devices based on these techniques. Comparison of fabrication technologies for silicon and gallium arsenide devices. Processes and fabrication equipment to be studied will include oxidation/diffusion, CVD reactors, photolithography, plasma etching, vacuum evaporator, ion implantation, etc. Introduction to computer modelling of processing steps such as etching, lithography, diffusion, implantation (eg SUPREME).
Class Contact: Four hours per week for one semester comprising two hours per week lectures and two hours per week of laboratory exercises.
Assessment: Assignments, 20%; laboratory exercises, 30%; and final examination, 50%.

EEH6012 SEMICONDUCTOR DEVICE PHYSICS
Campus: Chipskills Partner Universities
Prerequisite(s): Nil
Class Contact: Four hours per week for one semester comprising two hours per week lectures and two hours per week of laboratory exercises.
Assessment: Assignments, 20%; laboratory exercises, 30%; and final examination, 50%.

EEH6013 PROJECT MANAGEMENT AND ENTREPRENEURSHIP
Campus: Chipskills Partner Universities
Prerequisite(s): Nil
Required Reading: Current available text book – students to be advised. Appropriate journal papers.
Class Contact: Four hours per week for one semester.
Assessment: Assignments, 20%; seminar presentations, 10%; project, 30%; and final examination, 40%.

EEH6014 RF AND MIXED SIGNAL DESIGN
Campus: Chipskills Partner Universities
Prerequisite(s): Completed Analog Electronics at undergraduate level.
Content: Basic concepts of wireless communication systems design. Transceiver architectures. VLSI design issues and layout techniques in wireless transceiver design. Radio circuits, LNA’s, oscillators, mixers, limiters, phase detectors, frequency synthesizers, PLLs and power amplifiers. Low voltage low power design techniques and design flow for analog and mixed signal circuits and systems. OpAmps, comparators, A-to-D and D-to-A conversion circuits. Noise analysis and design tradeoffs - cost, power and performance. Students will develop hands-on
experience in design, simulation, verification and implementation using industry standard EDA tools.

**Required 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, 20%; project, 30%; and final examination, 50%.

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**EEH6020 MINOR PROJECT**

**Campus**

Chipskills Partner Universities

**Prerequisite(s)**

Completed EEH6001, EEH6002, EEH6003 or equivalent.

**Content**

It is expected that the majority of industry-based students will undertake projects as part of their normal employment, where relevant opportunities exist and suitable resources and supervision can be guaranteed. A project can be structured to be the equivalent of 2 units of study. Projects would be expected to demonstrate a good working knowledge in chip design and implementation. Students must demonstrate their ability to integrate and draw upon their coursework studies relevant to the project. A dissertation of no less than 10000 words must be submitted and will be examined by one examiner selected by the examining panel for this module. Commercial in-confidence programs can be undertaken, with appropriate restrictions on publication and choice of examiners. Intellectual property of projects initiated by a company and undertaken in that company will remain with the company. All other projects will be subject to the Intellectual Property policy of the relevant university partner.

**Required Reading**

Current available text - students to be advised. Appropriate IEEE/IEE Journal materials.

**Recommended Reading**


**Class Contact**

Sixteen hours per week for one semester. Assessment will be based on project proposal, 10%; progress report and seminars, 10%; project, 40%; and final report, 40%.

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**EEH6101 ASIC DESIGN**

**Campus**

Footscray Park

**Prerequisite(s)**

Nil.

**Co-requisite(s)**

EEH6151 VHD L and High-level Synthesis.

**Content**


**Required Reading**

Selected papers from IEEE/IEE Journal. To be advised by the lecturer.

**Recommended Reading**


**Class Contact**

Three hours per week for one semester comprising two hours per week of lecture and one hour per week of tutorial/laboratory.

**Assessment**

Test, assignments and laboratory exercises 40%, final examination 60%.

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**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**

Three hours per week for one semester comprising two hours per week of lecture and one hour per week of tutorial/laboratory.

**Assessment**

Test, assignments and laboratory exercises 40%, final examination 60%.
EEH6111 DIGITAL CIRCUIT DESIGN
Campus Footscray Park
Prerequisite(s) Nil
Class Contact Three hours per week for one semester comprising two hours per week of lecture and one hour per week of tutorial/laboratory.
Assessment Test, assignments and laboratory exercises 40%, final examination 60%.

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 GAs design technique 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/project: 70%; 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 N莫斯 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 Three hours per week for one semester comprising two hours per week of lecture and one hour per week of tutorial/laboratory.
Assessment Test, assignments and laboratory exercises 40%, final examination 60%.

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 Test, assignments and laboratory exercises 40%, final examination 60%.

EEH6131 HARDWARE DESCRIPTION BASED DESIGN
Campus Footscray Park
Prerequisite(s) Nil
Co-requisite Nil
Content Introduction to VHDL: traditional design methods, hardware, abstraction. Language elements: basic terminology, entity, modelling of architecture (structural, data flow and mixed) identifiers, data objects and types, operators. Subprograms and overloading Packages and libraries. Synthesis constraints, attributes, technology libraries, realisation with CPLDs and FPGAS-EDA design and development tools.
Class Contact Three hours per week for one semester. This includes two hours of lecture per week, one hour of tutorial and one hour of laboratory for every two weeks.
Assessment Assignments: 20%; Examination: 80%. A pass in each component of assessment is required for a subject pass.

EEH6132 INTEGRATED CIRCUIT TESTABILITY
Campus Footscray Park
Prerequisite(s) Nil
Content System partitioning, Layout and testability, Design for testability, Defects and fault models. Functional and structural testing. Test access. DFT techniques. Fault simulation and automatic test pattern generation. Ad-hoc DFT. Scan-path DFT. Built-in self test (BIST). Boundary scan DFT.
Recommended Reading Pucknell, D.A. and Eshraghian, K., 1994, Basic VLSI Design System and Circuits, Prentice Hall.
Class Contact Three hours per week for one semester comprising two hours per week of lecture and one hour per week of tutorial/laboratory. 
Assessment Test, assignments and laboratory exercises 40%, final examination 60%.

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 and low-level programs. Startup routines, interrupt systems and service routines. Interfacing 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%.

EEH6142 EMERGING TECHNOLOGIES
Campus Footscray Park
Prerequisite(s) Nil
Required Reading Selected papers from IEEE/IEE Journals. To be advised by the lecturer.
Class Contact Three hours per week for one semester comprising two hours per week of lecture and one hour per week of tutorial/laboratory.
Assessment Test, assignments and laboratory exercises 40%, final examination 60%.

EEH6151 VHDL AND HIGH LEVEL SYNTHESIS
Campus Footscray Park
Prerequisite(s) Nil.
Class Contact Three hours per week for one semester comprising two hours per week of lecture and one hour per week of tutorial/laboratory.
Assessment Assignment, 20%, final examination, 80%.

EEH6152 ADVANCED MICROPROCESSORS
Campus Footscray Park
Prerequisite(s) EEH6111 Digital Circuit Design
Content 68020 programming model, data organisation, addressing modes and instructions sets. Exception processing, stack frames, parameter passing and procedure calls. Software development for embedded systems. External bus behaviour and design of decoders, Stack and BERR circuitry using PLDs. Interfacing memory and peripheral devices. Embedded microcontroller devices – architecture, features, peripherals and programming. Coprocessor interface and memory management.
Required Reading Selected papers from IEEE/IEE Journals. To be advised by the lecturer.
Class Contact Three hours per week for one semester comprising two hours per week of lecture and one hour per week of tutorial/laboratory.
Assessment Test, assignments and laboratory exercises 40%, final examination 60%.

EET5500 COMMUNICATION SYSTEMS CASE STUDY
Campus Footscray Park
Prerequisite(s) EET5510 Communication Theory.
Content This subject provides the students with the opportunity to carry out an in-depth study of a specific topic in communication systems. A typical study would involve a detailed literature survey followed by a comprehensive analysis of the topic, and the compilation of a full report. The report is to be presented in a seminar at the end of the semester.
Required Reading Technical journal articles and other references as determined.
Class Contact Three hours per week for one semester.
Assessment Final report, 70%; seminar presentation, 30%.

EET5510 COMMUNICATION THEORY
Campus Footscray Park
Prerequisite(s) Nil.
Content This subject will provide students with a review of the fundamental principles on which telecommunication systems operate. The subject examines the following topics. Review of analysis techniques: Fourier series, Fourier transform, Bandwidth and rise time of signals. Convolution theorem and its applications. Sampling theorem and signal recovery. Review of modulation techniques: Auto-correlation, cross-correlation functions. Coherence. Power spectral density. Spectral analysis of random


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

**Assessment** Examination, 70%; assignments, 30%.

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**EET6500 COMMUNICATION SYSTEM MODELING AND SIMULATION**

**Campus** Footscray Park

**Prerequisite(s)** Nil

**Co-requisite** Nil

**Content** *Semester One*: Introduction to research methodology. System modeling and simulation procedures. MATLAB and its application in the design and simulation of communication subsystems. *Semester Two*: OPNET and other industry standard simulation tools and their application in telecommunication systems modeling and simulation.

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

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

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

**Assessment** Preliminary assignments, 40%; final assignment, 60%.

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**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.

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**EET6522 TELECOMMUNICATION TARIFF STRUCTURES AND TELETRAFFIC ENGINEERING**

**Campus** Footscray Park

**Prerequisite(s)** Nil

**Co-requisite** Nil


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


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

**Assessment** Tests/Assignments: 40%; Examination: 60%. A pass in each component of assessment is required for a subject pass.

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**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. Gain, radiation resistance, and phased array antennas. Base station antennas for cellular mobile systems. Low profile portable antennas. Modulation and coding for the mobile channel. FM, CPM, GMSK, and QPSK. Bit error rate and error flow. Channel equalisation. The effect of space, time and frequency diversity. Spread spectrum. CDMA, TDMA and FDMA.

Required Reading To be advised by the lecturer.


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

Assessment Tests/Assignments: 40%; Examination: 60%. A pass in each component of assessment is required for a subject pass.

EET6532 MICROWAVE AND SATELLITE COMMUNICATION SYSTEMS

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.

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 (ie. 0.9 to 2.3 GHz). Extensive use will be made of Hewlett Packard's simulation and design package, MDS and other software packages in this course. The subject content consists of the following: 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.
Required Reading Gonzalez, G., 1984, Microwave Transistor Amplifiers – Analysis and Design, Prentice-Hall.

Recommended Reading Fooks, E.H. and Zalas, A., Microwave Engineering Using Microstrip Circuits, Prentice Hall.


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

Assessment Tests/Assignments: 40%; Examination: 60%. A pass in each component of assessment is required for a subject pass.

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**EET652 COMPUTER NETWORKS AND NETWORKING SOFTWARE**

Campus Footscray Park

Prerequisite(s) Nil

Co-requisite Nil


Recommended Reading Verer, 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 Tests/Assignments: 40%; Examination: 60%. A pass in each component of assessment is required for a subject pass.

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**EET6561 LOCAL AREA AND BROADBAND NETWORKS**

Campus Footscray Park

Prerequisite(s) Nil

Co-requisite Nil


Required Reading To be advised by the lecturer.


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

Assessment Tests/Assignments: 40%; Examination: 60%. A pass in each component of assessment is required for a subject pass.

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**EET6562 DIGITAL SIGNAL PROCESSING**

Campus Footscray Park

Prerequisite(s) Nil

Co-requisite Nil


Required Reading To be advised by lecturer.

Recommended Reading To be advised by lecturer.

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

Assessment Tests/Assignments: 40%; Examination: 60%. A pass in each component of assessment is required for a subject pass.

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**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 Asian and Pacific Rim countries, in the United States and in Europe.

Required Reading Course Handbook provided to each student.


Class Contact Forty five hours of block mode teaching.
The Australian freight industry but also on international for intermodal firms and for the effective achievement of an adequate conceptual framework within which to define positioning the firm for the future. More particularly, the subject the guiding questions are strategic ones and focus on the nature of the intermodal freight market and the role of the intermodal service provider in it; and the 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**


**Class Contact**

Forty five hours of block mode teaching.

**Assessment**

Case study and seminar presentation, 10%; Syndicate group project, 40%; Research report, 50%.
EPM5005 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 network 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%.

EQB562I 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.


EQB563I SMOKE AND FIRE SPREAD, FIRE SAFETY SYSTEM DESIGN

Campus Werribee
Prerequisite(s) Nil


**EQB5642 PERFORMANCE CODES METHODOLOGY AND STRUCTURE**

**Campus** Werribee

**Prerequisite(s)** Nil

**Content** The subject introduces the student to the principles, methodology and scope of performance based codes including a conceptual framework and historical background and provides the student with an understanding of the structure of performance design and approval and background and refresher material essential to an understanding of further subjects in the course.


**EQB5611 FIRE SAFETY SYSTEMS MODELLING**

**Campus** Werribee

**Prerequisite(s)** EQ B5611, EQ B5621 and EQ B5632

**Content** The subject provides students with an understanding of the details of modelling of active, and passive, building fire safety subsystems, and the details of human behaviour modelling. The subject covers detection and sprinkler operation predictions; modelling of barrier failure; structural fire safety; human behaviour modelling; suppression models; and a fire brigade intervention model.


**Class Contact** Equivalent to three hours of lectures per week for thirteen weeks.

**Assessment** Four written assignments, 10%, 10%, 30% and 50%. Page limits: 10% - 4 pages, 30% - 12 pages, 50% - 20 pages.

**EQB5751 FIRE TECHNOLOGY MODELLING**

**Campus** Werribee

**Prerequisite(s)** EQ B5621 and EQ B5632

**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.

**EQB5772 FIRE SAFETY SYSTEM DESIGN**

**Campus** Werribee

**Prerequisite(s)** Fire Safety System Design: EQ B5751, EQ B5761 and EQ B5642.

**Content** The subject provides a description of various approaches used for the design of the safety in buildings, with particular emphasis placed on a fire safety system (FSS) performance model. The FSS model uses a risk assessment methodology to assess the risk to life safety and the expected losses, and to incorporate this risk assessment as part of the design procedure for the fire safety in buildings. The subject covers: introduction, alternative design approaches, fire engineering design code framework; risk assessment methodology, and description of a fire safety system (FSS) model and its parameters; risk to life subsystem and economic subsystem. Description of the various subsystems comprising the FSS model: namely; fire initiation and growth subsystem, smoke spread subsystem, fire spread subsystem, occupant communication and avoidance subsystem, fire brigade subsystem. In-service performance. Application of fire safety system models.


**Assessment** Assessment will be made on the basis of assignments. Four assignments, each 25%. Supplementary assessment will not be available.

**EQB5782 FIRE SPREAD AND FIRE SAFETY SYSTEM DESIGN PROJECT**

**Campus** Werribee

**Prerequisite(s)** Fire Spread and Fire Safety System Design Project.

**Co-requisite(s)** EQ B5772 Fire Safety System Design.

234
EQT6050 BUILDING FIRE RESEARCH (FULL-TIME)

Supplementary assessment will not be available.

Class Contact

Required Reading

Class Contact

Required Reading

EQT6060 BUILDING FIRE RESEARCH (PART-TIME)

Prerequisite(s)

Campus Werribee

Prerequisite(s)

Campus Werribee

Prerequisite(s)

Class Contact

Required Reading

Recommended Reading

Recommended Reading

HNM6236 ETHICS AND MEDICAL PRACTICE

Campus Footscray Park

Prerequisite(s) Nil.

Content This subject examines significant ethical issues in medical practice, including the question of a discipline-based ethical knowledge. The relationships between society, ethics, the
law and professional practice are examined through analysis of contemporary ethical, legal, social and professional issues. The subject considers the use of different ethical frameworks to justify moral judgements and includes analysis of issues affecting nurses' capacity to practice ethically.

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

**Recommended Reading** Australian Nursing Council Incorporated 1993, Code of Ethics for Nurses in Australia, Canberra; Bandman, E.L. and Bandman, B., 1995, Nursing Ethics Through the Lifespan, 3rd edn, Appleton and Lange, Norwalk, CT.

**Class Contact** Three hours per week for one semester comprising 1 two-hour lecture-led seminar, followed by one 1 hour tutorial.

**Assessment** Group project which includes a class presentation 40%; analysis of a case study or practice issue - 2,500 words 60%.

### SBF6720 FOOD MICROBIOLOGY

**Campus** Werribee

**Prerequisite(s)** Eligibility for entry to the Master of Science in Food Science and Technology.


**Class Contact** Six hours per week comprising lectures, tutorials, practical work and/or field trips for one semester.
Assessment Assignments and tests 30%, practical work 20%, final examination 50%.

**SBF6723 MUSCLE FOOD SCIENCE AND TECHNOLOGY**
Campus Werribee

**Prerequisite(s)** Eligibility for entry to the Master of Science in Food Science and Technology.

**Content** This subject aims to study the physical, chemical and biochemical parameters of muscle foods which have effect on the processing, technology and final quality of the product. The subject covers: The meat industry; Anatomical microstructure and histochemical characters of muscle; Muscle pigments; Post-mortem biochemistry of muscle; Conversion of muscle to food by processing – slaughter ing, chilling, freezing, curing, emulsifying, smoking, fermenting, canning and others. The assessment of product quality. Special religious requirements and the processing of muscle foods to meet these values; By-product processing.


**Class Contact** Six hours per week comprising lectures, tutorials, practical work and/or field trips for one semester.

**Assessment** Assignments and tests 30%, practical work 20%, final examination 50%.

**SBF6724 DAIRY SCIENCE AND TECHNOLOGY**
Campus Werribee

**Prerequisite(s)** Eligibility for entry to the Master of Science in Food Science and Technology.

**Content** This subject provides a study of the science and technology associated with the processing of milk and milk products. The subject covers: Structure of the Dairy Industry; Effects of heat treatment on milk; Processing of milk to various dairy products: Advances in testing of milk and milk products; Quality management of milk and dairy products; Starter cultures and friendly bacteria; Advances in dairy fermentation; UHT of milk and milk products; Membrane technology; Nutritional issues in dairy product development; Dairy ingredients.


**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%.

**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 conduct 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.

**SBT8010 RESEARCH THESIS (PART-TIME)**

Campus Werribee  
**Prerequisite(s):** Eligibility for entry to a Master of Science or Doctor of Philosophy program.

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**SCM3614 EXPERIMENTAL DESIGN I**

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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**SCM5404 FINANCIAL DECISION SUPPORT SYSTEMS**

Campus Footscray Park  
**Prerequisite(s):** Nil.  
**Content** This subject focuses on modelling the financial flows associated with investment both in commercial projects and in financial assets. Topics may include: the riskless investment: compound interest, present-value and future-value of a sequence of dated cash-flows, measures of rate-of-return; the single-period risky investment, the Markowitz mean-variance comparison of investments; reduction of risk through portfolio optimisation; the capital asset pricing model; extension to multi-period risky investments; financial instruments underlying sources of finance, bonds, shares, options, futures, currencies; Black/Scholes pricing of options; interest rate risk (duration and convexity); software-packages for financial modelling.  
**Class Contact** Three hours per week comprising two 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.

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**SCM5602 QUALITY MANAGEMENT AND STATISTICS**

Campus Footscray Park  
**Prerequisite(s):** Nil.  
**Content** Quality as an integral part of the business environment. Statistical process control: Pareto analysis, standards, process capability, control charts, acceptance sampling.  
**Required Reading** To be advised by lecturer.  
**Class Contact** Three hours per week for one semester comprising lectures and tutorials.  
**Assessment** Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

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**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 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.

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**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 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.

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**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.  
**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.

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**SCM5804 SOFTWARE ENGINEERING**

Campus Footscray Park, Hong Kong.  
**Prerequisite(s):** Nil.  
**Content** Introduction to software engineering; the lifetime of software systems; requirements definitions and specifications and feasibility; software design and programming languages; testing and debugging; documentation of software systems; the user interface; software quality assurance; software management and project management.  
**Required Reading** To be advised by lecturer.  
**Class Contact** Three hours per week for one semester.  
**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, costings; layered design of networks and the ISO reference model - protocols, interfaces, communication techniques, multiplexing; public networks in Australia - Datel, 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 entity-relationship model. Transaction analysis and management: transaction concept and properties, concurrency control, transaction logging and database recovery. Database application development: embedded SQL, form-based approach.
Required Reading To be advised by lecturer.
Class Contact Two hour lecture and one hour laboratory/tutorial per week.
Assessment Final examination, 80%; assignment and test, 20%.

SCM5811 OPERATING SYSTEMS
Campus Footscray Park, Hong Kong
Prerequisite(s) Nil.
Content Operating Systems, system structure, memory management, process management, concurrent processes, resource allocation, protection, advanced architecture and operating systems, implementations; operating environment for application programs, job control languages, job streams, check points, utilities and system routines, discussion of why the operating system exists and the practical consequences.
Required Reading To be advised by lecturer.
Class Contact Three hours per week for one semester comprising two hours of lectures and one one-hour practical.
Assessment Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

SCM5813 ARTIFICIAL INTELLIGENCE
Campus Footscray Park
Prerequisite(s) Nil.
Content LISP; knowledge representation - semantic nets, problem solving, search, frames, knowledge based systems - rule-based systems, logic programming developing an expert system.
Required Reading To be advised by lecturer.
Class Contact Three hours per week for one semester comprising two hours of lectures and one one-hour practical.
Assessment Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

SCM5819 COBOL PROGRAMMING
Campus Footscray Park
Prerequisite(s) Nil.
Content Advanced Programming, programming language, structured programming concepts, data organisation and accessing, file processing environment, sequential access, random access, file input-output, implementation considerations; design techniques, formal models of structured programming, demonstration of code reading and correctness, stepwise refinement; reorganisation and segmentation; top-down design and development, structured design, strength and coupling measures.
Required Reading To be advised by lecturer.
Class Contact Three hours per week for one semester comprising two hours of lectures and one one-hour practical.
Assessment Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

SCM5820 NETWORK OPERATING SYSTEMS
ADMINISTRATION
Campus Footscray Park
Prerequisite(s) SCM5805 Communication and Networks.
Class Contact Three hours per week for one semester, comprising two one-hour lectures and one one-hour laboratory/tutorial.
Assessment Final examination, 50%; assignment and tests, 50%.

SCM5821 INTRODUCTION TO MULTIMEDIA SYSTEMS
Campus Footscray Park
Prerequisite(s) Nil.
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%.

SCM5822 NETWORK MULTIMEDIA SYSTEMS
Campus Footscray Park
Prerequisite(s) SCM5821 Introduction to Multimedia Systems.
Content Components of networked multimedia systems. Multimedia object servers. Multimedia network topologies.


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

**Assessment** Final examination, 80%; assignments, 20%.

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**SCM5824 OBJECT ORIENTED PROGRAMMING GD2**

**Campus** Footscray Park, Hong Kong

**Prerequisite(s)** SCM5800 Object Oriented Programming GD 1

**Content** This subject provides practice to object oriented programming and methodology using advanced features and the application programming interface of the Java programming language. A deeper discussion of classes and objects, encapsulation, polymorphism, inheritance, relationships among classes of objects and programming with related classes along with exception handling, multithreading, file I/O and building GUI components.

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

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


**Assessment** Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

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**SCM5901 INTRODUCTION TO DECISION SUPPORT SYSTEMS**

**Campus** Footscray Park

**Prerequisite(s)** Nil.

**Content** Decision categories: strategic planning, management and operational control, structural and semi-structured decisions. Decision support systems versus idea processing systems. Modelling for DSS. Artificial intelligence and the automation of the human logic process. Knowledge based systems. Expert systems.

**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.

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**SCM5903 SYSTEMS AND SIMULATION STUDIES**

**Campus** Footscray Park

**Prerequisite(s)** Nil.

**Content** Philosophy and concepts of simulation; discrete and continuous event simulation of physical systems; modeling of transactions, resources and queues; analysis and design of simulation experiments. Practical program will involve building and implementing production, inventory control and general queuing models using SLAM II simulation language.

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

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

**Assessment** Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

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**SCM6801 INDUSTRY PROJECT**

**Campus** Footscray Park

**Prerequisite(s)** Nil.

**Content** The project work gives the students an opportunity to work on a complex real-life problem; experience in liaising with industrial personnel from various sections of the sponsoring company; experience at defining a problem in precise terms; experience in searching the literature and using library facilities; experience at presenting reports in both written and verbal forms. In all cases, students operate individually under the supervision of a staff member and tackle a problem using appropriate methods of statistical analysis. Typical project areas are: multivariate data analysis; quality control studies; econometric modelling; time series forecasting; reliability modelling; design and analysis of experiments; production scheduling; A.I. application in industry; database construction; systems analysis and design; development of expert systems.

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

**Class Contact** Six hours per week for one semester comprising individual supervision.

**Assessment** Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

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**SCM6802 THESIS (2 UNITS) (FULL-TIME) (FOR ONE SEMESTER)**

**SCM6803 THESIS (4 UNITS) (FULL-TIME) (FOR ONE SEMESTER)**

**SCM6804 THESIS (1 UNIT) (PART-TIME) (FOR TWO SEMESTERS)**

**SCM6805 THESIS (1 UNIT) (PART-TIME) (FOR TWO SEMESTERS)**

**SCM6806 THESIS (2 UNITS) (PART-TIME) (FOR TWO SEMESTERS)**

**Campus** Footscray Park, Hong Kong

**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.

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241
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 area of expertise.

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**SCM6501 IMAGE PROCESSING ALGORITHMS**

**Campus** Footscray Park

**Prerequisite(s)** Nil.

**Content** An introductory subject which covers the fundamental algorithms used in imaging. The topics include: point, algebraic and geometric operations; smoothing and edge detection, linear convolution, median and max/min filters; non-linear edge detection; shape detection algorithms; segmentation, template matching. Hough methods; morphological operations; texture generation and recognition; colour space; image coding and compression; three dimensional reconstruction.

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

**Class Contact** Three hours per week for one semester comprising lectures/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.

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**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 space. Linear Algebra: theory of vector spaces; metrics, Banach and Hilbert space; transformations; matrix decomposition; affine and projective geometry. Transform Theory: the Fourier transform in one and two dimensions; discrete and fast Fourier transforms; other transforms especially the cosine, Hilbert, and wavelet transforms and singular value decomposition.

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

**Class Contact** Three hours per week for one semester comprising lectures/practicals.

**Assessment** Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

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**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.

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**SCM6601 RELIABILITY AND MAINTENANCE**

**Campus** Footscray Park

**Prerequisite(s)** Nil.

**Content** This subject studies the important interrelated topics of system reliability, maintainability and availability. A statistical approach is taken and methods are tempered to meet practical considerations. Introduction: Historical perspective of reliability, fundamental concepts, analysis of Failure data. Combinatorial system reliability, Bayesian methods in reliability analysis, analysis of failure data in maintained systems, replacement strategies, techniques for reliability analysis of complex systems, distributed system reliability, software systems available for reliability and maintenance, software reliability models.

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

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

**Assessment** Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

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**SCM6602 STOCHASTIC PROCESSES**

**Campus** Footscray Park

**Prerequisite(s)** Nil.

**Content** This subject is an overview of stochastic processes. Some important topics in the theory of such processes are dealt with. The processes considered have been chosen because they have found application in various branches of science and technology. Computer Science and Operations Research applications are particularly emphasised. The subject consists of: Markov Chains: Transition probabilities, classification of states, absorption probabilities. Markov chains and Martingales occurring in branching, queuing with applications in computer science and operations research. Markov Processes: Birth and death processes, Poisson processes and queuing models Point Processes: Renewal and marked processes, Counter problems and cumulative processes. Congestion Theory: Loss and waiting systems in networks.

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

**Class Contact** Three hours per week for one semester comprising lecture and tutorial.

**Assessment** Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

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**SCM6603 STATISTICAL CONTROL OF CONTINUOUS PROCESSES**

**Campus** Footscray Park

**Prerequisite(s)** SCM3602 Quality Management and Statistics or equivalent.

**Content** This subject develops the ideas of statistical process control and its relationship to quality. Summary of statistical process control techniques for the discrete manufacturing industries. Consideration of average run length evaluation and the possibility of dynamic control. The impact of measurement error on process control chart performance. Consideration of time series models for application in process control. The distinction between discrete and continuous processes. Definitions of quality for products manufactured via a continuous process. The issue of auto-correlation. The general problem of process control in the absence of stability. Issues of the inter-relationship between automatic process control and statistical process control. Types of sampling and testing. The variogram as a time series descriptor. Estimation of average quality and its variance for a continuous
stream using the variogram. Central Limit consideration for auto-
correlated processes.

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

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

**Assessment** Will be based on a combination of examination, 
assignments, tests and presentations according to a formula to be 
provided during the first week of classes.

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**SCM6604 EXPERIMENTAL DESIGN 2**

**Campus** Footscray Park

**Prerequisite(s)** SCM604 Experimental Design 1 or equivalent.

**Content** Mathematical theory for confounding and fractional 
replication of factorial designs. Computer-Aided blocking of 
factorial and response-surface designs. Nested designs; Split plot 
Orthogonal main effect Plans; Search designs. Dispersion effects 
from factorial designs. Applications to the design of robust 
products. Experimental design for continuous processes.

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

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

**Assessment** Will be based on a combination of examination, 
assignments, tests and presentations according to a formula to be 
provided during the first week of classes.

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**SCM6605 REGRESSION ANALYSIS 2**

**Campus** Footscray Park

**Prerequisite(s)** Regression Analysis 1 or equivalent.

**Content** Review of Linear regression; the geometry of linear least 
squares; nonlinear regression: Nonlinear least squares; Guass-
Newton procedure for estimates; the geometry of nonlinear 
regression; nonlinear regression inference using the linear 
approximation; practical considerations in Nonlinear regression; 
introduction to nonnormal error structures: Logistic and Poisson 
regression; generalised linear models.

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

**Class Contact** Three hours per week for one semester 
comprising lecture and tutorial.

**Assessment** Will be based on a combination of examination, 
assignments, tests and presentations according to a formula to be 
provided during the first week of classes.

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**SCM6606 TIME SERIES ANALYSIS**

**Campus** Footscray Park

**Prerequisite(s)** Nil.

**Content** An advanced subject in time series analysis. It consists of 
the following topics: review of forecasting techniques including 
ARIMA modelling; spectrum analysis; spectral density Fourier 
transforms; transfer functions; cross-correlations; linear systems, 
forecasting; intervention analysis; model identification, estimation; 
use of computer packages such as SAS; review of current 
literature.

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

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

**Assessment** Will be based on a combination of examination, 
assignments, tests and presentations according to a formula to be 
provided during the first week of classes.

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**SCM6607 STATISTICAL COMPUTING**

**Campus** Footscray Park

**Prerequisite(s)** Nil.

**Content** Lecture Program Data manipulations using an 
appropriate language. What packages are available? Similarities and 
differences in what they can do. Writing macros or their 
equivalent. Producing graphical displays (including EDA). 
Statistical modelling. Creating useful output. Working with input 
from various sources. Using the Bootstrap. Using the Jackknife. 
Testing assumptions about data distributions. Practical program: 
laboratory sessions are designed to give students practical 
experience in using computers for statistical purposes.

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

**Class Contact** Three hours per week for one semester 
comprising lecture and practical.

**Assessment** Will be based on a combination of examination, 
assignments, tests and presentations according to a formula to be 
provided during the first week of classes.

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**SCM6608 MULTIVARIATE ANALYSIS**

**Campus** Footscray Park

**Prerequisite(s)** Nil.

**Content** This subject extends the concepts of estimation and 
statistical analysis to handle problems involving independent 
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 
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.

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

**Class Contact** Three hours per week for one semester 
comprising lecture and tutorial.

**Assessment** Will be based on a combination of examination, 
assignments, tests and presentations according to a formula to be 
provided during the first week of classes.

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**SCM6701 MATHEMATICS FOR COMPUTER SCIENCE**

**Campus** Footscray Park

**Prerequisite(s)** Nil.

**Content** Formal system; propositional calculus; predicate calculus; 
theories, set theory; relations; functions; sequences; algebras; 
formal methods; Z-notation.

**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.

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**SCM6801 OBJECT ORIENTED TECHNOLOGY 1**

**Campus** Footscray Park, Hong Kong

**Prerequisite(s)** Nil.

**Content** Object oriented concepts: classes, inheritance, 
polymorphism, encapsulation. Program design and 
implementation using object oriented methodology. Persistent 
objects and object oriented data bases. Comparison of object 
oriented languages.

**Required Reading** To be advised by lecturer.
SCM6802 OBJECT ORIENTED TECHNOLOGY 2

Campus Footscray Park, Hong Kong

Prerequisite(s) SCM6801 Object Oriented Technology 1 or equivalent.

Content Review of object-oriented systems inheritance, data and procedure encapsulation, messaging graph structures. Object-oriented languages: Object-oriented design. Impact of object-oriented design strategies on software development. Applications of object-oriented design in areas such as Artificial Intelligence, Database systems and user interfaces.

Required Reading To be advised by lecturer.

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

Assessment Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

SCM6803 SOFTWARE ENGINEERING 1

Campus Footscray Park, Hong Kong

Prerequisite(s) SCM5800 Object Oriented Programming GD1, Introduction to Computer Science; SCM5803 Data Structures and Programming or equivalent.


Required Reading To be advised by lecturer.

Class Contact Three hours per week comprising lectures/practical exercises/class discussions and projects.

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.

SCM6804 SOFTWARE ENGINEERING 2

Campus Footscray Park

Prerequisite(s) SCM6803 Software Engineering 1 or equivalent.

Content Each student will work on a project as a member of a team. Students will be required to present a written report and give an oral presentation at the end of semester. Projects will focus on industrial and business applications and can be chosen from one of the following fields: user interface development; database management systems; networking; parallel processing; artificial intelligence; general application development environments.

Required Reading To be advised by lecturer.

Class Contact Three hours per week comprising mainly of software development project.

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.

SCM6805 ARTIFICIAL INTELLIGENCE 1

Campus Footscray Park

Prerequisite(s) Nil.

Content Traditional programming versus artificial intelligence/expert systems; applications of artificial intelligence/expert systems: problem solving, classification, diagnosis, interpretation, monitoring, synthesis, planning, design; artificial intelligence/expert systems programming tools; practical work with one of PROLOG/LISP/ SMALLTALK/OPS-5; multi-paradigm tools, ES shells; knowledge engineering techniques; knowledge representations in AI and operations research; using artificial intelligence/expert systems; commercial applications.

Required Reading To be advised by lecturer.

Class Contact Three hours per week comprising lectures/seminars/workshops.

Assessment Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

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.

SCM6807 KNOWLEDGE ENGINEERING 1

Campus Footscray Park, Hong Kong

Prerequisite(s) Nil.

Content A study of various methodologies to represent knowledge, and to design and implement knowledge based systems. Topics include: knowledge, general concepts, knowledge organisation, knowledge processing; knowledge representation, formalised symbolic logics, reasoning under uncertainty, structured knowledge and data structures, object-oriented representations; knowledge organisation and manipulation, search and control strategy; memory techniques; knowledge engineering techniques; knowledge acquisition, knowledge representations in AI and applications.

Required Reading To be advised by lecturer.

Class Contact Three hours per week for one semester comprising lectures/seminars/workshops.

Assessment Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

SCM6809 PARALLEL PROCESSING 1

Campus Footscray Park

Prerequisite(s) SCM5800 Object Oriented Programming GD1, Introduction to Computer Science or equivalent.

Content Introduction to parallel processing: evolution of computer systems, parallelism in uniprocessor systems, parallel
computer structures, architectural classification schemes, parallel processing applications. Introduction to parallel programming: sequential programming languages, asynchronous parallel programming languages, synchronous parallel programming languages, data flow languages. Parallel machines: Transputer, Connection Machine, CRAY Machines. Parallel programming: OCCAM, Parallel-C.

Required Reading
- OCCAM, Parallel-C.

SCM6810 PARALLEL PROCESSING 2
Campus Footscray Park
Prerequisite(s) SCM6809 Parallel Processing 1 or equivalent.

Content Models of parallel processing: classical computational models, parallel computational models, dataflow and related models; models for synchronous computers; analysis and semantics of parallel processes; fundamentals of semantics of concurrency; semantics of Petri net models; tree semantics; power domain semantics, actor semantics; complexity and speed-up in parallel computations; realisation of parallel machines; universal interconnection patterns; VLSI computational complexity; physical complexity and neural networks; parallel processing of databases; modelling and analysis of concurrency in database systems; database architecture and languages.

Required Reading To be advised by lecturer.

Class Contact Three hours per week comprising two hours of lectures/ tutorials and one one-hour laboratory.

Assessment Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

SCM6811 INFORMATION NETWORKING 1
Campus Footscray Park
Prerequisite(s) SCM5805 Communications and Networks or equivalent.

Content Introduction to information networks; communication fundamentals; communication protocols; network architectures; network design; modelling and simulation of networks; network services; network management.

Required Reading To be advised by lecturer.

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

Assessment Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

SCM6812 INFORMATION NETWORKING 2
Campus Footscray Park
Prerequisite(s) SCM6811 Information Networking 1 or equivalent.


Required Reading To be advised by lecturer.

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

Assessment Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

SCM6813 DATA MANAGEMENT 1
Campus Footscray Park
Prerequisite(s) SCM5800 Object Oriented Programming GD1; SCM5801 Introduction to Computer Science; SCM5803 Data Structures and Programming or equivalent.

Content Amortized analysis; self-adjusting data structures, e.g. AVL and splay trees; multiway search trees, e.g. B-trees; range queries; data compression; dynamic structures, e.g. extendible and linear hashing; partial match retrieval.

Required Reading To be advised by lecturer.

Class Contact Three hours per week comprising two hours of lecture and one one-hour tutorial.

Assessment Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

SCM6814 DATA MANAGEMENT 2
Campus Footscray Park, Hong Kong
Prerequisite(s) SCM6813 Data Management 1 or equivalent.

Content Relational database systems. Relational algebra and calculus, relational query processing and optimisation. Inadequacies of the relational model. Deductive database systems design; Semantic data modelling. Object-oriented database systems.

Required Reading To be advised by lecturer.

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

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.

SCM6838 DATA STRUCTURES AND PROGRAMMING

Campus: Footscray Park, Hong Kong
Prerequisite(s): SCM5800 Object Oriented Programming GD 1
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 doubly-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.

SCM6823 DATABASE DESIGN, MANAGEMENT AND ADMINISTRATION

Campus: Footscray Park, Hong Kong
Prerequisite(s): Nil.
Content: This subject will study advanced topics in Networking with emphasis on Distributed Systems. After completing the subject the students will have gained a understanding of the following topics: OSI layers; Client-Server models and group programming; Networking programming; Distributed Systems.

Class Contact: Three hours per week two hours lecture and one-hour laboratory/tutorial.
Assessment: Final examination 70%. Assignment/Test 30%.

SCM6821 DECISION SUPPORT TECHNOLOGY

Campus: Hong Kong, Footscray
Prerequisite(s): Nil.
Content: Processes and phases of organisational decision making and modelling. Online analytic processing (OLAP) vs online transaction processing (OLTP). Decision support framework and applications. Data requirements and benefits of decision support systems. Structure, components and types of decision support systems. Data mining concepts. Data warehouse vs production systems. Warehouse data characteristics and requirements. Data fusion and data scrubbing. Data models for data warehouse and data mart. Star schemas and hypercubes. Multidimensional analysis RO LAP and MOLAP. Data warehouse administration. Warehouse database management technology.

Class Contact: Three hours per week two hours lecture and one-hour laboratory/tutorial.
Assessment: Final examination 70%. Assignment/Test 30%.

SCM6822 INTERNET PROGRAMMING

Campus: Footscray Park, Hong Kong
Prerequisite(s): Competency in Java.

Required Reading: Deitel, Deitel and Nieto, 2001 or later, Internet and World Wide Wide: How to Program, Prentice Hall. D.R. Watson's five hypertexts on Internet Programming, all available on the school's intranet at s:\samples\scm6822\Launcher.html or http://matilda.vu.edu.au/~dmw/scm6822/Launcher.html
Class Contact: Two hour lectures and 1 hour laboratory per week.
Assessment: Final Examination 70%, mid-semester practical test 30%.

SCM6820 DISTRIBUTED SYSTEMS

Campus: Footscray Park, Hong Kong
Prerequisite(s): Nil.
Content: This subject will study advanced topics in Networking with emphasis on Distributed Systems. After completing the subject the students will have gained a understanding of the following topics: OSI layers; Client-Server models and group programming; Networking programming; Distributed Systems.

Class Contact: Three hours per week two hours lecture and one-hour laboratory/tutorial.
Assessment: Final examination 70%. Assignment/Test 30%.
SCM6830 KNOWLEDGE ENGINEERING AND ENTERPRISE TECHNOLOGY

Campus: Footscray Park

Prerequisite(s): SCM6807 Knowledge Engineering 1 or equivalent.

Content: A study of concepts involved in knowledge based systems (KBS). Development of techniques for KBS design and development with particular emphasis on practical implementations such as expert systems. Topics include: knowledge-based system life cycle; planning and designing a knowledge-based application; creating a knowledge-based application; prototyping, evaluation, pilot application, operational characteristics; knowledge representation; rule-based representations, frame-based reasoning, multiple contexts, model-based representations, blackboard representations; selection of appropriate knowledge representation techniques.

Required Reading: To be advised by lecturer.

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.

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 for mathematical programming. Integer programming

Required Reading: To be advised by lecturer.

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

Assessment: Will be based on a combination of examination, assignments, 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 queueing, resources, pre-emption, priorities and machine breakdown. Design and analysis of simulation experiments. Practical coding experience using SLAMII.

Required Reading: To be advised by lecturer.

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

Assessment: Will be based on a combination of examination, assignments, 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 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.

SCM6906 OPTIMISATION TECHNIQUES

Campus: Footscray Park

Prerequisite(s): Consent of lecturer.

Content: Lecture Program Topics: Decision Tote and AHP; Maximal flow problems, Shortest-route problem, Minimal spanning tree problem, Estimating network flows; Queuing Theory; Combinatorial Models.

Required Reading: To be advised by lecturer.

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

Assessment: Will be based on a combination of examination, assignments, tests and presentations according to a formula to be provided during the first week of classes.

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-charge problems; partitioning and decomposition methods; commercial packages available for location problems; background to distribution and collection problems and their mathematical and computing models; basic heuristics for vehicle scheduling; mathematical programming approaches to vehicle scheduling; commercial packages available for vehicle scheduling.

Required Reading: To be advised by lecturer.

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

Assessment: Assignments and project, 40%; final examination, 60%.

SCS3100 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.
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.


Required Reading


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.


Required Reading


Class Contact Four hours per week, consisting of lectures and practicals for one semester.

Assessment Assignment and practical, 30%; examination, 70%.

SCS512I ENVIRONMENTAL LAW AND STANDARDS 1

Campus Footscray Park

Prerequisite(s) Nil.


Required Reading


Class Contact Two hours each week for one semester.

Assessment Continuous assessment by assignments, presentations and reports.

SCS513I ENVIRONMENTAL LAW AND STANDARDS 2

Campus Footscray Park

Prerequisite(s) Nil.


Required Reading


Class Contact Two hours each week for one semester.

Assessment Continuous assessment by assignments, presentations and reports.

SCS514I 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.


Required Reading


Class Contact Four hours per week for one semester.

Assessment Assignments, 40%; examination, 60%.
SCS5161 OCCUPATIONAL AND PUBLIC HEALTH  
Campus Footscray Park  
Prerequisite(s) Nil.  
Content Nature of hazards; basic risk assessment; prevention, protection, detection and decontamination of toxic chemicals; radioactivity; indoor air quality; principles of occupational health and safety; emergency incidents; case studies.  
Class Contact Four hours per week for one semester.  
Assessment Assignments, 40%; examination, 60%.  

SCS5172 SOLID WASTE MANAGEMENT  
Campus Footscray Park  
Prerequisite(s) Nil.  
Content Nature and sources of solid wastes; hazardous waste handling; incineration; landfills; other disposal alternatives; monitoring and control.  
Required Reading To be advised by lecturer.  
Class Contact Four hours per week for one semester.  
Assessment Assignments, 40%; 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.  
Class Contact 247 hours, equivalent to one third of full Masters program, over one semester (full-time) or over two semesters (part-time).  
Teaching Method Each student will be required to work independently, undertaking an individual piece of work related to the course. Students will be encouraged to propose their own topics in consultation with members of staff. The supervisor (or co-supervisor) will be responsible for providing guidance to the student. The selection of the supervisor (or co-supervisor) will be based on staff expertise, interests and research activities.  
Assessment The research project will normally be assessed by at least two expert examiners from an appropriate area of expertise.  

SCS6020 PROJECT (PART-TIME)  
Campus Footscray Park  
Prerequisite(s) Nil.  

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.  

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  

Postgraduate Subject Details


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

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.

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**Recognition of Prior Learning (RPL)**

Recognition of Prior Learning (RPL) 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 are advised to begin the application as soon as they are enrolled. Students applying for RPL 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 application.

The University will endeavour to process RPL 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 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**

Applicants will receive in writing the results of their application for credit or RPL 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 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 Engineering and Science 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 Engineering and Science 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 discrimination on the grounds of gender, sexual preference, marital status, pregnancy, race, political beliefs, religion, physical attributes, socio-economic status, language or age.

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. women, 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 hundreds of 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. If there is no relevant standardised pathway a customised pathway can be developed for applicants through the use of a student compacts. 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.

Alternative Entry at Victoria University

The University offers alternative entry programs that will provide for selection on criteria other than the ENTER. The Portfolio Partnership Program will be available in 2003.

Portfolio Partnerships Program

Victoria University is committed to strengthening partnerships with schools and communities in its local region. The Portfolio Partnership Program is an alternative entry scheme available to students in participating secondary schools in the Western Metropolitan, Sunbury and Macedon regions and mature age applicants who live in this region. Selected courses are included in the program and provide opportunities for students with strong vocational commitment and the potential to succeed at university in their selected course to submit a portfolio of evidence. This gives the applicant an opportunity to provide additional information related to their goals and achievements, previous studies, work experience, skills, personal qualities as well as examples of work and other evidence that indicates a commitment to the proposed area of study.

To enquire about the Portfolio Partnerships Program contact the Centre for Commencing Students on (03) 9688 4110 or by email at ccs@vu.edu.au or visit the web site at www.vu.edu.au/ccs

Student Compact

Existing students of the University may request to have a Student Compact which will identify their learning pathway from their existing course of study to other courses to which they aspire. The Student Compact is a documented agreement between the student and the University that lists all negotiated conditions related to their chosen field of study.

The Student Compact is available to all students of the University, and can be renegotiated at any time by the student or the University, to reflect the changing requirements of the student.

For further information about the Student Compact contact the Centre for Commencing Students telephone: (03) 9688 4110.
Admission Requirements

Undergraduate Courses

Normal Entry

Any persons who have been granted the Victorian Certificate of Education or satisfactorily completed an equivalent Year 12 qualification recognised by the University (plus relevant course prerequisite studies) will be eligible to apply for admission to courses of the University leading to a higher education award or to a TAFE Diploma.

In general, therefore, applicants will be eligible for admission to higher education undergraduate and TAFE Diploma courses if they have:

- passed the VCE including the satisfactory completion of English Units 3 and 4 from 1992 onwards;
- passed four approved VCE (HSC) Group 1 subjects (including English) at one sitting prior to 1992;
- passed four approved Victorian Institute of Education, HSC, Group 1 subjects (including English) at one sitting since 1980;
- satisfied Victorian University Schools Examination Board or Victorian Institute of Education Year 12 requirements prior to 1980; or
- obtained an equivalent interstate or overseas qualification.

Entry requirements for admission to TAFE courses other than courses leading to a Diploma vary. Details of entry requirements are to be found in the TAFE Handbook.

In addition to meeting the entry requirements above, applicants may be required to satisfy other requirements specified by the Faculty/School conducting the course. Further information can be found on www.vu.edu.au/admissions

Special Entry

Applicants meeting the above requirements will be regarded as having satisfied the Normal Entry requirements. However, applicants wishing to undertake a University course who do not meet the Normal Entry requirements may still be eligible for admission under Special Entry (SE). Students admitted to a course under SE may be subject to special terms and conditions determined by the relevant Faculty or School. The three categories of Special Entry are as follows.

Age and Educational Background

A person will be eligible for admission to any course within the University if, at 1 January of the intended year of entry, he or she is 21 years of age or over.

Any person who, at the date of their proposed admission to a TAFE course (other than a course for Diploma), is 18 years or older, will be eligible to apply for admission to any such course. Australian residents who meet these criteria are guaranteed a place in a Government-funded course if they apply via the University's Personalised Access Study scheme.

There is currently a high demand for many award courses, and a number of mature-age applicants do not receive an offer of a place in the course of their choice. Other factors taken into account in selection, in addition to work and life experience, include education level achieved, evidence of aptitude for study, time elapsed since study was attempted, and whether the applicant resides in the western metropolitan region of Melbourne.

Mature-age applicants should be aware of the study difficulties they might face in a tertiary course. The University conducts a number of programs generally of short duration, aimed to help improve communication skills, study skills and confidence. Mature-age applicants may not need to do a preparatory program, but should consider the following:

- It is assumed that students of award courses know how to study.

Study involves many skills - taking notes, using a library, organising your time effectively, essay writing, and so on.

- If it has been a long time since you last attended classes, or if your previous study experience was not very successful or enjoyable, it may be helpful to develop some confidence in your abilities before you begin.

- Communication skills are very important for award course students, and this can mean speaking (for example, participation in class discussions) as well as writing. Some practice in this area may be beneficial.

- The real work of any award course usually begins straight away: sometimes on the very first day. You may need some time to ease yourself into being a student.

By undertaking preparation for study, you can pay attention to the factors outlined above in an environment that is designed to minimise the pressure on you. If you move straight into a tertiary course, you might find that you are in fact trying to prepare yourself at the same time as trying to cope with the new material presented to you. This can result in failure to meet the required academic standard.

Courses conducted by the University to help you successfully return to study in an award course may include:

- **Access courses for women**
  - **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) 9294 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.

This category does not apply to applicants whose difficulties occurred only during their last year of secondary studies. Such persons must use the Victorian Tertiary Admission Centre 'Form S' rather than applying directly to the University for Special Entry. Applicants wishing to apply on this basis should contact the relevant Faculty or the Centre for Commencing Students for further information.

It should also be noted that this category does not apply to all persons with a disability or chronic medical condition. It only applies to those who can demonstrate that their progress through school was adversely affected by a disability. Persons with a disability should approach the relevant Faculty, School or Department of the University to discuss any potential difficulties or hazards they may encounter in undertaking
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 their period of deferment, providing they attend a scheduled enrolment session.

Application for Admission

Centre for Commencing Students

The Centre for Commencing Students (CCS) provides a central location for TAFE, undergraduate and postgraduate course information. Information sessions are conducted in the evenings and on weekends for prospective students that provide information and advice about return to study or career options, application procedures, alternative entry schemes and an overview of the University environment.

A resource area is provided where prospective students may browse through brochures of the many courses offered by the University. Advisers are always available to assist with enquiries, provide course information, and offer advice to individuals, schools and community groups. Group sessions can be arranged for local and community groups by contacting the Community Partnerships Officer at the Centre.

The Centre is located at Footscray Park Campus in Building C on ground level (level 3) facing Ballarat Road (adjacent to the pedestrian crossing). Contact the Centre for Commencing Students on telephone: (03) 9688 4110, fax: (03) 9688 4813 or email: ccs@vu.edu.au
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 organizations to enable programs to be delivered in offshore teaching sites such as Bangladesh, China, Hong Kong, Korea, Malaysia, New Zealand, Singapore, Thailand, and Vietnam.

**Centre for Graduating Students and Education Abroad**
Telephone: 61 3 9365 2846
Fax: 61 3 9365 2853
Email: offshoreadmin@vu.edu.au
Website: www.vu.edu.au
Located Building 4C, 141, St Albans Campus

Enrolment Management provides services in the following areas:
- **Admissions and Orientation** provides a comprehensive service to prospective students including distribution of course information, collection and processing of applications; and to the University in the coordination of the admissions process, procedures and information.
- **Client Services and Information** offers assistance with student administration enquiries including enrolment and fees information, cashier functions and switchboard services.
- **Enrolment** services entail the registration and administration of enrolment amendment for students on all onshore campuses and in both sectors, as well as Higher Education Contribution Scheme administration and TAFE fees.

**Undergraduate Courses**

**Normal Entry**
Persons applying for entry to higher education undergraduate courses (other than those listed below under Direct Application) to study either full-time or part-time must apply through the Victorian Tertiary Admissions Centre.

While the VTAC Guide and application form are available from newsagents, a convenient and comprehensive application service is available from their web site at: www.vtac.edu.au.

Persons applying through VTAC should note that the VTAC rules, by which the University is bound, provide that no selection authority shall take into account the preference for that course as indicated by the applicant. This means that even if an applicant has indicated a lower preference for the course concerned than other applicants, there shall be no prejudice and each applicant will be considered equally.

**Prerequisites and Extra Requirements**
Some higher education undergraduate courses have special prerequisites for enrolment. Where this is the case, these requirements are published two years in advance in the Victorian Tertiary Education Requirements (this is published as a supplement in the press) and for the following year in the VTAC Guide to Undergraduate and TAFE Courses (available from newsagents and the web: www.vtac.edu.au).

For some higher education undergraduate courses, the application process requires applicants to complete a Supplementary Information Form available from the relevant Faculty Office, the Admissions Office or the University website: www.vu.edu.au/admissions. These courses are identified in the VTAC Guide.

**Special Entry**
Persons applying for admission to a University course under Special Entry (except those applying for re-admission) 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 re-admission 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 re-admission 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;
- whether the circumstances which led to the person's previous unsatisfactory progress or to their allowing their previous enrolment to lapse have changed or improved.

If selected for re-admission such students will be subject to the course requirements in effect at the time of re-entry and may have special conditions attached to their re-admission.

**Part-time Admission**
Persons applying for admission on a part-time basis to Higher Education undergraduate courses and TAFE courses should follow the application procedures set out above. Where a form is to be lodged with the University as well as with VTAC, applicants should indicate their intention to study part-time on the form.

**Postgraduate Courses**

**Masters by Coursework, Graduate Certificates & Graduate Diplomas**
All persons seeking admission to postgraduate studies in the University (except for the Graduate Diploma of Education) must apply direct to the University.

Application forms for graduate certificates, graduate diplomas and masters by coursework are available from the Student Administration Admissions Office at the St Albans Campus or Faculty offices on the campus where the course is offered.

**Doctor of Business Administration**
Prospective students should contact the Faculty of Business and Law office at either the Footscray or City campuses for application details.

**Doctor of Philosophy and Masters Degrees by Research**
Those persons interested in pursuing a research degree are advised to contact the Postgraduate Studies Officer in the Faculty or Department in which they wish to study to discuss research interests and to determine the availability of suitable supervisors and facilities relevant to the proposed research.

Once the Department has confirmed that the applicant is eligible to enrol, an Application for Enrolment Form must be completed and lodged along with the necessary enrolment forms at Student Administration.
Direct Applications

All direct applications for admission to award courses must be on appropriate University application forms, available from the University. Telephone (03) 9345 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 numeracy 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 Victoria University on the basis of a pass in Economics at Monash University in 1998, the applicant should attach a copy of the subject description of the unit from the 1998 Monash University Handbook; and
• any other material that applicants wish to submit in support of their application.

Time Lapse Between Studies

Normally, credits for studies in a previous course of study will not be considered if studies were undertaken more than 10 years prior to the application. Courses linked to fields in which there is rapid change in technology and/or knowledge may set a maximum time limit of less than ten years. In cases where it can be demonstrated that relevant skills have been maintained and, where appropriate, updated, the above time limit restrictions may be waived by the appropriate Dean or TAFE Deputy Director on the recommendation of the appropriate Head of School or Department.

Enrolment

Enrolment enquiries should be directed to Student.Admin@vu.edu.au or to any Enrolment Management Branch office on campus.

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 valid 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 shall obtain written approval from the Director Student Affairs (or equivalent) at their home institution, verifying their enrolment status, indicating the nature of the studies to be undertaken, and certifying that the studies, if successfully completed, will count towards the award.

Students who have produced documentation required in accordance with the previous paragraph will be exempted from payment of the General Service Fee normally required upon enrolment at the University, on the basis that they have already paid such a fee elsewhere.

Complementary students will normally be required to accept liability under the Higher Education Contribution Scheme in respect of subjects undertaken at this University. However, students should not be required to accept liability more than once in respect of any particular component of enrolment.

Enrolment Amendment and Course Withdrawal

Higher Education Students

Students wishing to reduce their study load should complete an Application for Enrolment Amendment Form. Students should lodge the form at an Enrolment Management Branch Office.

Students who withdraw from subjects before the census date do not incur a HECS liability for those subjects. Students who withdraw from subjects after the census date, but before the late withdrawal date, do incur a HECS liability but not an academic penalty for those subjects. Students who withdraw from subjects after the late amendment date incur a HECS and an ‘N2’ fail for the subject. Generally, students are not permitted to withdraw after the late withdrawal date.

Students wishing to totally withdraw from studies should complete an Application for Course Leave of Absence, Deferment or Withdrawal Form, obtain approval from the Faculty or Department responsible for administration of the course, and lodge the approved form at Enrolment Management. Withdrawal from subjects or courses will not automatically be permitted after 31 March in Semester 1 and 31 August in Semester 2. If a student withdraws from enrolment at the University during the year without being granted leave of absence, it will be necessary to re-apply for admission to the course to recommence studies at any later stage. In such circumstances, re-admission is not automatic.

TAFE Students

TAFE students wishing to reduce their load or withdraw from studies should complete the appropriate form within four weeks of the course start date.

A Word of Warning

Do not leave things to the last minute. You may receive little sympathy if you approach staff during the examination period regarding a problem that has affected your enrolment status or hampered your performance throughout the semester.

If circumstances force you to 'drop' a subject, make sure you apply to withdraw from that subject at the earliest possible time and at least before the deadline specified by Enrolment Management. If you do not complete the assessment for a subject for which you are enrolled you will receive a 'Fail' grade in that subject even if you have not attended classes in that subject. You will also incur a HECS liability for the subject.

Conditional Enrolment

A student, whether a commencing or a continuing student, may be permitted to enrol subject to special conditions, provisions or requirements.

Conditional enrolment means that special requirements apply for that student in addition to the normal progression regulations of the course, for a specified period of time (whether that time is measured in terms of course stages or in terms of calendar time).

Where the University attaches conditions, and where these have been formally notified to the student, the continued or subsequent enrolment by that student serves to confirm acceptance of the specified conditions. 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**

Fee enquiries may be directed to Student.Fees@vu.edu.au or to any Enrolment Management office.

Students are required to pay all the fees for which they have been assessed including the General Services Fee, Building Levy and TAFE tuition fees or accept HECS 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 amenity fees. These fees are paid to the University to fund a variety of non-academic and general services, activities and facilities of benefit to all students.

In 2003 the General Services Fee (GSF) for students other than 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 2003 fees quoted above are subject to Council approval and may change.

**PAYMENT OF FEES IS REQUIRED ON THE DATE OF ENROLMENT.**

Students who are experiencing financial difficulties and are unable to complete payment of their fees on time should seek advice from Enrolment Management or the Student Services Branch.

TAFE tuition fees are levied in accordance with State Government Policy.

**Exemptions**

In cases of hardship, students can contact Student Services staff at your campus.

**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 deadline specified for that semester.

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 as a proportion of the normal full-time load for each student's 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 Your Questions Answered 2003*, published by the Department of Education, Science (for TAFE) and Training contains more detailed information about the scheme. Copies are distributed at enrolment and are available from Student Administration offices. Further information is also available on the following website: www.hecs.gov.au or by calling the HECS enquiry line on 1800 020 108

**Communication from the University to Higher Education Students on HECS Liability**

The University will issue to each higher education student two documents about their HECS liability each semester, namely:

- An Enrolment Offer showing the student's personal details, the subjects the student is enrolled in for the current semester, the Effective Full Time Student Unit (EFTSU) value for each of the subjects, the aggregate EFTSU, the HECS liability amount and the up front payment amount for the current semester. The form will be sent or given to Higher Education students before 15 March in Semester 1, before 15 August in semester 2, in early January for Summer School and in early July for Winter School.

- A Tax Invoice and Final Statement of HECS Liability will be sent to all Higher Education students in early April (for Semester 1) and mid-September (for Semester 2). This notice will show: the aggregate EFTSU enrolment as at census date; the resulting semester HECS liability; the amount of HECS liability paid for the current semester; the amount of any HECS liability to be reported to the Australian Taxation Office; and where applicable, the amount of any refund due from the University.

Students will have fourteen days from the date of issue of a ‘Final Statement of HECS Liability’ to lodge a written objection (giving reasons) at Enrolment Management. The only valid grounds for such an application are that the University has made an error in recording the students subject enrolment, in calculating the HECS liability, or in recording a HECS payment. Such applications for amendment will generally be considered before 1 May in Semester 1 and before 1 October in Semester 2. Students will be formally advised of the outcome.

**Tax File Numbers**

**Handling of Tax File Numbers by University Staff**

Tax File Numbers submitted by students or received from the Australian Taxation Office will be kept secure and confidential and no unauthorised person will be permitted access to this information.

**Collection of Tax File Number Information by the University**

If a student provides a Tax File Number that does not conform to the specifications provided by the Australian Taxation Office, the responsible University Officer has the authority not to accept or process the student's enrolment.

If a student fails to provide a Tax File Number or a Certificate of Application from the Australian Taxation Office by the enrolment census date, then the responsible University Officer has the authority to terminate the student's enrolment.
Postgraduate Education Loan Scheme (PELS)
The Postgraduate Education Loan Scheme is an interest free loan facility for fee-paying postgraduate students undertaking non-research courses. It is similar to the deferred payment arrangements available under HECS.

Eligibility
You are eligible for a PELS loan if you are:
• Enrolled in a fee-paying postgraduate non-research course and,
• An Australian citizen or holder of an Australian permanent visa (who meets eligibility requirements)

Loan Available
You can borrow up to the limit of your tuition fees being charged for your course each semester. You will begin repaying your loan through the taxation system once your repayment income reaches the minimum threshold for compulsory repayment.

Further Information
The information booklet, PELS Your Questions Answered 2003, published by the Department of Education, Science and Training, contains more detailed information about the scheme. Copies are distributed at enrolment and are available from the Enrolment Management offices.

Further information is also available on the following website: www.hecs.gov.au/PELS.htm or by calling the PELS enquiry line on 1800 020 010.

Bridging For Overseas-Trained Professionals Loan Scheme (BOTPLS)
The Bridging for Overseas-Trained Professionals Loan Scheme (BOTPLS) is an interest-free loan facility for overseas trained professionals who are seeking to work in regulated or self-regulated professions in Australia. It is similar to the deferred payment arrangements available under the Higher Education Contribution Scheme (HECS) and the Postgraduate Education Loans Scheme (PELS)

Eligible overseas-trained professionals who are citizens or permanent residents of Australia wishing to meet formal recognition requirements for their profession in Australia will be able to access these loans.

Further information can be found by reading BOTPLS, Your Questions Answered which is available on the following website: www.hecs.gov.au/botpls.htm or by calling the enquiry line: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 examiners 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 I of the Schedule to a Statute of the University (Statute 6.3.1—Assessment). A copy can be obtained from the Head Legal and Policy Secretariat, telephone (03) 9688 4022. These rules are normally reproduced by Student Affairs and displayed alongside the final examination timetable.

Assessment is available only to students of the University
Students cannot have results for an examination in a subject in which they have not formally enrolled; check carefully your Enrolment Registration and HECS Liability Statements to ensure that your enrolment is correct in every detail.

Examination Timetable
The final examination timetable is posted on University noticeboards and web site www.vu.edu.au approximately four weeks before the examination period begins. It is your responsibility to check this timetable for any clash, and to refer any clash to the either the Examinations Scheduling Officer of the Assessment & Progression Unit at Footscray Park Campus or to the Enrolment Management office on your campus.

You will not be given special consideration if you misread the examination timetable and miss an examination, nor will you be entitled to another examination.

No information about the examination timetable will be given by telephone.

Conduct of Examinations
Enquiries about examinations may be directed by email to examinations@vu.edu.au to the Enrolment Management office on campus.

Examination sessions will normally commence at:
9.30am morning examination sessions
2.00pm afternoon examination sessions
6.00pm evening examination sessions
unless otherwise indicated on the published timetable.

Students will be admitted to the examination room at those times and given fifteen minutes at the commencement of the session for the purpose of reading the paper. Any variation of this practice will be notified to students in the printed timetable. As a rule, no writing, note making or marking of the paper in any way is permitted in this reading time. A member of the academic or teaching staff will be present at the beginning of each examination session at the examination venues to answer any inquiries about the question paper.

Before entering the examination room, students must ascertain their seat numbers from lists posted on noticeboards at the examination venues and web site www.vu.edu.au. Lists are usually posted on the University website www.vu.edu.au two days prior to the commencement of examinations. Any student who has not been
allocated a seat number should report immediately to the Enrolment Management office before the commencement of the examination session.

No student may enter the examination room more than half an hour after the commencement of the session or leave the examination room until half an hour after the commencement of the session or during the last quarter of an hour of the session.

You may bring into the examination room: pens, ink, pencils, rulers, erasers and mathematical instruments (see below for use of calculators and electronic devices).

You may not bring into the examination room any book, paper or other material that has not been specifically authorised for use at that particular examination; if, during an examination, you are found to be in possession of such material, you will be reported as having breached examination rules and may face disciplinary action.

You are strongly advised not to bring to examinations any unnecessary clothing, papers, books, bags, handbags, wallets, folders,-valuables or other personal items. You will not be permitted to bring into the examination room any bag, handbag, folder, pencil case, calculator case, paper or similar item. You are warned of the possibility of theft. The University accepts no responsibility for loss of or damage to any item left outside of or brought into an examination room.

You must bring your student identity card or other photographic identification such as driver’s license or passport to each of your examinations. Checks will be conducted in examination venues to verify the student’s identity and any discrepancies will be dealt with University Statutes.

Further information about the conduct of the examinations is given in the Rules and Regulations published with the examination timetable and on the University’s web site www.vu.edu.au.

Academic Misconduct

Students should note that the University regards academic misconduct as a very serious matter. Students found guilty of academic misconduct could be excluded from the University. The period of exclusion will vary depending on the circumstance of individual cases.

The following are some of the actions which have resulted in students being found guilty of academic misconduct:

• taking unauthorised materials into an examination;
• submitting work for assessment knowing it to be the work of another person;
• improperly obtaining prior knowledge of an examination paper and using that knowledge in the examination;
• disobeying any reasonable instruction of a supervisor;
• directly or indirectly assisting other students or accepting assistance from any person other than a supervisor.

Possible penalties if found guilty of academic misconduct are referred to in Statute 2.7 and include:

• a formal reprimand;
• forfeiture of the whole or part of any assessment in the subject to which the misconduct relates;
• the imposition of a fine of not more than $500;
• suspension or exclusion from the course in which the student is enrolled.

Special Consideration

Students may apply for special consideration if their work during a teaching period or examination or other assessment has been gravely affected by illness or other serious cause.

Students with Disabilities - Alternative Arrangements

Students with an ongoing disability should immediately register with the Disability Liaison Unit in the Equity and Social Justice Branch of the University. Students with a temporary disability which puts them at a disadvantage in written examinations, should advise the Faculty or TAFE Executive Officer at the beginning of the semester of study or immediately after their disability is known to discuss alternative arrangements for examinations.

Use of Linguistic Dictionaries

Students may apply to use an English language dictionary in an examination during the first two years of enrolment in the University if:

• the student has arrived from a non-English-speaking country within the last five years;
• the student has regularly attended an approved program designed to improve their language skills.

These are general guidelines only and criteria may vary with individual subject assessment requirements. An Application to Use a Dictionary Form is available from Enrolment Management offices and must be presented together with a dictionary registered with Enrolment Management. The concerned lecturer must then approve this form. After the completion of this process, students are required to bring this form along with the dictionary to the examination venue.

Use of Electronic Linguistic Dictionaries

The use of electronic linguistic dictionaries is not permitted.

Use of Computers and Electronic Calculators

Faculties, Schools and teaching Departments are responsible for determining which materials will be allowable for use in examinations. Students should refer to individual subject guides for details about the use of calculators and electronic devices. Generally, students will be allowed to bring into an examination room only pens, pencils and non-electronic mathematical instruments unless otherwise specified in the subject guide.

Further Assessment

Before the results of assessment for any component of assessment are published, the examiners may administer a further component of assessment to resolve any doubts as to whether a student has reached...
the required standards, or about the grade to be awarded to the student. This means it is vital that students ensure they can be easily contacted between the time a component of assessment is completed and results are published.

Notification of Results
The final results for any subject will not be officially notified to students before the completion of assessment in that subject and their formal publication. No information regarding results will be given by telephone.

A further component of assessment - oral, written or practical - may be administered by the examiners in any subject at short notice and before the publication of results. Students should therefore ensure that they can be easily contacted until the publication of results.

Review and Reports
Students may apply to have an assessment of any work re-marked or to be given a report on their assessed work. These applications may be subject to a fee.

Applications must be made to the Chairperson of the relevant Examination Board within seven days of the day upon which the results of assessment were published or become available for collection. Students will be notified of the results of any review of their work.

Subject Assessment and Grading
Grades for Year 2003 are as follows.

Division 1 - Grades For Assessed Subjects (including theses)

A: Grades for Honours subjects, theses and subjects taken in Postgraduate courses, Honours Years, Honours Degrees, Degrees with Honours and Degrees of Master, assessed as a whole.

Grade Definition
H1 First Class Honours, 80–100%
H2A Second Class Honours, Upper, 70–79%
H2B Second Class Honours, Lower, 60–69%
H3 Third Class Honours, 50–59%
N Fail, 0–49%
S Ungraded Pass

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

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 Withdrawn - Transferred
WN Withdrawn - Failed
WD Withdrawn - Without Academic Penalty
WL Withdrawn - Late*
VC VCE
TA TAFE Preparatory Assistance

* The WL grade applies for Higher Education students who withdraw after week 7 of the relevant semester until the last day of the teaching period and requires faculty approval.

Course Assessment and Grading

Special provisions are made on a course-by-course basis for students who encounter difficulties with academic progress. The provisions for Stage Completion and Faculty Passes detailed below should be read in conjunction with the course-specific progress regulations that appear in the Faculty Details of Courses.

Stage Completion

Some courses are formally divided into stages. These are identified in the details of courses.

Following final assessment in all subjects within a course semester, course year or other defined course stage, a student may receive a stage grading as follows:
- stage completed, all subjects passed;
- stage completed by compensation.

Stage completion by compensation will only be granted to a student who, though not passing all individual subjects, has aggregated grades above pass level and at a standard appropriate for progression to the subsequent course stage. Stage completion by compensation is not a pass in the subject and might not be recognised by all appropriate professional bodies.

Procedures for stage gradings in particular courses are as recommended by academic course departments or faculties and approved by the University.
Faculty Pass (Higher Education Courses Only)
Faculty passes are only available to students who were enrolled in the University in 1991 and who have not since then discontinued their studies (other than by taking approved leave) or changed their course.

A Faculty Pass may be awarded to a student who has passed (at P grade or better), all but one of the units (subjects) required to complete their higher education course and qualify for the relevant award.

The mark in the outstanding subject must not be less than N1.

The student must have gained sufficient marks in the subjects passed within the award to compensate for the shortfall of marks in the failed subject.

The award of a Faculty Pass shall not be interpreted as a pass in the given subject.

A Faculty Pass will not be awarded in respect of a subject that is a prerequisite for another subject.

Students who have passed all but one of the subjects required to gain an award, and who have been issued an N1 grade in the outstanding subject, may apply for a Faculty Pass by writing to the Faculty responsible for administering the course, clearly stating the basis of their entitlement to such a Pass.

The Pass is awarded at the discretion of the Dean of the Faculty administering the course in which the student is enrolled.

Requirements for Granting of Awards
The policies set out below represent the basic rules relating to the granting of a University award. Additional rules or requirements set by the Faculty are included in the Faculty section of this Handbook.

Partially Completed Courses
Where a student enters a University course by transfer from incomplete studies at another institution, that student must complete at least the final full-time year (or equivalent) of the course to qualify for the Victoria University course. 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 their course of study as detailed in the relevant section of the Handbook or in course regulations.

The time periods are taken from the beginning of the first semester for which the student was enrolled in the course, until the completion of all course requirements, and may include time elapsed due to deferment, suspension or voluntary withdrawal from the course.

Note: The maximum completion times apply in the absence of specific course requirements. For specific courses, shorter maximum time periods can be specified, and where this is the case, the shorter time limit will apply.

Academic Progression
Unsatisfactory Progress
The demand for tertiary study places exceeds the number of places available. Every year a considerable number of applicants fail to gain entry to the University. It is assumed that every person selected into an award course has the capacity to succeed. However, if students do not progress satisfactorily, they will be asked to show cause as to why they should be permitted to continue in the course.

An important aim of the University is to assist its students to succeed. Therefore, students should make use of the free counselling services provided if they are encountering problems or difficulties that are affecting their studies. These difficulties could include problems in organising time, financial difficulties, personal problems or difficulties in writing and presenting assignments and essays.

On the recommendation of the relevant Faculty or School, the University may specify academic progression rules for each individual course. Students should carefully read the progression rules relating to their course of study as detailed in the relevant section of the Handbook or in course regulations.

A student who fails to make satisfactory progress in a course of study is liable for exclusion from that course. This applies where a student does not achieve a satisfactory performance on a component of assessment, fails to attend without good reason for the performance of a component of assessment, or does not perform a component of assessment. In these cases, the relevant Faculty, School or Department, after investigating the circumstances and allowing the student to be heard, either personally or through a representative, may notify the student in writing that he or she has made unsatisfactory progress in a subject.

In addition to notifying the student of unsatisfactory progress, the relevant Faculty or School may also notify the student that it intends to make a recommendation to the Academic Board or the Board of TAFE that the student be excluded or suspended from the course or only be allowed to continue under certain specified conditions. As a general policy, the following will form part of all award course progression regulations within the University.

Students may not:
• enrol in any sequential subject without having passed all prerequisite subjects; or
• enrol in any unit with a co-requisite subject without having either previously passed the co-requisite subject or enrolling simultaneously in the co-requisite subject.

After receiving a recommendation from a faculty or school, the Academic Board or the Board of TAFE, as appropriate, may exclude or suspend the student from a course.

Alternatively, the relevant Board may specify the conditions under which the student may continue in a course.
Special arrangements will apply to doctoral students and students undertaking masters degrees by research who should seek advice on those arrangements from their supervisors.

Any student who is notified of unsatisfactory progress should seek assistance from Student Services staff or the Student Union at the earliest opportunity.

**Discipline**

The University will act to protect good order and the rights of individuals within its confines. To this end, a formal process will be followed to deal with any alleged breach of discipline or misconduct.

The University operates within the provisions of a Statute dealing with discipline (Statute 4.1—Discipline). The full text of this Statute is printed in the Calendar.

**Plagiarism**

Paragraph 11(3)(d) of the Schedule to Statute 6.3.1—Assessment states that a student shall not, during or in connection with the performance of any component of assessment, submit, or represent 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. Forms can be collected from and handed in at the Enrolment Management office at any campus of Victoria University or downloaded from the University Website and sent directly to:

Centre for Graduating Students and Education Abroad

Telephone: 61 3 9365 2846
Fax: 61 3 9365 2853
Email: graduate@vu.edu.au
Website: www.vu.edu.au
Located Building 4C, 141, St Albans Campus.

Forms must be completed before the set closing date.

Graduation ceremonies in 2003 are scheduled as follows:
- 14 February 2003 Hong Kong
- 18 February 2003 Malaysia
- 20 February 2003 Singapore
Applications close 18 October 2002

26 April to 2 May 2003
Application closing date is 17 January 2003
30 and 31 October 2003
Application closing date is 15 or 18 August 2003

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.

Division of TAFE Certificants: A black gown and black cap.

Division of TAFE Diplomates: A black gown and black cap with a black stole faced with the colour tangerine.

Bachelors: A black gown and black cap with a black hood half lined with the discipline colour as follows:
- Ruby: Arts
- Ultramarine: Business or Business Administration
- Cherry: Education
- Silver Grey: Engineering
- Old Rose: Health Science
- Parchment: Law
- Grape: Music
- Buff: Psychology
- Spectrum Green: Science or Applied Science
- Buttercup: Social Work

Higher Education Diplomates and Certificants: A black gown and black cap together with a black stole faced in the discipline colour.

Masters: A black gown and black cap with a black hood fully lined with the discipline colour.

Doctorates: A black bonnet with a gold cord and scarlet gown with a facing of the discipline colour and black hood fully lined in the discipline colour as follows:
- Adonis Blue: Doctor of Business
- Cherry: Doctor of Education
- Charcoal Grey: Doctor of Engineering
- Pearl White: Doctor of Laws
- Ruby: Doctor of Letters
- Sapphire: Doctor of Philosophy
- Old Gold: Doctor of Psychology
- Spectrum Green: Doctor of Science
- Sky Blue: Doctor of the University

**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?

<table>
<thead>
<tr>
<th>Credit Points</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–44</td>
<td>credit points per semester will equal a part-time load</td>
</tr>
<tr>
<td>45–60</td>
<td>credit points per semester will equal a full-time load</td>
</tr>
<tr>
<td>0–90</td>
<td>credit points per year will equal a part-time load</td>
</tr>
<tr>
<td>91–120</td>
<td>credit points per year will equal a full-time load</td>
</tr>
</tbody>
</table>

EFTSU
All universities are required to calculate individual student enrolment load per year of a course. The Department of Education, Training and Youth Affairs expresses the value of an enrolment load as a percentage of 1, which is considered to be the total value of a standard, full-time course load. This unit of measurement is referred to as an Equivalent Full-Time Student Unit or EFTSU.

For example, a part-time student may record an EFTSU value of 5, indicating that the load for which the student is enrolled carries a value equivalent to half the standard student load for that course.
Services Available to Students

**Student Career Development**

Student Career Development provides an innovative range of services to students of Victoria University. These services include:

- Careers Counselling
- Careers Education Programs
- Employment Services
- Careers Resource Centres
- Online Careers Resources – website: www.vu.edu.au/careers

Careers Counselling appointments are available for students from all campuses by phoning (03) 9688 4944

**Careers Education Programs**

These include job seeking skills workshops, Employability Skills Challenge, Young Achievement Australia, in-class programs, Student Portfolios. Visit www.vu.edu.au/careers to see what’s on this month!

**Employment Services**

The online jobs board is accessed through www.vu.edu.au/careers/employment. Register on the site now for automatic notification of jobs in areas that you specify.

The Graduate Employment Stakes is a careers fair for final year students held in March each year. It’s free, it’s easy, and the employers come to you!! Watch the website for details

**Resume checking by email**

Email your resume to careers@vu.edu.au for feedback.

**Where are we?**

Footscray Park: Building M, level 4

All other campuses: co-located with Student Services.

**Children’s Services**

Victoria University has Children’s Centres located on five campuses - Footscray Nicholson, Footscray Park, Newport, St Albans (Jindi Woraback) and Werribee. In addition, there is a preschool located on the Melton Campus.

Each Centre provides educational programs which respond to the children’s social, emotional, physical, cognitive and creative needs. Nutritious meals and snacks are provided for the children throughout the day. All of the University Children’s Centres have been assessed as providing the highest level of care by the National Childcare Accreditation Council.

All Centres provide a funded and integrated preschool program with a qualified Early Childhood (Kindergarten) teacher.

Families using the University’s Children’s Centres are eligible to apply for Child Care Benefit (CCB) through the Family Assistance Office (FAO) - formerly Centrelink. The FAO is responsible for assessing family income and determining the percentage of Child Care Benefit families receive. For further information please contact your local Family Assistance Office.

**City Flinders, City King and City South Melbourne Campuses**

Telephone: (03) 9688 4098

A Referral Service has been developed for the city campuses to assist families in finding suitable childcare. Telephone the Manager, Children’s Services, on 9284 8801 for further information.

**Footscray Nicholson Campus**

Telephone: (03) 9284 8698

The Footscray Nicholson Campus Children’s Centre is located on the Ground Floor, Hoadley Building, Albert Street, Footscray. The Centre caters for a maximum of 39 children aged 6 weeks to 6 years on a full-time (weekly), daily, sessional (half day) and occasional care basis. The Centre is open from 7.45am to 5.45pm, Monday to Friday and offers a funded preschool program incorporated within the educational program.

**Footscray Park Campus**

Telephone: (03) 9688 4578

The Footscray Park Campus Children’s Centre is located at 8 Geelong Road, Footscray. The Centre caters for a maximum of 42 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) 9364 6855

The Jindi Woraback Children’s Centre is located at the Willis Street entrance of the St Albans Campus and is operated by a Management Committee consisting of representatives from the University and parents. The Centre caters for a maximum of 115 children aged from 2 weeks to 6 years on a full-time (weekly), daily, sessional (half day) basis. The Centre is open from 7.00am to 6.00pm, Monday to Friday and offers a funded preschool program.
Melton Campus
Telephone: (03) 9747 7500
The Brookfield Preschool operates from the Melton Campus Children's Centre and is located at the Wilson Road entrance of the Campus. The Centre offers sessional kindergarten programs for three and four-year-old children.

Newport Campus
Telephone: (03) 9284 8476
The Newport Campus Children's Centre is located in Building K, Champion Road, Newport. The Centre caters for a maximum of 40 children aged 6 weeks to 6 years on a full-time (weekly), daily, sessional (half day) and occasional care basis. The Centre is open from 7.45am to 5.45pm, Monday to Friday. The Centre provides a funded preschool program incorporated within the educational program.

Sunbury Campus
Telephone: (03) 9688 4418
Currently, there is no childcare provided on the Sunbury Campus. For information regarding childcare centres in the local area, contact the Manager, Children's Services on (03) 9284 8801.

Werribee Campus
Telephone: (03) 9748 9568 or (03) 9216 8098
The Werribee Campus Children's Centre is located in Hoppers Lane, Entrance Gate 1, Building 9, Werribee. The Centre caters for a maximum of 45 children aged 6 weeks to 6 years on a full-time (weekly), daily, sessional (half day) and occasional care basis. The Centre is open from 7.15am to 6.15pm, Monday to Friday and offers a funded preschool program incorporated within the educational program.

Graduating Students
The Centre for Graduating Students and Education Abroad is responsible for the administration services to process all awards for the University. When you have completed or nearly completed a course, you are required to submit an Application for an Award form. Forms can be collected from and handed into the Enrolment Management Office at any campus of Victoria University or downloaded from the University website. The organisation of all conferral ceremonies, both onshore and offshore, is also the responsibility of this unit.

Centre for Graduating Students and Education Abroad
Telephone: 61 3 9365 2846
Fax: 61 3 9365 2853
Email: graduate@vu.edu.au
Website: wwwvu.edu.au
Located: Building 4C, 141, St Albans Campus

Optometry and Dentistry
The Student Union operates optometry and dental services through local agencies. All enquiries should be directed to the Victoria University Student Union Resource Centre Building M, Level 2, Footscray Park Campus. Telephone: (03) 9688 4065.

Health Practice Units
The Faculty of Human Development operates Health Practice Units at the St Albans and King St. Campuses and at CERES in East Brunswick. These Units offer acupuncture, massage and herbal medicines to the university community and general public. Low fee structure. Phone (03) 9365 2625.

Independent Access: Students with Disabilities
Counselling, support and information for students with access disabilities are available from Student Services on all campuses. Assistance is available to students with disabilities for day-to-day issues of personal, academic, housing, career and financial matters; identification of support needs; and applications for alternative examination/ assessment arrangements and special consideration.
Further information and advice concerning support services for students with a disability can also be obtained by contacting the Disability Liaison Unit at the Equity and Social Justice Branch at Footscray Park Campus on telephone: (03) 9688 4598.

Orientation
Orientation Week (O-Week) is an annual event which is held at the beginning of Semester 1. During this week, a wide range of events are organised by the individual Faculties and Student Union to provide opportunities for students to meet each other and also to gain an awareness of the activities and services provided by the various University departments.
The Student Union distributes Orientation Information. "The Survival Guide" is published annually and includes information about the Student Union, Clubs and Societies, services available to students and a range of extracurricular activities. Further information can be obtained from the Resource Centre or the Student Union office on the City Flinders, City King, Footscray Nicholson, Footscray Park, Melton, Newport, St Albans, Sunshine and Werribee Campuses. (Refer to Student Union section for Campus phone numbers).

Student Services
Student Services provides support to students in a variety of ways. Staff provide academic support, personal and vocational counselling, financial counselling, housing and health services.
Student Services offices are located on most campuses and are open Monday to Friday during normal working hours, or after hours by appointment. For further information contact Footscray Nicholson campus on (03) 9284 8801, Footscray Park campus on (03) 9688 4418, St Albans campus on (03) 9365 2399 or visit our webpage: wwwvu.edu.au/ss.
Accommodation

The University Student Housing Service provides students with a wide range of free and confidential services to assist with locating, securing and maintaining suitable accommodation. The Student Housing Database, including current accommodation listings, is now on the Internet to improve accessibility. 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, referral and case management as well as assistance with general housing information. At other campuses, Student Services staff can assist with accommodation inquiries. For further information, contact the Housing Officer on telephone: (03) 9688 4420 or e-mail housing@vu.edu.au.

Chaplaincy

Contact Student Services for information about spiritual support in the community.

Counselling - Personal

Personal counselling is available at many of the campuses. Counselling can help students optimise their emotional, social and academic well being. Students are invited to discuss any personal, family or relationship matter with one of the counsellors. Some examples of issues discussed include loneliness, difficulty adjusting to life at the University, relationships, sexuality, family difficulties, grief and loss, self-confidence and anxiety. Counselling can be contacted by telephoning (03) 9688 4418 or (03) 9365 2399.

Financial Counselling/ Advice

Financial Counselling/ Advice can be provided 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. When discussing your needs a counsellor may be able to help you with information about financial assistance. This may include such things as 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. General 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 Services administers a loan scheme for enrolled students of the University who can demonstrate a genuine need. Loans are available for the purchase of books, computers and other course related materials, medical expenses, housing expenses and other purposes in accordance with the Student Loan Fund Policy. Application forms and information sheets are available on campus from Student Services on most campuses.

International Student Support

Two International Student Advisers provide services and programs such as Orientation and Return Home for international students in Higher Education. They are also available to provide individual assistance and support.

TAFE International services are available at the Footscray Nicholson Street Campus, telephone: (03) 9284 8517.

Services for AusAid sponsored students are available through Footscray Park Campus, telephone: (03) 9688 4780.

Further information is available at Footscray Park Campus, telephone: (03) 9688 4777, St Albans Campus, telephone: (03) 9365 2399 or City Flinders Campus, telephone: (03) 9248 1159.

Further information relevant to International students is available from the International Branch at City Flinders Campus, telephone: +61 3 9248 1164.

Health Advice

There are two health advisors (nurses) at the University. Typical issues that people consult the health advisors about include:

- General health and wellbeing
- Lifestyle issues
- Women's health
- Drug use issues
- Men's health
- Nutrition
- Chronic illnesses
- Family planning and sexual health
- Pregnancy testing
- Assistance with injuries and dressings
- Referrals to community agencies
- Vaccinations (at Footscray/ Park Campus)

The health advisors can also be contacted through Student Services on (03) 9688 4418.
Medical Centre
A Medical Centre is located at Student Services at the Footscray Park Campus in Building M, Level 2. Doctors consult on a sessional basis Monday to Thursday during Higher Education teaching time. All consultations are bulk billed on presentation of a Medicare card. For international students the Medical Centre bills Medibank Private direct. This means international students do not have to pay after their consultation provided they have their current Medibank Private card with them and they fill out a claim form at the Medical Centre. For appointments phone Student Services on (03) 9688 4418 or drop in to Student Services.

Drug Education
Substance use and abuse is an issue of considerable concern in the general community. The University has a drug education officer who can provide information on drug related issues and provide advice on how to find treatment and counselling services in the community. Education sessions on these issues can be organised for groups of students by contacting the drug education officer on (03) 9284 8886.

First Aid
There are first aiders on all campuses of the University. Lists of first aiders can be found on University intranet: 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.

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 email. However students should discuss this with the lecturer involved before sending work. Lecturers will comment on work, but not correct it.

Further Information
Contact Kim Borg or Bernadette Trickey CEDS Administrative Officers, on (03) 9688 4744.

Student Organisations
The peak student body for the University is the Victoria University Student Union Inc (VUSU Inc). Under this umbrella there are a number of sections including the International Students Association, the Victoria University Postgraduate Association as well as many clubs and societies. The VUSU provides a range of services through the Resource Centres and officers on each campus. These services are designed to make students' time at the University smoother and more enjoyable, and include recreation, sports, activities, advice, representation, advocacy and campaign organising.

Further information can be obtained from the Union Diary and the Survival Guide or by contacting the Student Offices at the following campuses:

City Flinders:
Student Union Office: (03) 9248 1221

City King:
Student Union Office: (03) 9284 7831

Footscray Nicholson:
Recreation Office: (03) 9284 8774
Recreation Centre: (03) 9284 8761
Student Union Office: (03) 9284 8534

Footscray Park:
Union Reception/General Enquiries: (03) 9688 4300
Resource Centre: (03) 9688 4302

Melton:
Recreation Office: (03) 9747 7552
Resource Centre: (03) 9747 7551

Newport:
Resource Centre: (03) 9284 8474
Alumni Association

Alumni of the University include staff, graduates, current students, and members of the community who have a connection with Victoria University. Membership of the University’s Alumni Association enhances the opportunities of members to achieve their professional aspirations. Students, graduates and staff maintain contact with one another and organise reunions, networks and business functions.

Staff of the Alumni office provide support in developing member networks and Alumni Chapters. Chapters focus on a particular discipline and draw together graduates to form a network in a related field. There are currently Chapters in Graphic Arts, MBA, Recreation/Fitness Leadership, Arts and Traditional Chinese Medicine.

Members of the Alumni Association are sent regular information on social activities, professional seminars, mentoring programs, activities within the University and activities organised by the various Alumni Chapters. Members also receive quarterly a copy of the University newspaper *Nexus* containing the Alumni supplement bulletin, and receive invitations to specifically targeted events organised by the Alumni Chapter in their field of study.

The Association also offers many complimentary member benefits. These include continuing use of the University’s library facilities after student members graduate, and discounts to a range of services such as car rental, travel, sporting goods, the University bookshop, newspaper subscriptions and hotel accommodation.

There are also several International Chapters of the Alumni Association for those graduates who return home overseas. To date, Chapters and/or networks have been developed in Hong Kong, India, Malaysia, Singapore, Taiwan and Thailand.

Membership for current students and first-year graduates is $11.00. The Alumni office is at the City Flinders Campus and is situated on the Ground Floor, 301 Flinders Lane, Melbourne.

Telephone: +613 9248 1017
Fax: +613 9248 1007
Email: alumni@vu.edu.au

Travel Concessions

Rail and bus concession application forms are available at the start of each academic year from VU Student Union (Resource Centres).
Courses at Victoria University in 2003

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 2002.

Undergraduate Courses and Programs

Faculty of Science, Engineering and Technology

<table>
<thead>
<tr>
<th>Campus codes:</th>
<th>Campus</th>
<th>Full-time</th>
<th>Part-time</th>
</tr>
</thead>
<tbody>
<tr>
<td>B=Sunbury</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C=City Flinders</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D=China</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E=Echuca</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F=Footscray Park</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G=Renmin University of China</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H=Hong Kong</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I=Internet</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J=City King</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>K=Kuala Lumpur</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M=Melton</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>O=Off campus</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P=Singapore</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q=Queen Street</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S=St Albans</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>W=Werribee</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3=Bangladesh</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D8=Tianjin, The People's Republic of China</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D7=Renmin University, Beijing, China</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Faculty Courses

Bachelor
- Business/Science  F/S/W Y Y
- Engineering/Science  F Y Y
- Engineering/Laws  F/S/W Y Y
- Science/Laws  F/S/W Y Y

Certificate
- Foundation Studies  F/S Y Y

School of the Built Environment

Bachelor of Engineering
- Architectural Engineering  F Y Y
- Building Engineering  F Y Y
- Building Surveying  F Y Y
- Civil Engineering  F Y Y
- Computational Engineering  F Y Y
- Mechanical Engineering  F Y Y
- Robotic Engineering  F Y Y

Bachelor of Science
- Engineering and Business  F Y Y
- Environmental Engineering  F Y Y

School of Communications and Informatics

Bachelor of Engineering
- Computer Engineering  F Y Y
- Electrical and Electronic Engineering  F Y Y
- Microelectronic Systems  F Y Y
- Telecommunication Engineering  F Y Y
- Photonics  F Y Y

Bachelor of Engineering Science
- Photonics  F Y Y

Bachelor of Science
- Applied Physics and Computing  F Y Y
- Computer Science  F/H/D7 Y Y
- Computer and Mathematical Sciences  F Y Y
- Computer Science and Aviation  F Y Y
- Computer Technology  F Y Y
- Optoelectronics  F Y Y

Bachelor of Science (Honours)
- Computer Technology  F Y Y
- Computer Science  F Y Y
### COURSES AT VICTORIA UNIVERSITY IN 2003

**Computer and Mathematical Sciences**
- Full-time: F
- Part-time: Y

**Physics**
- Full-time: F
- Part-time: Y

### School of Life Sciences and Technology

**Bachelor of Applied Science**
- Chemistry: F
- Biomedical Sciences: S
- Conservation Biology and Environmental Management: W
- Biotechnology: W
- Ecology and Sustainability: W
- Medical, Forensic and Analytical Chemistry: W
- Nutrition, Food and Health Science: W
- Occupational Health and Safety: W

**Bachelor of Science (Honours)**
- Biology (Biotechnology): W
- Conservation Biology and Environmental Management: W
- Nutrition and Food Science: W
- Biomedical Sciences: S
- Chemical and Environmental Sciences: S
- Meat Management: W

**Bachelor of Science**
- Chemistry: F
- Biomedical Sciences: S
- Conservation Biology and Environmental Management: W
- Nutrition and Food Science: W
- Biomedical Sciences: S
- Chemical and Environmental Sciences: W
- Meat Management: W

**Bachelor of Science (Honours)**
- Conservation Biology and Environmental Management: W
- Nutrition and Food Science: W
- Biomedical Sciences: S
- Chemical and Environmental Sciences: W
- Meat Management: W

**Diploma**
- Meat Management: W

**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) 9688 4191. For further information about Science, Engineering and Technology courses:
- Telephone: (03)9688 4191 - Facsimile: (03)9688 4513 - Email: BobRitchens@vu.edu.au

### Faculty of Arts

#### Generalist Degree Programs

<table>
<thead>
<tr>
<th>Program</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>Program</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 (Asian Studies)</td>
<td>F</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>Asia-Pacific Stream</td>
<td>S</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Australian Stream (3rd year only)</td>
<td>S</td>
<td>Y</td>
<td>Y</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 (Globalisation 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 (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 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>Program</th>
<th>Campus</th>
<th>Full-time</th>
<th>Part-time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor of Arts/ Bachelor of Business (Information Systems)</td>
<td>S</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Business (Tourism Management)</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Arts (Asian Studies)</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<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)</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Business (Human Resource Management)</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Business (Electronic Commerce)</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Arts (Multimedia)</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Arts/ Diploma of Liberal 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 Business (Marketing)/ Bachelor of Psychology</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
</tbody>
</table>
### Honours Programs

<table>
<thead>
<tr>
<th>Program</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 and Multimedia</td>
<td>S</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Arts (Honours - Psychology)</td>
<td>S</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Psychology (Honours)</td>
<td>S</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Science (Honours - Psychology)</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 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

<table>
<thead>
<tr>
<th>Program</th>
<th>Campus</th>
<th>Full-time</th>
<th>Part-time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor of Business</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accounting</td>
<td>F,W,K,D2</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Banking and Finance</td>
<td>F,K</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Strategic and Financial Management</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Accounting/ Financial Management</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Accounting/ Financial Management</td>
<td>W</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Accounting/ Banking and Finance</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Accounting/ Information Systems</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Accounting/ Electronic Commerce</td>
<td>W</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Accounting/ Small Enterprise Management</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Accounting/ Hospitality Management</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Accounting/ Commercial Law</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Accounting/ Transport and Logistics</td>
<td>W</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Banking and Finance/ International Trade</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Tourism Management/</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Small Enterprise Management</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Business Combined Degrees</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bachelor of Laws/ Bachelor of Business Accounting</td>
<td>F</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Bachelor of Business Accounting/ Certificate IV in Information Technology (Dual Award)</td>
<td>W</td>
<td>Y</td>
<td>Y</td>
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</tbody>
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#### School of Applied Economics

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#### Bachelor of Business Combined Degrees

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COURSES AT VICTORIA UNIVERSITY IN 2003

School of Hospitality, Tourism and Marketing

**Bachelor of Business**
- Hospitality Management
- Tourism Management
- Marketing
- Event Management
- Marketing/ International Tourism
- Accounting/ Hospitality Management
- Hospitality/ Tourism Management
- Hospitality/ Event Management
- Hospitality Management/ Human Resource Management
- Marketing/ Hospitality Management
- Marketing/ Tourism Management
- Marketing/ Event Management
- Regional Tourism Management
- Tourism/ Small Enterprise Management
- Marketing/ Applied Economics
- Marketing/ International Trade
- Retail Management/ Marketing
- Marketing/ Electronic Commerce
- Marketing/ Music Industry
- Hotel, Restaurant and Catering Management
- Management/ Marketing
- B.Bus Hospitality/ Event Management
- B.Bus Marketing/ Event Management
- Tourism Management/ Information Systems
- Tourism Management/ Event Management
- Bachelor of Business (Honours) – Marketing

**Bachelor of Business Combined Degrees**
- Bachelor of Laws/ Bachelor of Business Marketing
- BA Asian Studies/ BBus Tourism Management
- BA Recreation Management/ BBus Tourism Management
- BA Sports Administration/ BBus Marketing
- Bachelor of Business Marketing/ Bachelor of Psychology
- Bachelor of Business Marketing/ Advanced Diploma of

School of Information Systems

**Bachelor of Business**
- Information Systems
- Computer Systems Support
- Electronic Commerce
- Electronic Commerce/ Transport and Logistics
- Accounting/ Information Systems
- Tourism Management/ Information Systems
- Electronic Commerce/ Marketing
- Electronic Commerce/ Music Industry
- Electronic Commerce/ International Trade
- Electronic Commerce/ Retail Management
- Accounting/ Electronic Commerce
- Bachelor of Business (Honours) Information Systems

**Bachelor of Business Combined Degrees**
- Bachelor of Art/ BBus Information Systems
- BA Multimedia/ BBus Electronic Commerce
- Bachelor of Laws/ BBus Electronic Commerce
- B.Bus. Electronic Commerce/ Bachelor of Science

School of Law

**Bachelor of Laws**
- Law
- Graduate Entry
- Legal Practice

277
### Bachelor of Business

<table>
<thead>
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<th>Course Description</th>
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### Bachelor of Business Combined Degrees

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### School of Management

### Bachelor of Business

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<td>Human Resource Management</td>
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<td>Management - Service and Operations</td>
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<tr>
<td>Strategic and Financial Management</td>
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<tr>
<td>Hospitality Management/ Human Resource Management</td>
<td>F</td>
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<td>Y</td>
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<tr>
<td>Management/ Marketing</td>
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<td>Y</td>
<td>Y</td>
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<tr>
<td>Bachelor of Business (Honours) Management</td>
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### Bachelor of Business Combined Degrees

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<th>Campus</th>
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<th>Part-time</th>
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<tr>
<td>Bachelor of Laws/ B.Bus, Human Resource Management</td>
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<td>B.Bus Tourism Management/ Event Management</td>
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<td>BA Psychology/ BBus Human Resource Management</td>
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<tr>
<td>BA Sports Administration/ BBus Management</td>
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### Faculty of Human Development

#### School of Education

**Bachelor of Arts**

- Computer Mediated Art | S    | Y         | Y         |
- Computer Mediated Art & Multimedia | S    | Y         | Y         |
- Early Childhood Education | M    | n/a       | Y         |
- Youth Studies | FP    | Y         | Y         |

**Bachelor of Education**

- Four-Year Pre-Service Program P-12 | FP,M  | Y         | n/a       |
- Post-Registration (Year 4) | FP,M  | Y         | Y         |

**Bachelor of Education (Nyerna Studies)** | E    | Y         | Y         |

**School of Health Sciences**

#### Non-Award Courses

- First Aid in the Workplace Certificate: Level 1 & 2 | S,I  | Y         | Y         |
- Certificate of Advanced Airway Management (Pre-hospital) | S,I  | Y         | Y         |
- Certificate in Advanced Airway Management | S,I  | Y         | Y         |
- Certificate in Emergency Intravenous Therapy (Pre-hospital) | S,I  | Y         | Y         |
- Certificate in Venipuncture and Venous Cannulation | S,I  | Y         | Y         |
- Certificate in Emergency Intravenous Therapy | S,I  | Y         | Y         |
COURSES AT VICTORIA UNIVERSITY IN 2003

Certificate in Advanced Life Support (Pre-hospital)^*  
Certificate in Advanced Life Support^*  
Certificate in Semi Automatic External Defibrillation^*  

Award Courses

Bachelor of Health Science
- Clinical Dermal Therapies  
- Natural Medicine  
- Paramedic (3-Year Pre-service)  
- Paramedic (1-Year Conversion)  
- Chinese Medicine (Acupuncture)/(Chinese Herbal Medicine)  

Bachelor of Science
- Clinical Sciences  

School of Human Movement, Recreation and Performance

Non-Award Courses
Fitness Instructor Module ^  
Aerobic Module*  
Core Unit (Vic Fit)^  
Aqua Module*  
Personal Trainers Module^  
Children and Adolescent Exercise Module^  
Exercise to Music^  

Award Courses

Bachelor of Applied Science
- Human Movement  
- Human Movement/Bachelor of Psychology  
- Physical Education (Secondary)  
- Physical Education and Physics#  

Bachelor of Arts
- Performance Studies  
- Performance and Multimedia  
- Fitness Leadership*  
- Recreation Leadership  
- Recreation Management  
- Recreation Management/ Bachelor of Business - Tourism Management  
- Sports Administration  
- Sports Administration/ Bachelor of Business - Management  
- Sports Administration/ Bachelor of Business - Marketing  

Bachelor of Applied Science (Honours)
- Human Movement  

Bachelor of Nursing (Honours)

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### Postgraduate Courses

#### Faculty of Science, Engineering and Technology

**Centre for Environmental Safety and Risk Engineering**

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<tr>
<td>Master of Engineering (Coursework)</td>
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<tr>
<td>- Building Fire Safety and Risk Engineering</td>
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<td>- Performance-based Building and Fire Codes</td>
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<td>Graduate Diploma</td>
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<td>- Building Fire Safety and Risk Engineering</td>
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**Centre for Packaging, Transportation and Storage**

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**School of Communications and Informatics**

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**School of Life Sciences and Technology**

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**School of the Built Environment**

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### Faculty of Arts

#### Higher Degrees by Research

<table>
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<th>Campus</th>
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<th>Part-time</th>
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#### Postgraduate Programs by Coursework

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<td>(Community Development Stream)</td>
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<td>Graduate Certificate in Arts (History)</td>
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**Note:** The details of the programs, courses and subjects set out in this *Handbook* might change after publication. To ensure that the information about Faculty of Arts courses is still accurate, contact the Faculty of Arts Executive Officer on (03) 9365 2369.

### Faculty of Business and Law

#### Victoria Graduate School of Business

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<thead>
<tr>
<th>Degree</th>
<th>Campus</th>
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#### School of Accounting and Finance

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Master of Business in Professional Accounting  
Campus: C, H, P, K  
Full-time: Y  
Part-time: Y

Master of Business by Research  
Campus: C  
Full-time: Y  
Part-time: Y

Doctor of Philosophy  
Campus: C  
Full-time: Y  
Part-time: Y

School of Applied Economics

Master of Business in Business Economics  
Campus: C  
Full-time: Y  
Part-time: Y

Master of Business in International Trade  
Campus: C  
Full-time: Y  
Part-time: Y

Master of Business in International Music & Entertainment Business  
Campus: C  
Full-time: Y  
Part-time: Y

Graduate Certificate in Statistics  
Campus: C  
Full-time: Y  
Part-time: Y

Graduate Certificate in Retail Management (Offshore)  
Campus: C  
Full-time: Y  
Part-time: Y

Graduate Diploma in Retail Management (Offshore)  
Campus: C  
Full-time: Y  
Part-time: Y

Master of Business by Research  
Campus: C  
Full-time: Y  
Part-time: Y

Doctor of Philosophy  
Campus: C  
Full-time: Y  
Part-time: Y

School of Hospitality, Tourism and Marketing

Master of Business in Hospitality Management  
Campus: C  
Full-time: Y  
Part-time: Y

Master of Business in Hospitality Management (Professional Practice)  
Campus: C  
Full-time: Y  
Part-time: Y

Master of Business in Marketing  
Campus: C  
Full-time: Y  
Part-time: Y

Master of Business in Tourism Management  
Campus: C  
Full-time: Y  
Part-time: Y

Master of Business in Hospitality and Tourism Marketing  
Campus: C  
Full-time: Y  
Part-time: Y

Master of Business in Hospitality and Tourism Education  
Campus: C  
Full-time: Y  
Part-time: Y

Master of Business in Sports Tourism  
Campus: C  
Full-time: Y  
Part-time: Y

Master of Business by Research  
Campus: F, C  
Full-time: Y  
Part-time: Y

Doctor of Philosophy  
Campus: F, C  
Full-time: Y  
Part-time: Y

School of Information Systems

Graduate Certificate in Enterprise Resource Planning Systems  
Campus: C  
Full-time: Y  
Part-time: Y

Master of Business, Enterprise Resource Planning Systems  
Campus: C, P  
Full-time: Y  
Part-time: Y

Graduate Diploma in Business Computing  
Campus: C, R  
Full-time: Y  
Part-time: Y

Master of Business in Information Systems  
Campus: C, R  
Full-time: Y  
Part-time: Y

Master of Business E-Commerce/Marketing  
Campus: C  
Full-time: Y  
Part-time: Y

Master of Business by Research  
Campus: C  
Full-time: Y  
Part-time: Y

Doctor of Philosophy  
Campus: C  
Full-time: Y  
Part-time: Y

School of Law

Graduate Certificate in Australian Immigration Law  
Campus: D, K, P, H  
Full-time: Y  
Part-time: Y

Graduate Diploma of International Commercial Law  
Campus: Q, Q  
Full-time: Y  
Part-time: Y

Graduate Diploma in Notarial Practice  
Campus: C  
Full-time: Y  
Part-time: Y

Masters in Comparative Commercial Law  
Campus: C  
Full-time: Y  
Part-time: Y

Masters of Laws  
Campus: C  
Full-time: Y  
Part-time: Y

Masters of International Commercial Law  
Campus: D, K, P, H  
Full-time: Y  
Part-time: Y

Master of Business by Research  
Campus: C  
Full-time: Y  
Part-time: Y

Doctor of Juridical Science  
Campus: C, Q  
Full-time: Y  
Part-time: Y

Doctor of Philosophy  
Campus: C  
Full-time: Y  
Part-time: Y

School of Management

Master of Business in Management Practice  
Campus: C  
Full-time: Y  
Part-time: Y

Master of Business in Event Management  
Campus: C  
Full-time: Y  
Part-time: Y

Master of Business in Industrial Relations/ Human Resource Management  
Campus: C  
Full-time: Y  
Part-time: Y

Master of Business by Research  
Campus: C  
Full-time: Y  
Part-time: Y

Doctor of Philosophy  
Campus: C  
Full-time: Y  
Part-time: Y

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### Faculty of Human Development

#### Faculty Courses

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<th>Course</th>
<th>Campus</th>
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<td>Graduate Diploma in Dementia Care and Service</td>
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<tr>
<td>Graduate Program in Aged Services Management</td>
<td>C,Z</td>
<td>Y</td>
<td>Y</td>
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<tr>
<td>- Graduate Diploma in Aged Services Management</td>
<td>C,Z</td>
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<td>Y</td>
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<tr>
<td>- Master of Health Science - Aged Services Management</td>
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#### School of Education

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<td>Graduate Diploma in Secondary Education</td>
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<tr>
<td>Graduate Program in Education for Professional Development</td>
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#### School of Health Sciences

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<td>Graduate Diploma in Complementary Therapies</td>
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<td>Graduate Diploma in Prepared Chinese Medicine</td>
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<td>Graduate Diploma in Western Herbal Medicine</td>
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<td>- Graduate Certificate in Emergency Service Management</td>
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<td><strong>Note:</strong> The details of the programs, courses and subjects set out in this Handbook might change after the date of publication. To ensure that information about Faculty of Human Development courses is still accurate, contact the Faculty of Human Development Executive Officer on (03) 9688 4164.</td>
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**School of Nursing**

Graduate Diploma in Substance Abuse Studies Advanced Training Program  

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<th>Full-time</th>
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<tbody>
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<tr>
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<td>- Graduate Certificate in Cardiothoracic Nursing</td>
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<td>- Graduate Certificate in Cancer Nursing</td>
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<tr>
<td>- Graduate Certificate in Emergency Nursing</td>
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<tr>
<td>- Graduate Certificate in Geriatric Nursing#</td>
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<tr>
<td>- Graduate Certificate in Neuroscience Nursing</td>
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<td>- Graduate Certificate in Orthopaedic Nursing</td>
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<td>- Graduate Certificate in Paediatric Nursing</td>
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<tr>
<td>- Graduate Certificate in Palliative Care Nursing</td>
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<td>- Graduate Diploma in Cardiothoracic Nursing</td>
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<td>- Graduate Diploma in Cancer Nursing</td>
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<td>- Graduate Diploma in Emergency Nursing</td>
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<tr>
<td>- Graduate Diploma in Geriatric Nursing#</td>
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<tr>
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<tr>
<td>- Graduate Diploma in Palliative Care Nursing</td>
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<tr>
<td><strong>Master of Midwifery</strong></td>
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<tr>
<td>- Graduate Diploma in Midwifery</td>
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<tr>
<td><strong>Master of Nursing (by Research)</strong></td>
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<tr>
<td><strong>Doctor of Philosophy</strong></td>
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<td><strong>Note:</strong> The details of the programs, courses and subjects set out in this Handbook might change after the date of publication. To ensure that information about Faculty of Human Development courses is still accurate, contact the Faculty of Human Development Executive Officer on (03) 9688 4164.</td>
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### TAFE Courses at Victoria University in 2003

#### Strategic Development

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>Certificate IV in Assessment and Workplace Training (BSZ40198)</td>
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<tr>
<td>Diploma in Training and Assessment Systems (BSZ50198)</td>
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<tr>
<td>Certificate IV in Vocational Education and Training (15559VIC)</td>
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<tr>
<td>Diploma of Vocational Education and Training (15560VIC)</td>
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<td>Graduate Certificate in Vocational Education and Training (21205VIC)</td>
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<tr>
<td>Graduate Certificate in VET in Schools Implementation (21102VIC)</td>
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</tbody>
</table>

#### School of Building, Electrical and Information Technology

##### Building and Construction Department
- **Certificate I in Boatbuilding (15562VIC)** [Pre-Apprenticeship]
- **Certificate II in Boatbuilding (15563VIC)** [Traineeship]
- **Certificate III in Boatbuilding (15564VIC)** [Apprenticeship]
- **Certificate I in Construction (Off-site) (BCF10100)**
- **Certificate II in Off-Site Construction (BCF20100)**
- **Certificate III in Off-Site Construction (Joinery Timber/Aluminium/Glass) (BCF30200)**
- **Certificate I in Construction (BCG10198)**
- **Certificate II in General Construction (BCG 20198-B) [Bricklaying - Pre-Apprenticeship]**
- **Certificate III in General Construction (Bricklaying/Blocklaying) (BCG 30038) [Apprenticeship]**
- **Certificate II in Building and Construction (BCG 20198) [Carpentry - Pre-Apprenticeship]**
- **Certificate III in General Construction (Cabinet Making) (BCG 30798) [Apprenticeship]**
- **Certificate II in Furnishing (Furniture Manufacturing Pre-Apprenticeship) (12903VIC) [Cabinet Making]**
- **Certificate III in Furnishing (Cabinet Making) (2302A) [Apprenticeship]**
- **Certificate I in Construction (BCG 20198) [Carpentry – Pre-Apprenticeship]**
- **Certificate III in General Construction (Carpentry – Framework/Formwork/Finishing) (BCG 30898) [Apprenticeship]**
- **Certificate I in Construction (BCG 10198)**
- **Certificate II in Building and Engineering Trades Orientation (3113TNWB)**
- **Diploma of Building Design & Drafting (SA3474)**
- **Diploma of Building (SA3475)**
- **Certificate IV in Building (SA3477)**
- **Certificate IV in Building Drafting (SA3476)**
- **Diploma of the Built Environment (SA3472)**
- **Diploma of Building Surveying (SA3473)**

##### Building Services and Special Trades Department
- **Certificate II in General Construction (BCG 20198-P) [Painting & Decorating Pre-Apprenticeship]**
- **Certificate III in General Construction (Painting & Decorating) (BCG 30498)**
- **Certificate I in Building & Construction (Plumbing) (2102ABC)**
- **Certificate III in Plumbing and Gasfitting (20085VIC)**
- **Certificate IV in Plumbing (Services Design) (2402A) [AC]**
- **Certificate II in Sign Industry (20087VIC)**
- **Certificate III in Off-Site Construction (Sign Writing/Computer Operations) (BCF 30700)**
- **Certificate IV in Sign Technology (21000VIC)**
- **Course in Building and Engineering Trades Orientation (3113TNWB)**
- **Certificate III in Building and Construction (Protective Coating for Corrosion Control) (2302AFC)**

##### Electrotechnology Department
- **Certificate III in Electrotechnology Communications (UTE 30499)**
- **Certificate III in Electrotechnology Computer Systems (UTE 30599)**
- **Certificate III in Electrotechnology Entertainment and Servicing (UTE 30799)**
- **Certificate III in Electrotechnology Systems Electrician (UTE 31199)**
- **Advanced Diploma in Computer Systems Engineering (UTE60199)**
- **Advanced Diploma in Electronic Engineering (UTE60399)**
- **Certificate I in Electrical (Pre-Apprenticeship) (14035VIC)**
- **Certificate IV in Electrical (2406ANC) [Motor Control]**

##### Information Technology Department
- **Certificate I in Information Technology (ICA10101) [ICDL – International Computer Driving License]**
- **Certificate III in Information Technology (Software Applications) (ICA30199) [Web Pages]**
- **Certificate III in Information Technology (General) (ICA30299)**
- **Certificate III in Information Technology (Network Administration) (ICA30399)**
- **Certificate IV in Information Technology (21103VIC)**
- **Certificate IV in Information Technology (Network Management) (ICA40399)**
- **Certificate IV in Information Technology (Client Support) (ICA40199)**
- **Certificate IV in Information Technology (Programming) (ICA40699)**
- **Certificate IV in Information Technology (Technical Support) (ICA40599)**
- **Certificate IV in Multimodal (14035VIC)**
- **Diploma of Information Technology (Software Development) (ICA50299)**
- **Diploma of MultiMedia (14034VIC)**
- **Diploma of Information Technology (21104VIC) [Specialising in Network & Internet Technology]**
School of Business

Administrative and Legal Studies Department
Certificate IV in Electronic Publishing (21233VIC)
Certificate III in Business (Legal Administration) (BSA30200)
Certificate IV in Business (Legal Services) (BSA40200)
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)
Advanced Diploma of Business (Legal Practice) (20055VIC)
Certificate III in Government (PSP30190)

Financial Services Department
Certificate III in Financial Services (FNB30199)
Certificate IV in Financial Services (FNB40199)
Advanced Diploma of Accounting (FNB60299)
Diploma of Accounting (FNB50299)
Diploma of Business (Banking and Finance) (99025N SW)
Course in Real Estate for Agents' Representatives (2004AAA)
The Certificate IV in Business (State Agency Practice) (2404ADA)
Certificate IV in Property Services (Real Estate Operations) (2404AOB)
Course in Introduction to Call Centre Operations (3113BBD107)
Certificate II in Telecommunications (Call Centres) (ICT20409)
Certificate III in Telecommunications (Call Centres) (ICT30599)
Certificate IV in Telecommunications (Call Centres) (ICT40599)
Diploma of Commerce (3113BDC100)
Diploma in Customer Contact Management (3113BBCCM01)

Management and Marketing Department
Certificate III in Business (Frontline Management) (BSB30501)
Certificate IV in Business (Frontline Management) (BSB40101)
Diploma of Business (Frontline Management) (BSB50101)
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)
Diploma of Business Management (BSB50401)
Advanced Diploma of Business Management (BSB60201)
Advanced Diploma of Business (Operations Management) (20055VIC)
Diploma of Business (Operations Management) (20055VIC)
Certificate IV in Business (Operations Management) (20055VIC)
Certificate IV in Business (Advertising) (BSB40401)
Diploma of Business (Advertising) (BSB50401)
Advanced Diploma of Business (Advertising) (BSB60501)
Certificate IV in Business (Marketing) (BSB40701)
Diploma of Business (Marketing) (BSB50701)
Advanced Diploma of Business (Marketing) (BSB60601)
Advanced Diploma of Business (International Business) (20055VIC)
Diploma of Business (International Trade) (20053VIC)
Certificate IV in Business (International Trade) (20053VIC)
Advanced Diploma of Business (Public Relations) (20055VIC)
Certificate IV in Business (BSB40101)
Diploma of Business (BSB50101)
Certificate IV in Business Development (BSB40501)
Certificate IV in Business Development (BSB50501)
Advanced Diploma of Business Development (BSB60401)
Certificate III in Business (Sales) (BSB30301)
Graduate Certificate in Management Development (Education and Training) (2804ABB)
Certificate IV in Assessment and Workplace Training (BSZ40198)

Western Business Enterprise Centre
Certificate II in Security (Guarding) (PRS20198)
Certificate III in Security (Guarding) (PRS30198)
Certificate IV in Business (Small Business Management) (BSB40401)
Certificate IV in Business Facilitation (WSB57)
### Automotive and Fabrication Department

- **Certificate II in Automotive Technology** (21110VIC)
- **Certificate I in Automotive** (AUR10199)
- **Certificate II in Automotive (Administration – Clerical)** (AUR20199)
- **Certificate II in Automotive (Mechanical)** (AUR20799 – AUR21899)
- **Certificate II in Automotive (Vehicle Body)** (AUR22499 – AUR22999)
- **Certificate II in Automotive (Sales)** (AUR21999 – AUR22399)
- **Certificate II in Marine** (AUR22199 – AUR22599)
- **Certificate II in Bicycles (Services)** (AUR22099)
- **Certificate II in Outdoor Power Equipment (Services)** (AUR23399)
- **Certificate III in Automotive** (Sales) (AUR31399 – AUR31499)
- **Certificate III in Automotive Vehicle Body** (AUR31699 – AUR31899)
- **Certificate III in Automotive (Mechanical)** (AUR32099 – AUR32199)
- **Certificate III in Outdoor Power Equipment** (AUR32499 – AUR32599)
- **Certificate IV in Automotive** (AUR40199)

### Advanced Diploma of Engineering Technology

- **Principal Technical Officer** (14309VIC)
- **Certificate I in Engineering** (MEM10198F)
- **Certificate II in Engineering – Production** (MEM20298F)
- **Certificate III in Engineering – Production Systems** (MEM30198F)
- **Certificate III in Engineering – Fabrication Trade** (MEM30398F [Light & Heavy])

### Industrial Skills Training Centre

- **Course in Cranes** (contact Department for details)
- **Course in Rigging – Basic** (contact Department for details)
- **Course in Rigging – Intermediate** (contact Department for details)
- **Course in Rigging – Advanced** (contact Department for details)
- **Course in Safe Lifting (Load Slinging)** (contact Department for details)
- **Course in Scaffolding – Basic** (contact Department for details)
- **Course in Scaffolding – Limited Height** (contact Department for details)
- **Course in Scaffolding – Intermediate** (contact Department for details)
- **Course in Scaffolding – Advanced** (contact Department for details)
- **Course in Dogging** (contact Department for details)
- **Course in Earthmoving** (contact Department for details)
- **Course in Trench Shoring and Safety** (contact Department for details)
- **Course in Forklift Operating** (contact Department for details)
- **Course in Elevating Platform Vehicle Operators** (contact Department for details)

### Driver Training

- **Course in Driver Training** (contact Department for details)
- **Course in Driver Education** (contact Department for details)

### Engineering Technology Department

- **Advanced Diploma of Engineering Technology** (Principal Technical Officer) (14309VIC) [Civil]
- **Advanced Diploma of Engineering Technology** (20020VIC) [Civil]
- **Certificate I in Engineering Technology** (11409VIC)
- **Certificate II in Engineering (Production)** (MEM20198)
- **Certificate II in Engineering (Production Technology)** (MEM20298)
- **Certificate III in Engineering (Production Systems)** (MEM30198)
Certificate III in Engineering (Mechanical Trade) (MEM30298)
Certificate III in Engineering (Technician) (MEM30598)
Certificate IV in Engineering Technology (2001BVIC)
Advanced Diploma of Engineering Technology (20020VIC)
Diploma of Engineering Technology (20019VIC) [Streams in Mechanical, Manufacturing and Mechatronics]
Advanced Diploma of Engineering Technology (Principal Technical Officer) (14309VIC) [Streams in Mechanical, Manufacturing and Mechatronics]
Certificate II in Automotive Manufacturing (AUM20100)
Certificate III in Automotive Manufacturing – Frontline Management (AUM30100)
Certificate IV in Automotive Manufacturing – Manufacturing Maintenance (AUM40200)

Science and Food Technology Department
Certificate II in Science Bridging (12883VIC)
Certificate III in Science Bridging (22864VIC)
Certificate III in Animal Technology (QLD3757)
Certificate IV in Animal Technology (2411ARC)
Diploma of Applied Science (Animal Technology) (QLD3522)
Certificate II in Animal Studies (RUV20198)
Certificate III in Animal Studies (RUV30198)
Certificate IV in Veterinary Nursing (RUV40198)
Certificate III in Laboratory Skills (PML30199)
Certificate IV in Laboratory Techniques (PML40199)
Diploma of Laboratory Technology (PML50199)
Diploma of Laboratory Technology (Process Manufacturing Testing) (PML50199)
Diploma of Laboratory Technology (Pathology Testing) (PML50199)
Diploma of Laboratory Technology (Biological and Environmental Testing) (PML50199)
Diploma of Laboratory Technology (Food Testing) (PML50199)
Advanced Diploma of Laboratory Operations (PML60199)
Certificate I in Horticulture (RUH10198)
Certificate II in Horticulture (Arboriculture) (RUH20298)
Certificate II in Horticulture (Floriculture) (RUH20398)
Certificate II in Horticulture (Landscape) (RUH20498)
Certificate II in Horticulture (Nursery) (RUH20598)
Certificate II in Horticulture (Parks & Gardens) (RUH20698)
Certificate II in Horticulture (Production) (RUH20898)
Certificate II in Horticulture (Turf Management) (RUH20798)
Certificate III in Horticulture (RUH30198)
Certificate III in Occupational Health & Safety (QLD1893)
Certificate IV in Occupational Health & Safety (QLD1892)
Diploma of Occupational Health & Safety (QLD1891)
Certificate IV in Meat Processing (Leadership) (MTM40100)
Certificate IV in Meat Processing (Quality Assurance) (MTM40300)
Diploma of Meat Processing (MTM50100)
Advanced Diploma of Meat Processing (MTM60100)
Certificate II in Local Government (Environmental Health and Regulation) (LGA20200)
Certificate III in Local Government (Environmental Health and Regulation) (LGA30200)
Diploma of Local Government (Environmental Health and Regulation) (LGA50300)
Advanced Diploma of Local Government (Environmental Health and Regulation) (LGA60300)
Certificate I in Food Processing (Plant Baking) (FD F10398)
Certificate II in Food Processing (Plant Baking) (FD F20398)
Certificate III in Food Processing (Plant Baking) (FD F30398)
Certificate I in Process Plant Skills (PMA10198)
Certificate I in Food Processing (FD F10198)
Certificate I in Pharmaceutical Manufacturing (FD F10298)
Certificate II in Pharmaceutical Manufacturing (FD F20298)
Certificate II in Process Plant Operations (PMA20198)
Certificate III in Food Processing (FD F30198)
Certificate III in Pharmaceutical Manufacturing (FD F30298)
Certificate III in Process Plant Operations (PMA30198)
Diploma of Food Technology (2506AKC)
Certificate IV in Food Technology (11803VIC)
Diploma of Natural Resource Management (2212AMC)
Certificate III in Health (Hospital Pharmacy Technician) (2307AEC)
Certificate IV in Mortuary Science (Embalming) (2411AGB)
Courses in Lubrication (21010VIC)
Certificate IV in Assessment and Workplace Training (BSZ40198)
## School of Further Education 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)
- Certificate I in Vocational Studies (Transport and Distribution) (15598VIC)
- Diploma of Further Education (21015VIC)
- Certificate IV in Further Education (21014VIC)
- Certificate I in Work Education (21108VIC)
- Certificate I in Transition Education (15494VIC)
- Course in Concurrent Study (21204VIC)
- Certificate I in Laundry Operations (LMT10800)
- Certificate II in Laundry Operations (LMT21400)
- Certificate III in Laundry Operations (LMT31000)
- Certificate I in Dry Cleaning Operations (LMT11000)
- Certificate II in Dry Cleaning Operations (LMT21500)
- Certificate III in Dry Cleaning Operations (LMT31200)

### Arts and Preparatory Programs Department
- Diploma of Arts (Small Companies and Community Theatre) (21052VIC)
- 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)
- Access Course for Women (31132000KFM)
- Gateway to Nursing and the Health Sciences (31132290HZB)
- Preparation for Tertiary Studies (Arts) (31132000LZO)
- Certificate I in ESL Access (14378VIC)
- Certificate II in ESL Access (14379VIC)
- Certificate III in ESL Access (14380VIC)
- Certificate I in General Education for Adults (Introductory) (21249VIC)
- Certificate I in General Education for Adults (21250VIC)
- Diploma of Liberal Arts (21220VIC)
- Certificate IV in Liberal Arts (21219VIC)
- Victorian Certificate of Education (2200LZV)

### Music Programs
- Certificate IV in Music (CUS40101)
- Certificate IV in Music (Technical Production) (CUS40201)
- Diploma of Music Industry (Technical Production) (CUS50201)
- Diploma of Music (CUS50101)
- Certificate IV in Music Industry (Business) (CUS40301)
- Diploma of Music Industry (Business) (CUS50301)

### Language Studies Department
- Certificate II in ESL (Academic Purposes) (14372VIC)
- Certificate III in ESL (Academic Purposes) (14373VIC)
- Certificate III in ESL (Academic Purposes) (14373VIC) [English for Health Professionals]
- Certificate IV in ESL (Academic Purposes) (14374VIC)
- Certificate II in ESL (Vocational Purposes) (14375VIC)
- Certificate III in ESL (Vocational Purposes) (14376VIC)
- Certificate III in ESL (Vocational Purposes) (14376VIC) [Aged Care Work]
- Certificate IV in ESL (Vocational Purposes) (14377VIC)
- Certificate I in ESL Access (14378VIC)
- Certificate II in ESL Access (14379VIC)
- Certificate III in ESL Access (14380VIC)
- Certificate IV in ESL Access (14381VIC)
- Course in Concurrent Study (21204VIC)

### Department of Employment & Training Services
- Certificate I in Horticulture (RUH10198)
- Certificate II in Horticulture (RUH20298 - RUH20798)
- Course in Planning for Employment and Training (21109VIC)
School of Human Services, Art and Multimedia

Art, Design and Multimedia Department
Advanced Diploma of Arts (Graphic Design)(12862VIC)
Diploma of Arts (Graphic Arts)(12861VIC)
Certificate IV in Arts (Applied Design)(15727VIC)
Advanced Diploma of Multimedia(CUF60501)
Diploma of Multimedia(CUF50701)
Diploma of Arts (Visual Art)(12857VIC)

Child Studies Department
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)(CHC30399)
Certificate III in Community Services (Children’s Services)(CHC20399)

Health Services Unit
Certificate IV in Health (Nursing)(2407ADC)
Certificate III in Pathology Specimen Collection(HLT30101)

Library Studies Unit
Diploma of Library and Information Services(CUL50199)
Certificate III in Library and Information Services(CUL30199)

Social and Community Studies Department
Certificate III in Community Services (Disability Work)(CHC30799)
Certificate IV in Community Services (Disability Work)(CHC40799)
Diploma of Community Services (Disability Work)(CHC50799)
Certificate II in Community Services (Community Work)(CHC20499)
Certificate III in Community Services (Community Work)(CHC30699)
Diploma of Community Services (Community Work)(CHC50699)
Certificate IV in Community Services (Aged Care Work)(CHC40199)
Certificate III in Community Services (Welfare Studies)(2507ABC)
Diploma in Counselling (3113GWD40)
Advanced Diploma of Justice(21214VIC)
Diploma of Justice (21213VIC)
Certificate IV in Justice (21212VIC)
Diploma of Community Services (Youth Work)(CHC50999)
Diploma of Business (Community Services and Health Management)(2504AIC)
Certificate II in Home Support Cleaning(21186VIC)
Course in Palliative Care Awareness(3113GWD50)
Certificate II in Asset Maintenance (Cleaning Operations)(PRM20198)

Sport and Recreation Department
Certificate II in Fitness(SRF20201)
Certificate III in Fitness(SRF30201)
Certificate IV in Fitness(SRF40201)
Certificate II in Outdoor Recreation(SRO20299)
Certificate II in Sport (Career Oriented Participation)(SRS20299)
Certificate II in Sport and Recreation(SRO20199)
Certificate III in Sport and Recreation(SRO30199)
Certificate II in Community Recreation(SRC20201)
Certificate III 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)
Diploma of Sport (Coaching)(SRS50299)
Certificate IV in Sports Science (Golf)(3113SRG35)
Diploma of Sports Science (Golf)(3113SRG36)
Certificate II in Racing (Greyhound) - Kennelhand Level 1(RG R20398)
Certificate III in Racing (Greyhound) - Kennelhand Level 2(RG R30508)
Graduate Certificate in Career Counselling for Elite Performers (Dance, Music, Sports)(21237VIC)
COURSES AT VICTORIA UNIVERSITY IN 2003

School of Hospitality and Personal Services

Personal Services Department
Certificate II in Modelling (2211ARC)
Certificate II in Nail Technology (WRB20199)
Certificate III in Beauty (WRB30199)
Certificate IV in Beauty Therapy (WRB40199)
Diploma of Beauty Therapy (WRB50199)
Course in Basic Make-Up (3113CBLCAF)
Diploma of Entertainment (Make-Up) (CUE50796)
Certificate IV in Entertainment Make-Up (CUE40890)
Diploma of Health Science (Massage) (WAO350)
Certificate IV in Health Science (Remedial Massage) (3113BT002)
Certificate III in Health Science (Therapeutic Massage) (3113BT001)
Certificate II in Hairdressing (WHH20100) [Pre-Apprenticeship]
Certificate III in Hairdressing (WHH30100)
Certificate III in Hairdressing (WHH30100) [Pre-Apprenticeship]
Certificate IV in Hairdressing (WHH40100)
Certificate III in Hairdressing Salon Management (WRH50100)

Wholesale/ Retail Unit
Certificate II in Wholesale Operations (WRW20101)
Certificate III in Wholesale Operations (WRW30101)
Certificate IV in Wholesale Operations (WRW40101)
Diploma of Wholesale Management (WRW50101)
Diploma of Retail Management (WRW50101)
Certificate IV in Retail Management (WRW40102)
Certificate III in Retail Operations (WRW30102)
Certificate II in Retail Operations (WRW20102)
Certificate I in Retail Operations (WRW10102)
Certificate II in Retail Cosmetic Assistant (WRB20399)

Hospitality and Tourism Department
Certificate I in Hospitality (Operations) (THH11002)
Certificate I in Hospitality (Kitchen Operations) (THH11102)
Certificate II in Hospitality (Operations) (THH21102)
Certificate II in Hospitality (Kitchen Operations) (THH21202)
Certificate III in Hospitality (Commercial Cookery) (THH31502)
Certificate III in Hospitality (Catering Operations) (THH32902)
Certificate III in Hospitality (Operations) (THH33002)
Certificate III in Hospitality (Food and Beverage) (THH32797)
Certificate IV in Hospitality (Supervision) (THH42602)
Diploma of Hospitality Management (THH51202)

Advanced Diploma of Hospitality Management (THH60202)
Certificate II in Tourism (Operations) (THT20502)
Certificate III in Tourism (Retail Travel Sales) (THT30202)
Certificate III in Tourism (Tour Wholesaling) (THT30502)
Certificate III in Tourism (Visitor Information Services) (THT30602)
Certificate III in Tourism (Guiding) (THT30902)
Certificate III in Tourism (Operations) (THT31002)
Certificate IV in Tourism (Sales and Marketing) (THT40102)
Certificate IV in Tourism (Operations) (THH40202)
Certificate IV in Tourism (Guiding) (THT40302)
Certificate IV in Tourism (Natural and Cultural Heritage) (THT40402)
Diploma of Tourism (Marketing and Product Development) (THT50102)

Diploma of Tourism (Operations Management) (THT50302)
Advanced Diploma of Tourism Management (THT60102)